



**THE
HASTINGS
ACADEMY**



**HOME LEARNING
PACK
YEAR
10**



PRIDE THROUGH SUCCESS

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HOW TO USE THIS BOOKLET

In this booklet you will find a menu of tasks related to the subjects and topics that you study. There are opportunities for you to revise material you have previously studied, practice skills that you have learned in class and sometimes learn something new.

As a minimum you will need a pen and some paper to complete these tasks. If you need these, please collect from the reception desk at the academy. For some of the mind-mapping tasks you might wish to use coloured pens or pencils but they are not essential. Some tasks may ask you to create packs of flashcards. You can use any kind of paper or card for this but don't worry if you don't have enough, just choose another task.

While you are not in school **you should follow your normal school timetable** and complete an hour of work for each hour you would normally be studying that subject. You may find that, without the support of your teacher you complete tasks more slowly than you would do in a lesson.

If you get really stuck on something, move on to the next task and/or seek help from the internet or by e-mailing your teacher if possible.

ENGLISH LITERATURE AND LANGUAGE

Work your way through the tasks on the following pages. If you get really stuck on one, try a different question and/or contact your teacher for advice.



For your English work you will be studying 'Romeo and Juliet'. Read through the summaries of each scene and then complete the activities.

The Prologue

Two households, both alike in dignity
(In fair Verona, where we lay our scene),
From ancient grudge break to new mutiny,
Where civil blood makes civil hands unclean.
From forth the fatal loins of these two foes
A pair of star-crossed lovers take their life,
Whose misadventured piteous overthrows
Doth with their death bury their parents' strife.
The fearful passage of their death-marked love
And the continuance of their parents' rage,
Which, but their children's end, naught could remove,
Is now the two hours' traffic of our stage—
The which, if you with patient ears attend,
What here shall miss, our toil shall strive to mend.

What does the prologue reveal to the audience?

What is the purpose of the prologue?

Romeo and Juliet Act 1

Act 1, Scene 1 – summary:

Sampson and Gregory, two servants of the house of Capulet, stroll through the streets of Verona. With bawdy banter, Sampson vents his hatred of the house of Montague. The two exchange punning remarks about physically conquering Montague men and sexually conquering Montague women. Gregory sees two Montague servants approaching, and discusses with Sampson the best way to provoke them into a fight without breaking the law. Sampson bites his thumb at the Montagues—a highly insulting gesture. A verbal confrontation quickly escalates into a fight. Benvolio, a kinsman to Montague, enters and draws his sword in an attempt to stop the confrontation. Tybalt, a kinsman to Capulet, sees Benvolio's drawn sword and draws his own. Benvolio explains that he is merely trying to keep the peace, but Tybalt professes a hatred for peace as strong as his hatred for Montagues, and attacks. The brawl spreads. A group of citizens bearing clubs attempts to restore the peace by beating down the combatants. Montague and Capulet enter, and only their wives prevent them from attacking one another. Prince Escalus arrives and commands the fighting stop on penalty of torture. The Capulets and Montagues throw down their weapons. The Prince declares the violence between the two families has gone on for too long, and proclaims a death sentence upon anyone who disturbs the civil peace again. He says that he will speak to Capulet and Montague more directly on this matter; Capulet exits with him, the brawlers disperse, and Benvolio is left alone with his uncle and aunt, Montague and Lady Montague.

Benvolio describes to Montague how the brawl started. Lady Montague asks whether Benvolio has seen her son, [Romeo](#). Benvolio replies that he earlier saw Romeo pacing through a grove of sycamores outside the city; since Romeo seemed troubled, Benvolio did not speak to him. Concerned about their son, the Montagues tell Benvolio that Romeo has often been seen melancholy, walking alone among the sycamores. They add that they

have tried to discover what troubles him, but have had no success. Benvolio sees Romeo approaching, and promises to find out the reason for his melancholy. The Montagues quickly depart. Benvolio approaches his cousin. With a touch of sadness, Romeo tells Benvolio that he is in love with Rosaline, but that she does not return his feelings and has in fact sworn to live a life of chastity. Benvolio counsels Romeo to forget her by gazing on other beauties, but Romeo contends that the woman he loves is the most beautiful of all. Romeo departs, assuring Benvolio that he cannot teach him to forget his love. Benvolio resolves to do just that.

Tasks

List 5 key events from this scene:

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Why has Shakespeare opened the play with a brawl between the Montagues and the Capulets? What is revealed to the audience?

How does this opening establish the main themes of the play?

Sampson and Gregory joke about what they will do to the Montagues: “’Tis true, and therefore women, being the weaker vessels, are ever thrust to the wall. Therefore I will push Montague’s men from the wall, and thrust his maids to the wall.”

How does this help to establish the theme of masculine honour?

Tybalt joins the fight and says to Benvolio, “What, drawn, and talk of peace? I hate the word/ As I hate hell, all Montagues, and thee.”

How is Tybalt presented in this scene?

The audience first meets a lovesick Romeo, but it may be a shock to the audience that he is in love with Rosaline.

“Alas, that Love, whose view is muffled still,

Should without eyes see pathways to his will!

Where shall we dine? O me! What *fray* was here?

Yet tell me not, for I have heard it all.

Here’s much to do with hate, but more with love.

Why then, O brawling love, O loving hate,

O anything of nothing first create!

O *heavy* lightness, serious vanity,

Misshapen chaos of well-seeming forms!

Feather of lead, bright smoke, cold fire, sick health,

Still-waking sleep, that is not what it is!

This love feel I, that feel no love in this.

Dost thou not laugh?”

Highlight all the oxymorons in Romeo’s monologue.

Why has Shakespeare used so many oxymorons? What does it reveal to the audience about Romeo?

Act 1, Scene 2 – Summary

On another street of Verona, Capulet walks with Paris, a noble kinsman of the Prince. The two discuss Paris's desire to marry Capulet's daughter, **Juliet**. Capulet is overjoyed, but also states that Juliet—not yet fourteen—is too young to get married. He asks Paris to wait two years. He assures Paris that he favours him as a suitor, and invites Paris to the traditional masquerade feast he is holding that very night so that Paris might begin to woo Juliet and win her heart. Capulet dispatches a servant, Peter, to invite a list of people to the feast. As Capulet and Paris walk away, Peter laments that he cannot read and will therefore have difficulty accomplishing his task.

Romeo and Benvolio happen by, still arguing about whether Romeo will be able to forget his love. Peter asks Romeo to read the list to him; Rosaline's name is one of those on the list. Before departing, Peter invites Romeo and Benvolio to the party—assuming, he says, that they are not Montagues. Benvolio tells Romeo that the feast will be the perfect opportunity to compare Rosaline with the other beautiful women of Verona. Romeo agrees to go with him, but only because Rosaline herself will be there.

Tasks

List 3 key events from this scene:

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When Lord Capulet is considering marrying Juliet to Paris he comments, "My will to her consent is but a part" What does this show the audience about Lord Capulet and his relationship with his daughter?

What is the significance of Romeo meeting Peter? What role does fate play?

Act 1, Scene 3 – Summary:

In Capulet's house, just before the feast is to begin, Lady Capulet calls to the Nurse, needing help to find her daughter. Juliet enters, and Lady Capulet dismisses the Nurse so that she might speak with her daughter alone. She immediately changes her mind, however, and asks the Nurse to remain and add her counsel. Before Lady Capulet can begin to speak, the Nurse launches into a long story about how, as a child, an uncomprehending Juliet became an innocent accomplice to a sexual joke. Lady Capulet tries unsuccessfully to stop the wildly amused Nurse. An embarrassed Juliet forcefully commands that the Nurse stop. Lady Capulet asks Juliet what she thinks about getting married. Juliet replies that she has not given it any thought. Lady Capulet observes that she gave birth to Juliet when she was almost Juliet's current age. She excitedly continues that Juliet must begin to think about marriage because the "valiant Paris" has expressed an interest in her (1.3.76). Juliet dutifully replies that she will look upon Paris at the feast to see if she might love him. A servingman enters to announce the beginning of the feast.

Tasks

List 3 key events from this scene:

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When Lady Capulet asks Juliet to think about marriage, she says:

"I'll look to like, looking liking move; / But no more deep will I endart mine eye / Than your consent gives strength to make it fly"

What does this reveal to the audience about the position of women and parental influence in the 1500s?

How is the relationship between Juliet and Lady Capulet presented in this scene?

Act 1, Scene 4 – Summary:

[Romeo](#), Benvolio, and their friend [Mercutio](#), all wearing masks, have gathered with a group of mask-wearing guests on their way to the Capulets' feast. Still melancholy, Romeo wonders how they will get into the Capulets' feast, since they are Montagues. When that concern is brushed aside, he states that he will not dance at the feast. Mercutio begins to gently mock Romeo, transforming all of Romeo's statements about love into blatantly sexual metaphors. Romeo refuses to engage in this banter, explaining that in a dream he learned that going to the feast was a bad idea. Mercutio responds with a long speech about Queen Mab of the fairies, who visits people's dreams. The speech begins as a flight of fancy, but Mercutio becomes almost entranced by it, and a bitter, fervent strain creeps in. Romeo steps in to stop the speech and calm Mercutio down. Mercutio admits that he has been talking of nothing, noting that dreams are but "the children of an idle brain" (1.4.97).

Benvolio refocuses their attention on actually getting to the feast. Romeo voices one last concern: he has a feeling that the night's activities will set in motion the action of fate, resulting in untimely death. But, putting himself in the hands of "he who hath the steerage of my course," Romeo's spirits rise, and he continues with his friends toward the feast (1.4.112).

Tasks

List 3 key events from this scene:

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How has foreshadowing been used in this scene?

*“O, then I see Queen Mab has been with you. . . .
She is the fairies’ midwife. . . .”*

Queen Mab, who brings dreams to sleeping people, seems to be loosely based on figures in the pagan Celtic mythology that predated Christianity’s arrival in England. Yet the name holds a deeper meaning. The words “quean” and “mab” were references to whores in Elizabethan England. In Queen Mab, then, Mercutio creates a sort of conceptual pun: he alludes to a mythological tradition peopled with fairies and attaches it to a reference to prostitutes.

What could this reveal to the audience about Mercutio’s character?

Act 1, Scene 5 – Summary;

In the great hall of the Capulets, all is a-bustle. The servants work feverishly to make sure all runs smoothly, and set aside some food to make sure they have some enjoyment of the feast as well. Capulet makes his rounds through groups of guests, joking with them and encouraging all to dance.

From across the room, **Romeo** sees **Juliet**, and asks a servingman who she is. The servingman does not know. Romeo is transfixed; Rosaline vanishes from his mind and he declares that he has never been in love until this moment. Moving through the crowd, Tybalt hears and recognizes Romeo's voice. Realizing that there is a Montague present, Tybalt sends a servant to fetch his rapier. Capulet overhears Tybalt and reprimands him, telling him that Romeo is well regarded in Verona, and that he will not have the youth harmed at his feast. Tybalt protests, but Capulet scolds him until he agrees to keep the peace. As Capulet moves on, Tybalt vows that he will not let this indignity pass.

Meanwhile, Romeo has approached Juliet and touched her hand. In a dialogue laced with religious metaphors that figure Juliet as a saint and Romeo as a pilgrim who wishes to erase his sin, he tries to convince her to kiss him, since it is only through her kiss that he might be absolved. Juliet agrees to remain still as Romeo kisses her. Thus, in the terms of their conversation, she takes his sin from him. Juliet then makes the logical leap that if she has taken Romeo's sin from him, his sin must now reside in her lips, and so they must kiss again.

Just as their second kiss ends, the Nurse arrives and tells Juliet that her mother wants to speak with her. Romeo asks the Nurse who Juliet's mother is. The Nurse replies that Lady Capulet is her mother. Romeo is devastated. As the crowd begins to disperse, Benvolio shows up and leads Romeo from the feast. Juliet is just as struck with the mysterious man she has kissed as Romeo is with her. She comments to herself that if he is already married, she feels she will die (1.5.131). In order to find out

Romeo's identity without raising any suspicions, she asks the Nurse to identify a series of young men. The Nurse goes off and returns with the news that the man's name is Romeo, and that he is a Montague.

Overcome with anguish that she loves a Montague, Juliet follows her nurse from the hall.

Tasks

List 5 key events from this scene:

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Romeo's monologue when he first sees Juliet:

Oh, she doth teach the torches to burn bright!
It seems she hangs upon the cheek of night
Like a rich jewel in an Ethiop's ear,
Beauty too rich for use, for earth too dear.
So shows a snowy dove trooping with crows
As yonder lady o'er her fellows shows.
The measure done, I'll watch her place of stand,
And, touching hers, make blessed my rude hand.
Did my heart love till now? Forswear it, sight!
For I ne'er saw true beauty till this night.

Highlight and annotate the language devices used. What does this monologue reveal to the audience about Romeo?

The first conversation between Romeo and Juliet is an extended Christian metaphor. Romeo declares he is a 'Pilgrim' while Juliet is a 'Saint'

"This holy shrine, the gentle fine is this:
My lips, two blushing pilgrims, ready stand"

What is the significance of this religious imagery?

Romeo and Juliet's first conversation is a shared sonnet. A sonnet is a perfect, idealized poetic form often used to write about love. Why has Shakespeare used a sonnet here?

When Tybalt hears Romeo's voice he immediately asks for his 'rapier'. What does this reveal to the audience about Tybalt? How could this link to ideas of masculinity?

Romeo and Juliet Act 2

Act 2, Scene 2 – Summary:

Having left the feast, Romeo decides that he cannot go home. He must instead try to find Juliet. He climbs a wall bordering the Capulet property and leaps down into the Capulet orchard. Juliet suddenly appears at a window above the spot where Romeo is standing. Romeo compares her to the morning sun, far more beautiful than the moon it banishes. He nearly speaks to her, but thinks better of it. Juliet, musing to herself and unaware that Romeo is in her garden, asks why Romeo must be Romeo—a Montague, and therefore an enemy to her family. She says that if he would refuse his Montague name, she would give herself to him; or if he would simply swear that he loved her, she would refuse her Capulet name. Romeo responds to her plea, surprising Juliet, since she thought she was alone. She wonders how he found her and he tells her that love led him to her. Juliet worries that Romeo will be murdered if he is found in the garden, but Romeo refuses to budge, claiming that Juliet's love would make him immune to his enemies. Juliet admits she feels as strongly about Romeo as he professes he loves her, but she worries that perhaps Romeo will prove inconstant or false, or will think Juliet too easily won. Romeo begins to swear to her, but she stops him, concerned that everything is happening too quickly. He reassures her, and the two confess their love again. The Nurse calls for Juliet, and Juliet goes inside for a moment. When she reappears, she tells Romeo that she will send someone to him the next day to see if his love is honorable and if he intends to wed her. The Nurse calls again, and again Juliet withdraws. She appears at the window once more to set a time when her messenger should call on him: they settle on nine in the morning. They exult in their love for another moment before saying good night. Juliet goes back inside her chamber, and Romeo departs in search of a monk to aid him in his cause.

Tasks

List 5 key events from this scene:

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'Tis but thy name that is my enemy.
Thou art thyself, though not a Montague.
What's Montague? It is nor hand, nor foot,
Nor arm, nor face, nor any other part
Belonging to a man. O, be some other name!
What's in a name? That which we call a rose
By any other word would smell as sweet.
(2.1.80–86)

What does Juliet's monologue reveal to the audience?

"But, soft! what light through yonder window breaks?
It is the east, and Juliet is the sun.
Arise, fair sun, and kill the envious moon,
Who is already sick and pale with grief,"

Why does Romeo refer to Juliet as the 'sun'? What does this suggest about his feelings?

Act 2, Scene 3 – Summary:

In the early morning, [Friar Lawrence](#) enters, holding a basket. He fills the basket with various weeds, herbs, and flowers. While musing on the beneficence of the Earth, he demonstrates a deep knowledge of the properties of the plants he collects. [Romeo](#) enters and Friar Lawrence guesses that Romeo has not slept the night before. The friar fears that Romeo may have slept in sin with Rosaline. Romeo assures him that did not happen, and describes his new love for [Juliet](#), his intent to marry her, and his desire that the friar consent to marry them that very day. Friar Lawrence is shocked at this sudden shift from Rosaline to Juliet. He comments on the fickleness of young love, Romeo's in particular. Romeo defends himself, noting that Juliet returns his love while Rosaline did not. In response, the friar comments that Rosaline could see that Romeo's love for her "did read by rote, that could not spell." Remaining skeptical at Romeo's sudden change of heart, Friar Lawrence nonetheless agrees to marry the couple. He expresses the hope that the marriage of Romeo and Juliet might end the feud ravaging the Montagues and Capulets.

Tasks

List 3 key events from this scene:

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In this scene we are introduced to Friar Lawrence as he meditates on the duality of good and evil that exists in all things.

Within the infant rind of this small flower
Poison hath residence and medicine power.
For this, being smelt, with that part cheers each part;

What does this reveal to the audience about Friar Lawrence and his significance in the play?

Act 2, Scene 4 – Summary:

Later that morning, just before nine, **Mercutio** and Benvolio wonder what happened to Romeo the previous night. Benvolio has learned from a Montague servant that Romeo did not return home; Mercutio spouts some unkind words about Rosaline. Benvolio also relates that Tybalt has sent a letter to Romeo challenging him to a duel. Mercutio responds that Romeo is already dead, struck by Cupid's arrow; he wonders aloud whether Romeo is man enough to defeat Tybalt. Romeo arrives. Mercutio immediately begins to ridicule him, claiming that Romeo has been made weak by love. As a way of mocking what he believes is Romeo's overwrought love for Rosaline, Mercutio takes the part of Romeo and compares Rosaline to all the most famous beauties of antiquity, finding Rosaline far superior. Then Mercutio accuses Romeo of abandoning his friends the previous night. Romeo does not deny the charge, but claims his need was great, and so the offense is forgivable. From this proceeds intricate, witty, and wildly sexual verbal jousting.

The Nurse enters, trailed by the servant, Peter. The Nurse asks if any of the three young men know Romeo, and Romeo identifies himself. Mercutio teases the Nurse, insinuating that she is a harlot, thus infuriating her. Benvolio and Mercutio take their leave to have dinner at Montague's house,

and Romeo says he will follow shortly. The Nurse warns Romeo that he had better not attempt to “deal double” with Juliet, and Romeo assures her he is not. He asks the Nurse to tell Juliet to find some way to attend confession at Friar Lawrence’s cell that afternoon; there they will be married. The Nurse agrees to deliver the message. The Nurse also agrees to set up a cloth ladder so that Romeo might ascend to Juliet’s room on their wedding night.

Tasks

List 3 key events from this scene:

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What is the purpose of this scene? How does it develop the plot?

Act 2, Scene 5 – Summary:

In the Capulet orchard, [Juliet](#) impatiently waits for her nurse, whom she sent to meet [Romeo](#) three hours earlier. At last the Nurse returns, and Juliet anxiously presses her for news. The Nurse claims to be too tired, sore, and out of breath to tell Juliet what has happened. Juliet grows frantic, and eventually the Nurse gives in and tells her that Romeo is waiting at [Friar Lawrence](#)’s cell to marry her. The Nurse departs to wait in the ally for Romeo’s servant, who is to bring a ladder for Romeo to use to climb up to Juliet’s chamber that night to consummate their marriage.

Tasks

List 3 key events from this scene:

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Act 2, Scene 6 – Summary:

Romeo and Friar Lawrence wait for Juliet to arrive at the cell. An ecstatic Romeo brashly states that he does not care what misfortune might come, as it will pale in comparison to the joy he feels right now. Friar Lawrence counsels Romeo to love moderately and not with too much intensity, saying, “these violent delights have violent ends” (2.5.9). Juliet enters and Romeo asks her to speak poetically of her love. Juliet responds that those who can so easily describe their “worth” are beggars, her love is far too great to be so easily described. The lovers exit with Friar Lawrence and are wed.

Tasks

List 3 key events from this scene:

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How has Shakespeare used foreshadowing in this scene?

Romeo and Juliet Act 3

Act 3, Scene 1 – Summary:

As they walk in the street under the boiling sun, Benvolio suggests to **Mercutio** that they go indoors, fearing that a brawl will be unavoidable should they encounter Capulet men. Mercutio replies that Benvolio has as quick a temper as any man in Italy, and should not criticize others for their short fuses. Tybalt enters with a group of friends. He approaches Benvolio and Mercutio and asks to speak with one of them. Annoyed, Mercutio begins to taunt and provoke him. **Romeo** enters. Tybalt turns his attention from Mercutio to Romeo, and calls Romeo a 'villain'. Romeo, now secretly married to **Juliet** and therefore Tybalt's cousin in law, refuses to be angered by Tybalt's verbal attack. Tybalt commands Romeo to draw his sword. Romeo protests that he has good reason to love Tybalt, and does not wish to fight him.

Mercutio and Tybalt begin to fight. Romeo, attempting to restore peace, throws himself between them. Tybalt stabs Mercutio under Romeo's arm, and as Mercutio falls, Tybalt and his men hurry away. Mercutio dies, cursing both the Montagues and the Capulets: "A plague o' both your houses" (3.1.87).

Enraged, Romeo declares that his love for Juliet has made him effeminate (female) and that he should have fought Tybalt in Mercutio's place. When Tybalt, still angry, storms back onto the scene, Romeo draws his sword. **They fight, and Romeo kills Tybalt.** Benvolio urges Romeo to run; a group of citizens outraged at the recurring street fights is approaching. Romeo, shocked at what has happened, cries "O, I am fortune's fool!" and flees (3.1.131).

The Prince enters, accompanied by many citizens, and the Montagues and Capulets. Benvolio tells the Prince the story of the brawl, emphasizing Romeo's attempt to keep the peace, but Lady Capulet, Tybalt's aunt, cries that Benvolio is lying to protect the Montagues. She demands Romeo's life. Prince Escalus

chooses instead to exile Romeo from Verona. He declares that should Romeo be found within the city, he will be killed.

Tasks

List 5 key events from this scene:

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What does this quote show about Tybalt?

“Romeo, the love I bear thee can afford
No better term than this: thou art a villain.”

How does this compare to Tybalt earlier in the play?

When he hears Romeo at the Capulet party: “To strike him dead I hold it not a sin.”

(1.5.61-67)

Elizabethan society generally believed that a man too much in love lost his manliness. What would an Elizabethan society feel about Romeo?

Why is this scene structurally significant in the play (think about what has happened just before and the consequences of Romeo's actions).

Act 3, Scene 2 – Summary:

In Capulet's house, [Juliet](#) longs for night to fall so that [Romeo](#) will come to her "untalked of and unseen" (3.2.7). Suddenly the Nurse rushes in with news of the fight between Romeo and Tybalt. But the Nurse is so distraught, she stumbles over the words, making it sound as if Romeo is dead. Juliet assumes Romeo has killed himself, and she resigns to die herself. The Nurse then begins to moan about Tybalt's death, and Juliet briefly fears that both Romeo and Tybalt are dead. When the story is at last straight and Juliet understands that Romeo has killed Tybalt and been sentenced to exile, she curses nature that it should put "the spirit of a fiend" in Romeo's "sweet flesh" (3.2.81–82). The Nurse echoes Juliet and curses Romeo's name, but Juliet denounces her for criticizing her husband, and adds that she regrets faulting him herself. Juliet claims that Romeo's banishment is worse than ten thousand slain Tybalts. She cries that she will die without a wedding night, a maiden-widow. The Nurse assures her, however, that she knows where Romeo is hiding, and will see to it that Romeo comes to her for their wedding night. Juliet gives the Nurse a ring to give to Romeo as a token of her love.

Task

List 5 key events from this scene:

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What is Juliet trying to say here:

**“O, I have bought the mansion of a love,
But not possess'd it, and, though I am sold,
Not yet enjoy'd: so tedious is this day
As is the night before some festival
To an impatient child that hath new robes
And may not wear them.”**

Act 3, Scene 3 – Summary:

In [Friar Lawrence](#)'s cell, Romeo is overcome with grief, and wonders what sentence the Prince has decreed. Friar Lawrence tells him he is lucky: the Prince has only banished him. Romeo claims that banishment is a penalty far worse than death, since he will have to live, but without Juliet. The friar tries to counsel Romeo but the youth is so unhappy that he will have none of it. Romeo falls to the floor. The Nurse arrives, and Romeo desperately asks her for news of Juliet. He assumes that Juliet now thinks of him as a murderer and threatens to stab himself. Friar Lawrence stops him and scolds him for being unmanly. He explains that Romeo has much to be grateful for: he and Juliet are both alive, and after matters have calmed down, Prince Escalus might change his mind. The friar sets forth a plan: Romeo will visit Juliet that night, but make sure to leave her chamber, and Verona, before the morning. He will then reside in Mantua until news of their marriage can be spread. The Nurse hands Romeo the ring from Juliet, and this physical symbol of their love revives his spirits. The Nurse departs, and Romeo bids Friar Lawrence farewell. He must prepare to visit Juliet and then flee to Mantua.

Task

List 5 key events from this scene:

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How is this scene similar to the previous scene? What are the similarities between Romeo and Juliet's reactions?

In scenes 2 and 3, how do Romeo and Juliet's reactions foreshadow what may happen later in the play?

Act 3, Scene 4 – Summary:

Capulet, Lady Capulet, and Paris walk together. Capulet says that because of the terrible recent events, he has had no time to ask his daughter about her feelings for Paris. Lady Capulet states that she will know her daughter's thoughts by the morning. Paris is about to leave when Capulet calls him back and makes what he calls "a desperate tender of my child's love" (3.4.12–13). Capulet says he thinks his daughter will listen to him, then corrects himself and states that he is sure Juliet will abide by his decision. He promises Paris that the wedding will be held on Wednesday, then stops suddenly and asks what day it is. Paris responds that it is Monday; Capulet decides that Wednesday is too soon, and that the wedding should instead be held on Thursday.

Task

List 5 key events from this scene:

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How does Lord Capulet's decision to have Juliet married reflect ideas about the Patriarchy in Shakespearean times?

How would a modern audience react differently to a Shakespearean audience?

Act 3, Scene 5 – Summary:

Just before dawn, **Romeo** prepares to lower himself from **Juliet's** window to begin his exile. Juliet tries to convince Romeo that the birdcalls they hear are from the nightingale, a night bird, rather than from the lark, a morning bird. Romeo cannot entertain her claims; he must leave before the morning comes or be put to death. Juliet declares that the light outside comes not from the sun, but from some meteor. Overcome by love, Romeo responds that he will stay with Juliet, and that he does not care whether the Prince's men kill him.

Faced with this turnaround, Juliet declares that the bird they heard was the lark; that it is dawn and he must flee. The Nurse enters to warn Juliet that Lady Capulet is approaching. Romeo and Juliet tearfully part. Romeo climbs out the window. Standing in the orchard below her window, Romeo promises Juliet that they will see one another again, but Juliet responds that he appears pale, as one dead in the bottom of a tomb. Romeo answers that, to him, she appears the same way, and that it is only sorrow that makes them both look pale. Romeo hurries away as Juliet pulls in the ladder and begs fate to bring him back to her quickly.

Lady Capulet calls to her daughter. Juliet wonders why her mother would come to speak to her so early in the morning. Unaware that her daughter is married to Romeo, Lady Capulet enters the room and mistakes Juliet's tears as continued grief for Tybalt. Lady Capulet tells Juliet of her deep desire to see "the villain Romeo" dead (3.5.80). Lady Capulet tells Juliet about Capulet's plan for her to marry Paris on Thursday, explaining that he wishes to make her happy. Juliet is appalled. She rejects the match, saying "I will not marry yet; and when I do, I swear / It shall be Romeo—whom you know I hate— / Rather than Paris" (3.5.121–123). Capulet enters the chamber. When he learns of Juliet's determination to defy him he becomes enraged and threatens to disown Juliet if she refuses to obey him. When Juliet entreats her mother to intercede, her mother denies her help.

After Capulet and Lady Capulet storm away, Juliet asks her nurse how she might escape her predicament. The Nurse advises her to go through with the marriage to Paris—he is a better match, she says, and Romeo is as good as dead anyhow. Though disgusted by her nurse's disloyalty, Juliet pretends to agree, and tells her nurse that she is going to make confession at [Friar Lawrence's](#). Juliet hurries to the friar, vowing that she will never again trust the Nurse's counsel. If the friar is unable to help her, Juliet comments to herself, she still has the power to take her own life.

Task

List 5 key events from this scene:

-
-
-
-
-

What do these quotes tell us about Lord Capulet’s relationship with his daughter?

“How, how, how, how? Chopped logic! What is this?
“Proud,” and “I thank you,” and “I thank you not,”
And yet “not proud”? Mistress minion you,
Thank me no thankings, nor proud me no prouds,
But fettle your fine joints 'gainst Thursday next
To go with Paris to Saint Peter’s Church,
Or I will drag thee on a hurdle thither.
Out, you green sickness, carrion! Out, you baggage!
You tallow face!”

“Hang thee, young baggage! Disobedient wretch!
I tell thee what: get thee to church o' Thursday,

Or never after look me in the face.
Speak not. Reply not. Do not answer me.
My fingers itch.—Wife, we scarce thought us blest
That God had lent us but this only child,
But now I see this one is one too much
And that we have a curse in having her.
Out on her, hilding!”

How does this compare to Lord Capulet earlier in the play?
“My child is yet a stranger in the world.
She hath not seen the change of fourteen years.
Let two more summers wither in their pride
Ere we may think her ripe to be a bride.” (Act 1, Scene 2)

In this line, why is it significant that Shakespeare has included the stage direction ‘Kneeling’. Consider the role of women at the time.

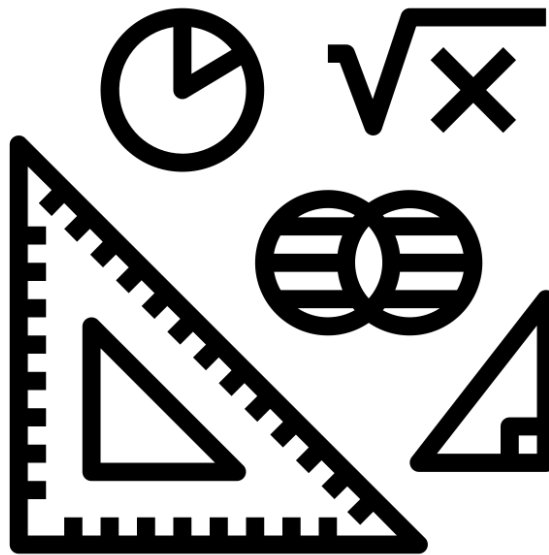
JULIET [Kneeling]

Good Father, I beseech you on my knees,

Hear me with patience but to speak a word.

MATHS – FOUNDATION

On the following pages you will find a series of maths activities. Please start with the ones that are appropriate for your tier or set although of course you are welcome to try other activities if you wish. You can mark your own work by using the answers at the back of the section.



Place value

Grade 1

1. Write the number ninety thousand, one hundred and twenty-four using digits.

[I got ___ / 1 mark]

Grade 2

2. Write down the value represented by the digit 2 in each of these numbers.

a) 4269

[___ / 1 mark]

b) 723 000

[___ / 1 mark]

c) 5.201

[___ / 1 mark]

Grade 2

3. Put one of the symbols $<$, $>$ or $=$ in each box to make a correct statement.

a) 0.36 0.306

[___ / 1 mark]

b) 0.450 0.45

[___ / 1 mark]

c) 1.9003 1.903

[___ / 1 mark]

Grade 2

4. Put these numbers in order of size, starting with the smallest.

7.504 7.45 7.405 7.054

[___ / 2 marks]

Grade 2

5. Work out



a) 67.9×1000

Hint
Think about how many places the digits move and in what direction.

[___ / 1 mark]

b) $0.9 \div 100$

[___ / 1 mark]

Grade 2

6. 10 packets of sweets cost £8.50. How much does one packet cost?



.....p [___ / 2 marks]

Grade 3

7. Given that $4.5 \times 192 = 864$, write down the answer to each of these calculations.



a) 4.5×19.2

[___ / 1 mark]

b) 450×0.0192

[___ / 1 mark]

c) $8.64 \div 0.45$

[___ / 1 mark]

Order of operations

Grade
2

1. Work out



a) $2 + 3 \times 9$

..... [I got ___ / 1 mark]

b) $24 \div (6 - 2) \times 5$

..... [___ / 1 mark]

c) $10 - 3^2$

..... [___ / 1 mark]

Grade
3

2. Work out



a) $(12 - 4 \times 2)^3$

..... [___ / 1 mark]

b) $\frac{4 \times 5^2}{4 \times 5 \div 2}$

..... [___ / 1 mark]

c) $5 \times \sqrt{50 - 1} + 6 \times 3$

..... [___ / 1 mark]

Grade
3

3. Use your calculator to evaluate these expressions.



a) $\frac{2 \times 36 + 18}{20 - 12}$

..... [___ / 1 mark]

b) $\left(\frac{3}{5}\right)^3 + 9 \div 3$

..... [___ / 1 mark]

c) $\sqrt{7.29} \times 1000$

..... [___ / 1 mark]

Grade
3

4. Bavan says that $2 \times 3^2 = 36$ but Eva says $2 \times 3^2 = 18$

Who is correct? Explain your reasoning.

.....
.....

[___ / 1 mark]

Hint
Explain your answer using accurate calculations.

Grade
3

5. Rewrite these statements using brackets to make them true.

a) $22 - 10 - 7 = 19$

..... [___ / 1 mark]

b) $20 - 5 - 2 + 6 = 11$

..... [___ / 1 mark]

Rounding and truncating

Grade
2

1. Round 258.3 to

a) the nearest integer

..... [I got ___ / 1 mark]

b) the nearest 10

..... [___ / 1 mark]

c) the nearest 100

..... [___ / 1 mark]

Grade
2

2. Round 19.902 to

a) the nearest integer

..... [___ / 1 mark]

b) 1 decimal place

..... [___ / 1 mark]

c) 2 decimal places.

..... [___ / 1 mark]

Grade
2

3. Truncate 8.2694 to

a) an integer

..... [___ / 1 mark]

b) a tenth

..... [___ / 1 mark]

c) a hundredth.

..... [___ / 1 mark]

Hint
Remind yourself of the difference between truncation and rounding.

Grade
2

4. One bag of grass seed covers an area of 3.66 m^2 . What size of lawn will nine bags of seed cover?

Give your answer to the nearest integer.



..... m^2 [___ / 2 marks]

Grade
2

5. A jug contains 3000 ml of juice. A glass holds 310 ml. How many glasses can be filled from the jug?



..... [___ / 2 marks]

Grade
3

6. Mark is paid £18.93 an hour and works 7.5 hours a day.

Kwamé is paid £22.17 an hour and works 6.5 hours a day.

What is the difference between their daily pay?



Hint
Money is often rounded to 2 dp.

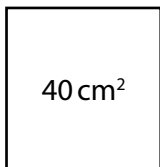
£..... [___ / 3 marks]

Significant figures

- Grade 3**
1. Round 20 193 to
- a) 4 significant figures [I got ___ / 1 mark]
 - b) 3 significant figures [___ / 1 mark]
 - c) 2 significant figures [___ / 1 mark]
 - d) 1 significant figure. [___ / 1 mark]

- Grade 3**
2. Round 0.006 802 to
- a) 1 significant figure [___ / 1 mark]
 - b) 2 significant figures [___ / 1 mark]
 - c) 3 significant figures. [___ / 1 mark]

- Grade 3**
3. The area of a square is 40 cm^2 . What is the length of the side of the square?
Give your answer to 3 significant figures.



Hint
You square the side length to get the area of a square.

..... cm [___ / 2 marks]

- Grade 3**
4. a) Evaluate this expression using your calculator.



$$\frac{4.56 \times 2.89}{12.1 - 0.56}$$

Write your answer as a decimal, giving all the digits on your calculator display.

..... [___ / 1 mark]

- b) Write your answer to part a to 2 significant figures.

..... [___ / 1 mark]

- Grade 4**
5. Shirley rounds 0.065 29 to 2 significant figures and gives the answer 0.07
Shirley is wrong. Explain why.

Hint
Think about the difference between significant figures and decimal places.

.....
..... [___ / 1 mark]

Estimation

Grade
4

1. Estimate the value of 2.84×19.3 . Show your working.



Hint
You usually round numbers to 1 sf to estimate.

..... [I got ___ / 1 mark]

Grade
4

2. Estimate the value of $\frac{317 + 48.6}{9.683}$. Show your working.



..... [___ / 2 marks]

Grade
4

3. Estimate the value of $\frac{2.67 \times 1.36}{0.11 + 0.42}$. Show your working.



..... [___ / 2 marks]

Grade
4

4. A biologist visits a lake at the start of January and works out that the number of fish in the lake is approximately 1000. She thinks that the population is growing at a rate of 17 fish per day. Estimate how many fish there will be in the lake five months later.



..... [___ / 3 marks]

Grade
5

5. In one week, an Italian restaurant sells 96 portions of lasagne. The restaurant sells a portion of lasagne for £8.95 and each portion costs £3.20 to make. Estimate the profit the restaurant makes from lasagne in the week.



£..... [___ / 3 marks]

Grade
5

6. James is driving to visit his Gran who lives 405 km away. He leaves at 8.30 am and drives at an average speed of 77 km/h, stopping for a 25-minute lunch break on the way. Estimate the time he arrives at his Gran's.



..... [___ / 3 marks]

Error intervals

Grade 5 1. A number is given as 5.3 rounded to 1 decimal place.
What is the smallest number this could be?
..... [I got ___ / 1 mark]

Grade 5 2. The length, L cm, of a rectangle is 14 cm to the nearest centimetre.
Complete the statement to show the range of possible values of L .
..... $\leq L <$ [___ / 2 marks]

Grade 5 3. The length, p m, of a football pitch is given as 110 m.
Write the error interval for p if this value is rounded to
a) the nearest 10 metres
..... $\leq p <$ [___ / 2 marks]

b) the nearest 5 metres
..... $\leq p <$ [___ / 2 marks]

c) the nearest metre.
..... $\leq p <$ [___ / 2 marks]

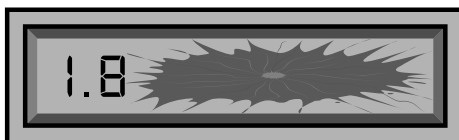
Grade 5 4. A number, x , is given rounded to a particular degree of accuracy.
Write the error interval for x in each case.
a) $x = 4.67$ to 2 decimal places
..... $\leq x <$ [___ / 2 marks]

b) $x = 5000$ to 1 significant figure
..... $\leq x <$ [___ / 2 marks]

Grade 5 5. The average length, l seconds, of a chart song is 250 seconds to 2 significant figures.
Give the error interval for l .
..... [___ / 2 marks]

Hint
Remember to use the correct inequality symbols: minimum $\leq x <$ maximum.

Grade 5 6. Sienna uses her calculator to answer a question. The display breaks and she can only see 1.8 at the start of her answer. Let x be the unknown number on the display and write the range of possible values for x as an error interval.



..... [___ / 2 marks]

Calculating with negative numbers

Grade
1



1. The table shows the minimum temperature (in °C) across five months of the year.

Month	December	January	February	March	April
Minimum temperature (°C)	-1	-5	0	3	8

a) In which month is the lowest temperature recorded?

..... [I got ___ / 1 mark]

b) What is the difference in minimum temperature between December and January?

..... [___ / 1 mark]

c) What is the difference in minimum temperature between April and January?

..... [___ / 1 mark]

Grade
2



2. Evaluate

a) $2 + (-5)$

..... [___ / 1 mark]

b) $(-48) \div (-6)$

..... [___ / 1 mark]

c) $(-3)^2$

..... [___ / 1 mark]

Grade
3



3. Evaluate

a) $5 + (-3) \times 4$

..... [___ / 2 marks]

b) $(8 - 10) \times 4 - (-10)$

..... [___ / 2 marks]

c) $\frac{(-2) \times (-6)}{-10 + 7}$

..... [___ / 2 marks]

Hint
Remember the order of operations.

Grade
3



4. Thomas's bank balance is £241. He goes shopping and uses his bank card to spend £154 in the supermarket, £95 in the computer shop and £8.50 in a café. How much does Thomas need to pay into his bank account to bring the balance up to £100?

£..... [___ / 3 marks]

Calculating with decimals

Grade
2

1. Evaluate



a) $2.906 + 8.31$

..... [I got ___ / 2 marks]

b) $25.043 - 17.82$

..... [___ / 2 marks]

Grade
3

2. Evaluate



a) 7.4×0.26

Hint
For part **b**, it's easier to divide by a whole number.
How can you change the calculation to do this?

..... [___ / 2 marks]

b) $17.12 \div 0.8$

..... [___ / 2 marks]

c)
$$\frac{1.9 + 7.62}{9 - 8.3}$$

..... [___ / 3 marks]

Grade
3

3. Seven identical toys cost a total of £55.65. How much does one toy cost?



£..... [___ / 2 marks]

Grade
3

4. Alex works out the answer to 14.5×2.6 . Alex says the answer is 3.77

Explain, without working out the answer, how you can be sure Alex has made a mistake.



.....
..... [___ / 1 mark]

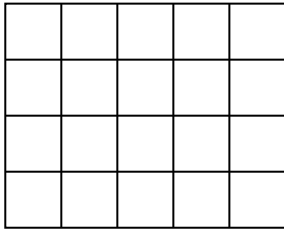
Introduction to fractions

Grade
2

1. Which is the larger fraction, $\frac{1}{5}$ or $\frac{1}{4}$? Explain your answer.



You may use the diagram to help.



[I got ___ / 1 mark]

Grade
2

2. Write these fractions in order of size, starting with the smallest.



$$\frac{3}{4} \quad \frac{2}{3} \quad \frac{5}{8} \quad \frac{7}{12}$$

Hint

Find equivalent fractions with a common denominator.

[___ / 2 marks]

Grade
2

3. a) Write each mixed number as an improper fraction, giving your answer in its simplest form.



i) $1\frac{2}{5}$

[___ / 1 mark]

ii) $3\frac{3}{4}$

[___ / 2 marks]

b) Write each improper fraction as a mixed number, giving your answer in its simplest form.

i) $\frac{17}{9}$

[___ / 1 mark]

ii) $\frac{92}{40}$

[___ / 2 marks]

Grade
3

4. After a party, Dave has $2\frac{1}{3}$ bottles of cola left and Lizzie has $\frac{19}{8}$ bottles left. Who has the most cola? Show your working.





Hint


Here, you need to compare fractions that are presented differently. Convert both fractions to the same form.

[___ / 3 marks]


Proportions of amounts


- Grade 2** 1. Work out
-  a) $\frac{1}{5}$ of 45 [I got ___ / 2 marks]
- b) 30% of 180 [___ / 2 marks]
- c) $\frac{5}{7}$ of 14 [___ / 2 marks]
- d) 62% of 50 [___ / 2 marks]

- Grade 2** 2. Every month, Faizal receives a bonus of 15% of his earnings in that month. In April, Faizal earned £2460. How much was his bonus in April?
- 
- £..... [___ / 2 marks]

- Grade 3** 3. Which is bigger, 110% of 90 or $\frac{8}{7}$ of 84? Show all your working.
- 
- [___ / 3 marks]

Hint
A diagram such as a bar model can help with these kinds of questions.

- Grade 3** 4. Every year, a school raises money to donate to charity. One year, it chooses to donate $\frac{3}{8}$ of the money raised to a hospital. If the school raises £7200 that year, how much does it give to the hospital?
- 
- £..... [___ / 2 marks]

- Grade 4** 5. 48 children go on an outdoor activities day and must choose a morning activity.
- 25% of the children choose rock climbing.
- $\frac{5}{12}$ of the children choose raft building.
- The rest choose kayaking.
- Work out how many children choose kayaking.
- 
- [___ / 3 marks]

Hint
Calculate how many children choose rock climbing and how many choose raft building.

Calculating with fractions 1

Grade
2

1. What is the reciprocal of 0.25?



..... [I got ___ / 1 mark]

Grade
3

2. Work out and simplify where possible



a) $\frac{1}{3} \times \frac{2}{5}$

..... [___ / 1 mark]

b) $\frac{3}{7} \times \frac{14}{9}$

..... [___ / 2 marks]

Grade
3

3. Evaluate and simplify where possible



a) $\frac{3}{4} \div \frac{1}{11}$

..... [___ / 2 marks]

b) $\frac{6}{5} \div \frac{7}{10}$

..... [___ / 2 marks]

Grade
3

4. A café uses up $\frac{2}{3}$ of a box of coffee beans every day. How many days will it take for the café to use up 16 boxes of coffee beans?



..... days [___ / 2 marks]

Grade
3

5. In a model village, everything is built at a size $\frac{1}{9}$ of the original size. If a street is 30 m long in real life, work out how long it is in the model village. Give your answer in its simplest form.



..... m [___ / 2 marks]

Grade
4

6. Rafael reserves $\frac{3}{10}$ of his monthly wage to pay his bills. $\frac{1}{4}$ of this amount is spent on his electricity bill. What fraction of his monthly wage does Rafael spend on his electricity bill?



..... [___ / 2 marks]

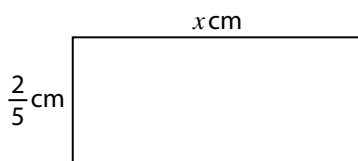
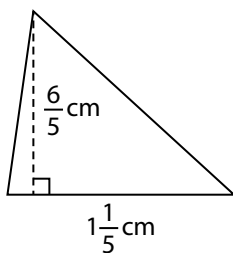
Hint
What calculation does the word 'of' represent?

Grade
5

7. A triangle has base $1\frac{1}{5}$ cm and perpendicular height $\frac{6}{5}$ cm. A rectangle has the same area as the triangle. If the width of the rectangle is $\frac{2}{5}$ cm, what is its length, x cm? Give your answer in its simplest form.





Hint
This question combines fractions and geometry. Find the area of the triangle. What is the same about both shapes?





..... cm [___ / 3 marks]


Calculating with fractions 2


- Grade 3** 1. Work out and simplify where possible
-  a) $\frac{1}{3} + \frac{1}{5}$ [I got ___ / 2 marks]
- b) $\frac{2}{9} + \frac{5}{6}$ [___ / 2 marks]
- c) $1\frac{7}{8} + 2\frac{3}{4}$ [___ / 3 marks]

- Grade 3** 2. Evaluate and simplify where possible
-  a) $\frac{7}{9} - \frac{1}{2}$ [___ / 2 marks]
- b) $3\frac{1}{6} - 2\frac{3}{4}$ [___ / 3 marks]

- Grade 3** 3. Janet says that $\frac{2}{5} + \frac{4}{5} = \frac{6}{10}$. Is Janet correct? Explain your reasoning carefully.
-  [___ / 1 mark]

- Grade 4** 4. $\frac{1}{8}$ of the students in a class drive to school. $\frac{2}{3}$ of the students walk to school. The rest take the bus. What fraction of the students take the bus?
-  [___ / 3 marks]
- Hint**
The whole class is represented by the number 1

- Grade 4** 5. Daisy is building a model train track. Her track is $2\frac{4}{5}$ m long. She then takes out a piece of track which is $\frac{7}{8}$ m long and replaces it with a piece which is $1\frac{1}{20}$ m long. Work out the length of her track now.
-  m [___ / 3 marks]

- Grade 4** 6. Maxwell is reading a book on his e-reader. When he picks it up one day, it tells him he is $\frac{1}{3}$ of the way through the book. He reads some and when he puts it down he is $\frac{3}{4}$ of the way through the book. What fraction of the book did he read?
-  [___ / 2 marks]

Fractions, decimals, percentages

Grade
2

1. a) Write 0.4 as a fraction in its simplest form.



..... [1 got ___ / 1 mark]

b) Write 6% as a decimal.

..... [___ / 1 mark]

c) Write $\frac{1}{8}$ as a percentage.

..... [___ / 1 mark]

Grade
2

2. a) Convert $\frac{6}{5}$ to a percentage.



..... [___ / 1 mark]

b) Convert 0.035 to a fraction in its simplest form.

..... [___ / 1 mark]

c) Convert 3.6% to a decimal.

..... [___ / 1 mark]

Grade
3

3. Write these numbers in order of size, starting with the smallest.



34%

0.3

$\frac{1}{3}$

$\frac{16}{50}$

..... [___ / 3 marks]

Grade
3

4. An online music streaming service, Dittify, does some research and finds

that $\frac{7}{20}$ of its users listen to its daily mix playlist in the morning, $\frac{1}{5}$ of

users listen to their own mix playlist and the rest choose an album.

What percentage of users choose an album?

Hint
Convert the fractions to percentages first.



..... [___ / 3 marks]

Grade
4

5. In Lin's class, 6 out of 25 students read fantasy books. In Jay's class, 8 out of 32 students read fantasy books. Lin says the proportion of students who read fantasy books is greater in her class than in Jay's. Is Lin correct? Explain your answer.



.....

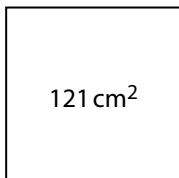
..... [___ / 2 marks]

Powers and roots

- Grade 2** 1. Write down the value of
- a) 4^2 [I got ___ / 1 mark]
- b) 2^3 [___ / 1 mark]
- c) $\sqrt{49}$ [___ / 1 mark]
- d) $\sqrt[3]{27}$ [___ / 1 mark]

- Grade 3** 2. Evaluate
- a) $2 \times \sqrt{9+16} + 6^2$ [___ / 3 marks]
- b) $3^4 - 6 \times \sqrt[3]{8} + 50 \div 5^2$ [___ / 3 marks]

- Grade 3** 3. The area of a square is 121 cm^2 . What is its perimeter?



Hint
Think how the side length of a square relates to its area and to its perimeter.

..... cm [___ / 2 marks]

- Grade 4** 4. a) Using your calculator, work out the value of $\frac{\sqrt[3]{3.6^2 + 91} \times 3.7}{\sqrt{6.25} + 1.8^3}$



Write down all the figures on your calculator display.

Hint
Remind yourself how to round to 3 sf.

..... [___ / 1 mark]

- b) Write your answer to part a to 3 significant figures.

..... [___ / 1 mark]

- Grade 4** 5. A cube-shaped box of side length 8 cm is made of solid metal. Work out how many smaller cubes of side length 2 cm will fill the box completely.

Hint
Consider the volume of the box and the volume of the smaller cubes.

..... [___ / 3 marks]

Calculating with indices

Grade
4

1. Simplify

Hint
Remind yourself of the rules of indices.



a) $7^2 \times 7^5$

[I got ___ / 1 mark]

b) $9^{10} \div 9^4$

[___ / 1 mark]

c) $2^5 \times 2^{-3}$

[___ / 1 mark]

d) $7^{-2} \div 7^{-6}$

[___ / 1 mark]

e) $(3^4)^4$

[___ / 1 mark]

Grade
4

2. Simplify



a) $(8^2)^{-5}$

[___ / 1 mark]

b) $\frac{9^3}{9^2 \times 9^4}$

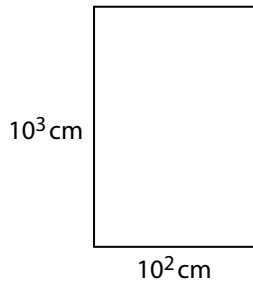
[___ / 2 marks]

c) $(2^7 \times 2^4)^{-1}$

[___ / 2 marks]

Grade
4

3. Work out the area of the rectangle, leaving your answer in simplified index form.



..... cm² [___ / 2 marks]

Grade
4

4. Peter says that $2^3 \times 5^2$ simplifies to 10^5 . Peter is wrong. Explain why.

..... [___ / 1 mark]

Grade
5

5. Work out



a) 13^0

[___ / 1 mark]

b) 8^{-1}

[___ / 1 mark]

c) $\left(\frac{2}{5}\right)^3$

[___ / 1 mark]

d) $\left(\frac{1}{4}\right)^{-2}$

[___ / 2 marks]

Factors and multiples

Grade
2

1. Here is a list of numbers.

3 6 8 10 18 24 30 36



From the list, select

a) a factor of 12

..... [I got ___ / 1 mark]

b) a multiple of 9

..... [___ / 1 mark]

c) a number which is both a multiple of 12 and a multiple of 4

..... [___ / 1 mark]

d) a number which is both a factor of 24 and a factor of 16

..... [___ / 1 mark]

e) two numbers with a common factor of 5

..... [___ / 1 mark]

f) two numbers with a common multiple of 60

..... [___ / 1 mark]

Grade
3

2. What is the lowest common multiple of 9 and 12?



..... [___ / 2 marks]

Grade
3

3. What is the highest common factor of 18 and 12?



..... [___ / 2 marks]

Grade
4

4. Three alarms beep at the same time. The first alarm then beeps every 6 minutes, the second then beeps every 5 minutes and the third beeps every 15 minutes. Work out how long it is before all three alarms beep at the same time.



..... minutes [___ / 2 marks]

Hint
Is this an HCF or an LCM question?

Grade
4

5. Two 2-digit numbers have a highest common factor of 4 and a lowest common multiple of 60. What are the two numbers?



..... [___ / 2 marks]

Hint
Remind yourself how to use prime factors to find the HCF and LCM.

Prime factor decomposition

Grade
4

1. Write 110 as a product of its prime factors.



..... [I got ___ / 2 marks]

Grade
4

2. a) Write 540 as a product of powers of its prime factors.



..... [___ / 2 marks]

b) By looking at its prime factors, explain why 540 is divisible by 15

Hint
What are the prime factors of 15?

..... [___ / 1 mark]

Grade
4

3. a) Write 750 as a product of its prime factors. Give your answer in index notation.



..... [___ / 2 marks]

b) By looking at its prime factors, explain why 750 is not divisible by 4

..... [___ / 1 mark]

Grade
5

4. The prime factor decomposition of a number, x , is $2 \times 3^2 \times 7 \times 13$

a) Is x even or odd? Explain your reasoning.



..... [___ / 1 mark]

b) What is the prime factor decomposition of a number twice as big as x ?

..... [___ / 1 mark]

Grade
5

5. A number is a multiple of 4, 5 and 6. Write the prime factor decomposition of the smallest number it could be.



..... [___ / 2 marks]

Finding HCF and LCM

Grade
4



1. a) Write 160 as a product of prime factors.

..... [I got ___ / 2 marks]

b) Find the highest common factor of 160 and 280

..... [___ / 2 marks]

c) Find the lowest common multiple of 160 and 280

..... [___ / 2 marks]

Grade
5

2. Two numbers have prime factor decompositions $2^3 \times 5 \times 11$ and $2 \times 3^2 \times 5$

Find

a) the highest common factor of the two numbers

Hint

You may wish to use a Venn diagram to help with this question.

..... [___ / 2 marks]

b) the lowest common multiple of the two numbers.

..... [___ / 1 mark]

Grade
5



3. Fran is sorting her books into piles. She has 225 yellow books and 324 orange books. She does not want to mix the colours and wants every pile to contain the same number of books. Work out the biggest number of books she can put in each pile.

..... [___ / 3 marks]

Standard form

Grade
3

1. Write these as ordinary numbers.



a) 1.56×10^8

..... [I got ___ / 1 mark]

b) 8.02×10^{-3}

..... [___ / 1 mark]

Grade
3

2. Write these numbers in standard form.



a) 48 000 000 000

..... [___ / 1 mark]

b) 0.000 0703

..... [___ / 1 mark]

c) 95×10^6

..... [___ / 1 mark]

d) 0.68×10^{-4}

..... [___ / 1 mark]

Grade
3

3. The distance from the Sun to Earth is approximately 150 000 000 km.
Write this number in standard form.



..... km [___ / 1 mark]

Grade
4

4. Put these numbers in order of size, starting with the biggest.

2.1×10^4 2.3×10^5 0.21×10^4 2200



Hint

Write all the numbers in the same form.

..... [___ / 3 marks]

Grade
4

5. The size of a bacteria cell is 4×10^{-7} m and the size of a virus is 0.000 000 05 m.
Which is smaller, the bacteria cell or the virus?



..... [___ / 2 marks]

Calculating with standard form

- Grade 5** 1. Work out the value of each expression, giving your answers in standard form.
- a) $2 \times (3 \times 10^2)$
 [I got ___ / 1 mark]
- b) $(4 \times 10^{-4}) \div 2$
 [___ / 1 mark]
- c) $(3 \times 10^{-2}) + (5 \times 10^{-2})$
 [___ / 1 mark]
- d) $(9 \times 10^7) - (3 \times 10^7)$
 [___ / 1 mark]

- Grade 5** 2. Everly says that $6 \times (3 \times 10^6)$ is written as 18×10^6 in standard form.
 Is Everly correct? Explain your reasoning.
 [___ / 1 mark]

- Grade 5** 3. Work out the value of $7 \times 10^{-2} \times 30\,000$. Give your answer in standard form.
 [___ / 2 marks]



- Grade 5** 4. Work out the value of each expression, giving your answers in standard form.
- a) $(5 \times 10^4) + (6 \times 10^5)$
 [___ / 2 marks]
- b) $(9 \times 10^{-3}) - (3 \times 10^{-4})$
 [___ / 2 marks]
- c) $(2.1 \times 10^8) \times (3 \times 10^{-5})$
 [___ / 2 marks]
- d) $(8.2 \times 10^3) \div (4.1 \times 10^7)$
 [___ / 2 marks]



Guided answers

A correct final answer automatically scores all the marks, unless specified otherwise.

Page 1, Place value

- 90 124
1 mark for correct answer.
- a** 200 **b** 20 000 **c** $\frac{2}{10}$ or 0.2
1 mark for each correct answer.
- a** > **b** = **c** <
1 mark for each correct answer.
- 7.054, 7.405, 7.45, 7.504
2 marks for correct order; **1 mark** for any three in correct order.
- a** $67.9 \times 1000 = 67\,900$ **b** $0.9 \div 100 = 0.009$
1 mark for each correct answer.
- $\pounds 8.50 \div 10 = \pounds 0.85$, so 1 packet costs 85p.
1 mark for division; **1 mark** for 85p.
- a** $4.5 \times 19.2 = 4.5 \times 192 \div 10 = 864 \div 10 = 86.4$
You could also estimate: $4.5 \times 19.2 \approx 5 \times 20 \approx 100$, which is close to 86.4
b $450 \times 0.0192 = 4.5 \times 100 \times 192 \div 10\,000$
 $= 864 \times 100 \div 10\,000 = 8.64$
You could also estimate: $450 \times 0.0192 \approx 500 \times 0.02 \approx 10$, which is close to 8.64
c You know that $864 \div 4.5 = 192$,
so $8.64 \div 0.45 = \frac{864 \div 100}{4.5 \div 10} = 192 \div 10 = 19.2$
You could also estimate: $8.64 \div 0.45 \approx 10 \div 0.5 \approx 20$, which is close to 19.2
1 mark for each correct answer.

Page 2, Order of operations

- a** $2 + 3 \times 9 = 2 + 27 = 29$
b $24 \div (6 - 2) \times 5 = 24 \div 4 \times 5 = 30$
c $10 - 3^2 = 10 - 9 = 1$
1 mark for each correct answer.
- a** $(12 - 4 \times 2)^3 = (12 - 8)^3 = 4^3 = 64$
b $\frac{4 \times 5^2}{4 \times 5 \div 2} = \frac{4 \times 25}{10} = \frac{100}{10} = 10$
c $5 \times \sqrt{50 - 1} + 6 \times 3 = 5 \times \sqrt{49} + 6 \times 3$
 $= 5 \times 7 + 6 \times 3$
 $= 35 + 18 = 53$
1 mark for each correct answer.
- a** $\frac{2 \times 36 + 18}{20 - 12} = \frac{90}{8} = \frac{45}{4}$ or 11.25
b $(\frac{3}{5})^3 + 9 \div 3 = \frac{27}{125} + 3 = \frac{402}{125}$ or 3.216
c $\sqrt{7.29} \times 1000 = 2.7 \times 1000 = 2700$
1 mark for each correct answer.
- There are a number of ways to explain this. Two examples of correct explanations would be:
Eva is correct because you calculate 3^2 , which is 9, then multiply by 2, so $2 \times 9 = 18$
Eva is correct. Bavan made the mistake of multiplying before squaring, whereas Eva squared before multiplying.
1 mark for a correct, detailed explanation.
- a** $22 - (10 - 7) = 19$ **b** $20 - (5 - 2 + 6) = 11$
1 mark for each correct answer.

Page 3, Rounding and truncating

- a** 258 **b** 260 **c** 300
1 mark for each correct answer.
- a** 20 **b** 19.9 **c** 19.90
1 mark for each correct answer.
- a** 8 **b** 8.2 **c** 8.26
1 mark for each correct answer.
- $3.66 \times 9 = 32.94 \approx 33 \text{ m}^2$
1 mark for correct multiplication; **1 mark** for rounding.
- $3000 \div 310 = 9.677$, so the jug will fill 9 whole glasses.
1 mark for correct division; **1 mark** for truncating to an integer.
- $18.93 \times 7.5 = 141.975$, so Mark earns $\pounds 141.98$ a day.
 $22.17 \times 6.5 = 144.105$, so Kwamé earns $\pounds 144.11$ a day.
The difference in their pay is $\pounds 144.11 - \pounds 141.98 = \pounds 2.13$ a day.
1 mark for Mark's pay; **1 mark** for Kwamé's pay; **1 mark** for the difference. Total 3 marks.

Page 4, Significant figures

- a** 20 190 **b** 20 200
c 20 000 **d** 20 000
1 mark for each correct answer.
- a** 0.007 **b** 0.0068 **c** 0.00680
1 mark for each correct answer.
- Side length = $\sqrt{40} = 6.32455532 = 6.32 \text{ cm}$ to 3 sf
1 mark for square rooting; **1 mark** for 6.32
- a** $\frac{4.56 \times 2.89}{12.1 - 0.56} = 1.141\,975\,737$
b $1.141\,975\,737 = 1.1$ to 2 sf
1 mark for each correct answer.
- Shirley has rounded 0.065 29 to 2 dp instead of 2 sf.
The correct answer is 0.065
1 mark for a correct explanation.

Page 5, Estimation

- $2.84 \times 19.3 \approx 3 \times 20 \approx 60$
1 mark for correct answer.
- $\frac{317 + 48.6}{9.683} \approx \frac{300 + 50}{10} \approx \frac{350}{10} \approx 35$
1 mark for rounding to 1 sf; **1 mark** for correct answer.
- $\frac{2.67 \times 1.36}{0.11 + 0.42} \approx \frac{3 \times 1}{0.1 + 0.4} \approx \frac{3}{0.5} \approx 6$
1 mark for rounding to 1 sf; **1 mark** for correct answer.
- Number of fish at start of January ≈ 1000
Increase ≈ 20 fish per day
Five months $\approx 5 \times 30 \approx 150$ days
Number of fish after five months $\approx 150 \times 20 + 1000 \approx 4000$
1 mark for rounding rate of increase to 1 sf; **1 mark** for correct calculation for the number of fish after five months; **1 mark** for correct answer. Total 3 marks.
- Number of portions sold ≈ 100
Sale price per portion $\approx \pounds 9.00$
Cost per portion $\approx \pounds 3.00$
Profit per portion $\approx \pounds 9.00 - \pounds 3.00 \approx \pounds 6.00$
Total profit $\approx \pounds 6.00 \times 100 \approx \pounds 600$

1 mark for rounding portions, sale price and cost to 1 sf;
1 mark for a profit calculation; **1 mark** for correct answer.
 Total 3 marks.

Note that you could also find the total estimated sale price (£900) and subtract the total estimated cost (£300) to get the total estimated profit.

6. Distance driven ≈ 400 km
 Average speed ≈ 80 km/h
 Time driving $\approx \frac{400}{80} \approx 5$ hours
 Time for whole journey ≈ 5 hours 30 minutes (including the break)
 Time of arrival is roughly 2 pm (8.30 am + $5\frac{1}{2}$ hours).
1 mark for rounding distance and speed to 1 sf;
1 mark for finding the time taken; **1 mark** for correct answer. Total 3 marks.

Page 6, Error intervals

1. The smallest number this could be is 5.25, since 5.25 is the smallest number that rounds to 5.3 to 1 dp.
1 mark for correct answer of 5.25
2. $13.5 \leq L < 14.5$
1 mark for 13.5; **1 mark** for 14.5
3. a $105 \leq p < 115$ b $107.5 \leq p < 112.5$
 c $109.5 \leq p < 110.5$
1 mark for each correct minimum; **1 mark** for each correct maximum.
4. a $4.665 \leq x < 4.675$ b $4500 \leq x < 5500$
1 mark for each correct minimum; **1 mark** for each correct maximum.
5. $245 \leq l < 255$
1 mark for correct minimum and maximum; **1 mark** for correct interval notation.
6. Sienna can see a truncation to 1 dp, so the error interval is $1.8 \leq x < 1.9$
1 mark for correct minimum and maximum; **1 mark** for correct interval notation.

Page 7, Calculating with negative numbers

1. a January b $-1 - (-5) = 4^\circ\text{C}$
 c $8 - (-5) = 13^\circ\text{C}$
1 mark for each correct answer.
2. a $2 + (-5) = -3$ b $(-48) \div (-6) = 8$
 c $(-3)^2 = (-3) \times (-3) = 9$
1 mark for each correct answer.
3. a $5 + (-3) \times 4 = 5 + (-12) = -7$
1 mark for -12; **1 mark** for correct answer.
 b $(8 - 10) \times 4 - (-10) = (-2) \times 4 - (-10) = -8 - (-10) = 2$
1 mark for -8; **1 mark** for correct answer.
 c $\frac{(-2) \times (-6)}{-10 + 7} = \frac{12}{-3} = -4$
1 mark for either 12 in the numerator or -3 in the denominator; **1 mark** for correct answer.
4. Total spend = £257.50
 Bank balance = £241 - £257.50 = -£16.50
 Thomas must pay in £100 + £16.50 = £116.50 to get the balance up to £100
1 mark for subtracting the spend from £241; **1 mark** for -£16.50 or £16.50 overdrawn; **1 mark** for final answer of £116.50. Total 3 marks.

Page 8, Calculating with decimals

1. a
$$\begin{array}{r} 2.906 \\ + 8.310 \\ \hline 11.216 \end{array}$$

1 mark for lining up the digits correctly in a column;
1 mark for correct answer.
- b
$$\begin{array}{r} 114.1 \\ 25.043 \\ - 17.820 \\ \hline 7.223 \end{array}$$

1 mark for lining up the digits correctly in a column;
1 mark for correct answer.
2. a
$$\begin{array}{r} 74 \\ \times 26 \\ \hline 444 \\ + 1480 \\ \hline 1924 \end{array}$$

 Since $74 \times 26 = 1924$,
 $7.4 \times 0.26 = 1924 \div 10 \div 100 = 1.924$
1 mark for multiplying 74×26 to get 1924; **1 mark** for correct answer.
- b $17.12 \div 0.8 = 171.2 \div 8$

$$\begin{array}{r} 21.4 \\ 8 \overline{)171.2} \\ \underline{16} \\ 11 \\ \underline{8} \\ 32 \\ \underline{32} \\ 0 \end{array}$$

 $171.2 \div 8 = 21.4$
1 mark for dividing $171.2 \div 8$; **1 mark** for correct answer.
- c $\frac{1.9 + 7.62}{9 - 8.3} = \frac{9.52}{0.7} = \frac{95.2}{7}$

$$\begin{array}{r} 13.6 \\ 7 \overline{)95.2} \\ \underline{7} \\ 25 \\ \underline{21} \\ 42 \\ \underline{42} \\ 0 \end{array}$$

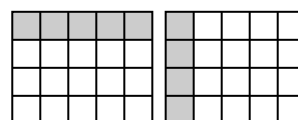
 $\frac{95.2}{7} = 13.6$
1 mark for getting correct numerator and denominator;
1 mark for dividing $95.2 \div 7$; **1 mark** for correct answer.
 Total 3 marks.
3. $£55.65 \div 7 = £7.95$

$$\begin{array}{r} 7.95 \\ 7 \overline{)55.635} \\ \underline{49} \\ 66 \\ \underline{63} \\ 35 \\ \underline{35} \\ 0 \end{array}$$

1 mark for attempting to divide; **1 mark** for correct answer.
4. By estimating, $14.5 \times 2.6 \approx 15 \times 3 \approx 45$. Alex's answer is not even close.
1 mark for a correct explanation.

Page 9, Introduction to fractions

1. $\frac{1}{4} > \frac{1}{5}$
 Giving them a common denominator, $\frac{1}{4} = \frac{5}{20}$ and $\frac{1}{5} = \frac{4}{20}$
 You can see $\frac{1}{4}$ is bigger.
 Alternatively, you can say that $\frac{1}{4}$ must be bigger as one whole is split into four parts. Each part will be bigger than if the whole was split into five parts.
 You can also show this by shading $\frac{1}{4}$ (horizontally) and $\frac{1}{5}$ (vertically) on the diagram:



1 mark for a correct explanation.

2. Giving each fraction a common denominator of 24,

$$\frac{3}{4} = \frac{18}{24}, \frac{2}{3} = \frac{16}{24}, \frac{5}{8} = \frac{15}{24} \text{ and } \frac{7}{12} = \frac{14}{24}$$

You can now put them in order by comparing the

numerators and you have $\frac{7}{12}, \frac{5}{8}, \frac{2}{3}, \frac{3}{4}$

2 marks for all correct, 1 mark for three out of four correct.

3. a i $1\frac{2}{5} = \frac{7}{5}$

1 mark for correct answer.

ii $3\frac{2}{4} = 3\frac{1}{2} = \frac{7}{2}$. Alternatively, $3\frac{2}{4} = \frac{14}{4} = \frac{7}{2}$

1 mark for simplifying $\frac{2}{4}$ or $\frac{14}{4}$; 1 mark for correct answer.

b. i $\frac{17}{9} = 1\frac{8}{9}$

1 mark for correct answer.

ii $\frac{92}{40} = \frac{23}{10} = 2\frac{3}{10}$. Alternatively, $\frac{92}{40} = 2\frac{12}{40} = 2\frac{3}{10}$

1 mark for simplifying $\frac{92}{40}$ or $\frac{12}{40}$; 1 mark for correct answer.

4. Dave has $2\frac{1}{3} = \frac{7}{3} = \frac{56}{24}$ bottles left.

Lizzie has $\frac{19}{8} = \frac{57}{24}$ bottles left.

$\frac{57}{24} > \frac{56}{24}$, so Lizzie has more.

Alternatively, Lizzie has $\frac{19}{8} = 2\frac{3}{8} = 2\frac{9}{24}$ bottles left.

Dave has $2\frac{1}{3} = 2\frac{8}{24}$ bottles left.

$2\frac{9}{24} > 2\frac{8}{24}$, so Lizzie has more.

1 mark for converting $2\frac{1}{3}$ to an improper fraction (or for converting $\frac{19}{8}$ to a mixed number); 1 mark for writing both fractions with a common denominator (such as 24); 1 mark for a correct comparison and conclusion. Total 3 marks.

Page 10, Proportions of amounts

1. a $\frac{1}{5}$ of 45 = $45 \div 5 = 9$

b 30% of 180 = $180 \div 10 \times 3 = 54$

c $\frac{5}{7}$ of 14 = $14 \div 7 \times 5 = 10$

d 10% of 50 = 5

So, 60% of 50 = $5 \times 6 = 30$

1% of 50 = 0.5

So, 2% of 50 = $2 \times 0.5 = 1$

62% of 50 = $30 + 1 = 31$

1 mark for each correct calculation; 1 mark for each correct answer.

2. 10% of £2460 = £246

So, 5% of £2460 = £123

15% of £2460 = $\text{£}246 + \text{£}123 = \text{£}369$

1 mark for correct calculation; 1 mark for correct answer.

3. 10% of 90 = 9

So, 110% of 90 = $90 + 9 = 99$

$\frac{8}{7}$ of 84 = $84 \div 7 \times 8 = 96$

Since $99 > 96$, 110% of 90 is bigger than $\frac{8}{7}$ of 84

1 mark for finding 110% of 90; 1 mark for finding $\frac{8}{7}$ of 84;

1 mark for a correct conclusion. Total 3 marks.

4. $\frac{3}{8}$ of £7200 = $\text{£}7200 \div 8 \times 3 = \text{£}2700$

1 mark for correct calculation; 1 mark for correct answer.

5. Rock climbing: 25% of 48 = $48 \div 4 = 12$

Raft building: $\frac{5}{12}$ of 48 = $48 \div 12 \times 5 = 20$

Kayaking: $48 - 12 - 20 = 16$ children

1 mark for the number who choose rock climbing;

1 mark for the number who choose raft building; 1 mark for the number who choose kayaking. Total 3 marks.

Page 11, Calculating with fractions 1

1. 4

1 mark for correct answer.

2. a $\frac{1}{3} \times \frac{2}{5} = \frac{2}{15}$

1 mark for correct answer.

b $\frac{3}{7} \times \frac{14}{9} = \frac{\cancel{3} \times \cancel{14}^2}{\cancel{7} \times \cancel{9}_3} = \frac{1 \times 2}{1 \times 3} = \frac{2}{3}$

1 mark for multiplying; 1 mark for the simplified answer.

3. a $\frac{3}{4} \div \frac{1}{11} = \frac{3}{4} \times \frac{11}{1} = \frac{33}{4} = 8\frac{1}{4}$

1 mark for turning into multiplication; 1 mark for correct answer in improper fraction or mixed number form.

b $\frac{6}{5} \div \frac{7}{10} = \frac{6}{5} \times \frac{10}{7} = \frac{\cancel{6} \times \cancel{10}^2}{\cancel{5} \times 7} = \frac{6 \times 2}{1 \times 7} = \frac{12}{7} = 1\frac{5}{7}$

1 mark for writing a correct multiplication; 1 mark for correct, simplified answer in improper fraction or mixed number form.

4. $16 \div \frac{2}{3} = \frac{16}{1} \times \frac{3}{2} = \frac{\cancel{16}^8 \times 3}{1 \times \cancel{2}_1} = \frac{8 \times 3}{1 \times 1} = \frac{24}{1} = 24$ days

1 mark for writing a division and turning into a correct multiplication; 1 mark for correct answer.

5. $\frac{1}{9}$ of 30 = $\frac{1}{9} \times 30 = \frac{30}{9} = \frac{10}{3}$ m or $3\frac{1}{3}$ m

1 mark for multiplying; 1 mark for correct simplified answer (improper fraction or mixed number).

6. $\frac{1}{4}$ of $\frac{3}{10} = \frac{1}{4} \times \frac{3}{10} = \frac{3}{40}$

1 mark for multiplying; 1 mark for correct answer.

7. Area of triangle = $\frac{1}{2} \times 1\frac{1}{5} \times \frac{6}{5} = \frac{1}{2} \times \frac{6}{5} \times \frac{6}{5} = \frac{18}{25}$ cm²

This is the area of the rectangle.

Length of rectangle = $\frac{18}{25} \div \frac{2}{5} = \frac{18}{25} \times \frac{5}{2} = \frac{\cancel{18}^9 \times \cancel{5}_5}{\cancel{25}_5 \times \cancel{2}_1} = \frac{9 \times 1}{5 \times 1} = \frac{9}{5}$ cm or $1\frac{4}{5}$ cm

1 mark for writing a correct multiplication; 1 mark for writing a division and turning into a correct multiplication; 1 mark for correct, simplified answer (improper fraction or mixed number). Total 3 marks.

Page 12, Calculating with fractions 2

1. a $\frac{1}{3} + \frac{1}{5} = \frac{5+3}{15} = \frac{8}{15}$

1 mark for finding a common denominator; 1 mark for correct answer.

b $\frac{2}{9} + \frac{5}{6} = \frac{4}{18} + \frac{15}{18} = \frac{19}{18}$ or $1\frac{1}{18}$

1 mark for finding a common denominator; 1 mark for correct answer.

c $1\frac{7}{8} + 2\frac{3}{4} = \frac{15}{8} + \frac{11}{4} = \frac{15}{8} + \frac{22}{8} = \frac{37}{8}$ or $4\frac{5}{8}$

1 mark for converting mixed numbers to improper fractions; 1 mark for finding a common denominator; 1 mark for correct answer. Total 3 marks.

2. a $\frac{7}{9} - \frac{1}{2} = \frac{14-9}{18} = \frac{5}{18}$

1 mark for finding a common denominator; 1 mark for correct answer.

b $3\frac{1}{6} - 2\frac{3}{4} = \frac{19}{6} - \frac{11}{4} = \frac{38}{12} - \frac{33}{12} = \frac{5}{12}$

1 mark for converting mixed numbers to improper fractions; 1 mark for finding a common denominator; 1 mark for correct answer. Total 3 marks.

3. Janet is not correct. She has added the numerators and the denominators. She should have found a common denominator and then added the numerators only.

1 mark for a correct explanation.

$$4. \frac{1}{8} + \frac{2}{3} = \frac{3+16}{24} = \frac{19}{24}$$

$$1 - \frac{19}{24} = \frac{24}{24} - \frac{19}{24} = \frac{5}{24}$$

1 mark for finding a common denominator of 24; **1 mark** for adding to get $\frac{19}{24}$; **1 mark** for correct answer. Total 3 marks.

$$5. 2\frac{4}{5} - \frac{7}{8} + 1\frac{1}{20} = \frac{14}{5} - \frac{7}{8} + \frac{21}{20} = \frac{112}{40} - \frac{35}{40} + \frac{42}{40} = \frac{119}{40} \text{ m or } 2\frac{39}{40} \text{ m}$$

1 mark for converting mixed numbers to improper fractions; **1 mark** for finding a common denominator; **1 mark** for correct answer. Total 3 marks.

$$6. \frac{3}{4} - \frac{1}{3} = \frac{9-4}{12} = \frac{5}{12}$$

1 mark for finding a common denominator; **1 mark** for correct answer.

Page 13, Fractions, decimals, percentages

$$1. \text{ a } 0.4 = \frac{4}{10} = \frac{2}{5} \quad \text{b } 6\% = 0.06 \quad \text{c } \frac{1}{8} = 12.5\%$$

1 mark for each correct answer.

$$2. \text{ a } \frac{6}{5} = 1\frac{1}{5} = 120\% \quad \text{b } 0.035 = \frac{35}{1000} = \frac{7}{200} \quad \text{c } 3.6\% = 0.036$$

1 mark for each correct answer.

3. Convert everything to a percentage.

$$0.3 = 30\%, \frac{1}{3} = 33.\dot{3}\%, \frac{16}{50} = \frac{32}{100} = 32\%$$

The order is $0.3, \frac{16}{50}, \frac{1}{3}, 34\%$.

1 mark for converting everything to a percentage (or everything to a decimal, or everything to a fraction with a common denominator), condone one mistake; **2 marks** for correct order (**1 mark** for three out of four correct). Total 3 marks.

$$4. \frac{7}{20} = \frac{35}{100} = 35\%, \frac{1}{5} = 20\%$$

$$35\% + 20\% = 55\%$$

$$100\% - 55\% = 45\% \text{ play an album.}$$

1 mark for converting both fractions to a percentage; **1 mark** for subtracting from 100%; **1 mark** for correct answer. Total 3 marks.

$$5. \text{ Lin's class: } \frac{6}{25} = \frac{24}{100} = 24\%$$

$$\text{Jay's class: } \frac{8}{32} = \frac{1}{4} = \frac{25}{100} = 25\%$$

Lin is not correct. Jay's class has a (slightly) higher proportion of students who read fantasy books.

1 mark for finding either 24% or 25% or for giving both fractions with a common denominator; **1 mark** for a complete, correct explanation.

Page 14, Powers and roots

$$1. \text{ a } 4^2 = 16 \quad \text{b } 2^3 = 8$$

$$\text{c } \sqrt{49} = 7 \quad \text{d } \sqrt[3]{27} = 3$$

1 mark for each correct answer.

$$2. \text{ a } 2 \times \sqrt{9+16} + 6^2 = 2 \times \sqrt{25} + 36 = 2 \times 5 + 36$$

$$= 10 + 36 = 46$$

1 mark for $\sqrt{25} = 5$ and $6^2 = 36$ first; **1 mark** for multiplying before adding; **1 mark** for correct answer. Total 3 marks.

$$\text{b } 3^4 - 6 \times \sqrt[3]{8} + 50 \div 5^2 = 81 - 6 \times 2 + 50 \div 25$$

$$= 81 - 12 + 2 = 71$$

1 mark for $3^4 = 81, \sqrt[3]{8} = 2$ and $5^2 = 25$ first; **1 mark** for multiplying and dividing before adding and subtracting; **1 mark** for correct answer. Total 3 marks.

$$3. \text{ Side length: } \sqrt{121} = 11 \text{ cm}$$

$$\text{Perimeter: } 4 \times 11 = 44 \text{ cm}$$

1 mark for side length of 11 cm; **1 mark** for correct perimeter.

$$4. \text{ a } \frac{\sqrt[3]{3.6^2 + 91 \times 3.7}}{\sqrt{6.25 + 1.8^3}} = 0.845537207$$

$$\text{b } 0.845537207 = 0.846 \text{ to 3 sf}$$

1 mark for each correct answer.

$$5. \text{ Volume of box } = 8^3 = 512 \text{ cm}^3$$

$$\text{Volume of small cubes } = 2^3 = 8 \text{ cm}^3$$

$$512 \div 8 = 64 \text{ cubes will fit in the box.}$$

Alternatively, $8 \div 2 = 4$, so 4 cubes fit along each side of the box and the total number of cubes that fit is $4^3 = 64$ cubes.

1 mark for volume of box (or for finding that 4 cubes fit along each side); **1 mark** for volume of small cubes (or for 4^3); **1 mark** for correct answer. Total 3 marks.

Page 15, Calculating with indices

$$1. \text{ a } 7^2 \times 7^5 = 7^{2+5} = 7^7$$

$$\text{b } 9^{10} \div 9^4 = 9^{10-4} = 9^6$$

$$\text{c } 2^5 \times 2^{-3} = 2^{5+(-3)} = 2^2$$

$$\text{d } 7^{-2} \div 7^{-6} = 7^{-2-(-6)} = 7^4$$

$$\text{e } (3^4)^4 = 3^{4 \times 4} = 3^{16}$$

1 mark for each correct answer.

$$2. \text{ a } (8^2)^{-5} = 8^{2 \times (-5)} = 8^{-10}$$

1 mark for correct answer.

$$\text{b } \frac{9^3}{9^2 \times 9^4} = \frac{9^3}{9^6} = 9^{3-6} = 9^{-3}$$

1 mark for 9^6 in the denominator; **1 mark** for correct answer.

$$\text{c } (2^7 \times 2^4)^{-1} = (2^{7+4})^{-1} = (2^{11})^{-1} = 2^{11 \times (-1)} = 2^{-11}$$

1 mark for 2^{11} in the bracket; **1 mark** for correct answer.

$$3. \text{ Area } = 10^3 \times 10^2 = 10^5 \text{ cm}^2$$

1 mark for multiplying the two lengths; **1 mark** for correct answer.

4. Peter has multiplied the bases. Since the bases are different this cannot be simplified as a simple power of 10

1 mark for a correct explanation.

$$5. \text{ a } 13^0 = 1$$

1 mark for correct answer.

$$\text{b } 8^{-1} = \frac{1}{8}$$

1 mark for correct answer.

$$\text{c } \left(\frac{2}{5}\right)^3 = \frac{2^3}{5^3} = \frac{8}{125}$$

1 mark for correct answer.

$$\text{d } \left(\frac{1}{4}\right)^{-2} = 4^2 = 16$$

1 mark for 4; **1 mark** for correct answer.

Page 16, Factors and multiples

$$1. \text{ a } 3 \text{ or } 6 \quad \text{b } 18 \text{ or } 36 \quad \text{c } 24 \text{ or } 36$$

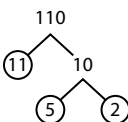
$$\text{d } 8 \quad \text{e } 10 \text{ and } 30 \quad \text{f } \text{Any two of } 3, 6, 10 \text{ and } 30$$

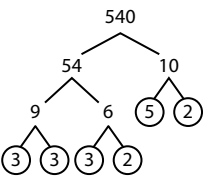
1 mark for each correct answer. Just one correct answer needed to get each mark.

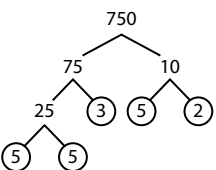
2. Multiples of 9: 9, 18, 27, 36, 45, ...
 Multiples of 12: 12, 24, 36, 48, ...
 $\text{LCM}(9, 12) = 36$
1 mark for any correct common multiple; **1 mark** for correct answer.
3. Factors of 18: 1, 2, 3, 6, 9, 18
 Factors of 12: 1, 2, 3, 4, 6, 12
 $\text{HCF}(18, 12) = 6$
1 mark for any correct common factor; **1 mark** for correct answer.
4. Multiples of 6: 6, 12, 18, 24, 30, 36, ...
 Multiples of 5: 5, 10, 15, 20, 25, 30, 35, ...
 Multiples of 15: 15, 30, 45, ...
 $\text{LCM}(6, 5 \text{ and } 15) = 30$
 The alarms next beep together after 30 minutes.
1 mark for any correct common multiple; **1 mark** for correct answer.
5. Multiples of 4: 4, 8, 12, 16, 20, ...
 Factors of 60: 1, 2, 3, 4, 5, 6, 10, 12, 15, 20, 30, 60
 $\text{HCF}(12, 20) = 4$ and $\text{LCM}(12, 20) = 60$
 The two numbers are 12 and 20
1 mark for writing two numbers with a HCF of 4 or two numbers with a LCM of 60; **1 mark** for correct answer.

Page 17, Prime factor decomposition

You might use a factor tree in your working with the same start and end as shown here but with different middle branches.

1. 
 $110 = 2 \times 5 \times 11$
1 mark for finding or listing the prime factors; **1 mark** for correct answer.

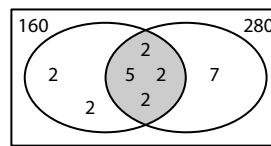
2. a 
 $540 = 2^2 \times 3^3 \times 5$
1 mark for finding or listing the prime factors;
1 mark for correct answer.
- b Since $15 = 3 \times 5$ and both 3 and 5 are prime factors of 540, 540 must be divisible by 15
1 mark for a correct explanation.

3. a 
 $750 = 2 \times 3 \times 5^3$
1 mark for finding or listing the prime factors;
1 mark for correct answer.
- b Since $4 = 2 \times 2$, but 750 only contains the factor of 2 once, 750 is not divisible by 4
1 mark for a correct explanation.
4. a $2 \times 3^2 \times 7 \times 13$ is even since 2 is a prime factor.
1 mark for correct answer.

- b To double a number, you multiply by 2, so the prime factor decomposition of a number twice as big will have another factor of 2. This is $2^2 \times 3^2 \times 7 \times 13$
1 mark for correct answer.
5. The prime factors of each number are:
 $4 = 2 \times 2$; $5 = 5$; $6 = 2 \times 3$
 Any number divisible by 4, 5 and 6 must have at least two 2s, one 5 and a 3, so the smallest such number is $2^2 \times 3 \times 5$
1 mark for listing the prime factors of 4 and 6; **1 mark** for correct answer.

Page 18, Finding HCF and LCM

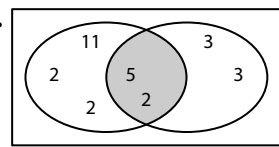
1. a $160 = 2^5 \times 5$
1 mark for finding or listing the prime factors;
1 mark for correct answer.
- b $280 = 2^3 \times 5 \times 7$
 A Venn diagram showing the prime factors looks like this:



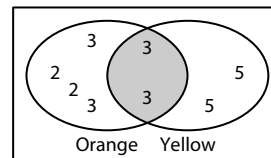
$$\text{HCF}(160, 280) = 2^3 \times 5 = 40$$

1 mark for multiplying the common factors; **1 mark** for correct answer.

- c From the Venn diagram,
 $\text{LCM}(160, 280) = 2 \times 2 \times 2 \times 2 \times 2 \times 5 \times 7 = 1120$
1 mark for multiplying all the appropriate factors;
1 mark for correct answer.

2. 
a $\text{HCF} = 2 \times 5 = 10$
b $\text{LCM} = 2 \times 2 \times 11 \times 2 \times 5 \times 3 \times 3 \times 3 = 3960$
1 mark for correct Venn diagram or alternative method;
1 mark for HCF; **1 mark** for LCM. Total 3 marks.

3. $225 = 3^2 \times 5^2$
 $324 = 2^2 \times 3^4$
 A Venn diagram would look like this:



The HCF of the two numbers is 9, so Fran can sort her books into piles of a maximum of 9 if they are to be the same size.

1 mark for the prime factors of 225; **1 mark** for the prime factors of 324; **1 mark** for correct answer. Total 3 marks.

Page 19, Standard form

1. a $1.56 \times 10^8 = 156\,000\,000$ b $8.02 \times 10^{-3} = 0.008\,02$
1 mark for each correct answer.
2. a $48\,000\,000\,000 = 4.8 \times 10^{10}$ b $0.000\,0703 = 7.03 \times 10^{-5}$
 c $95 \times 10^6 = 9.5 \times 10^7$ d $0.68 \times 10^{-4} = 6.8 \times 10^{-5}$
1 mark for each correct answer.

3. $150\,000\,000\text{ km} = 1.5 \times 10^8\text{ km}$
1 mark for correct answer.
4. Putting all the numbers in either standard or ordinary form:
 $2.1 \times 10^4 = 21\,000$, $2.3 \times 10^5 = 230\,000$,
 $0.21 \times 10^4 = 2.1 \times 10^3 = 2100$, $2200 = 2.2 \times 10^3$
 The order, starting with the biggest, is 2.3×10^5 , 2.1×10^4 ,
 2200 , 0.21×10^4
1 mark for converting at least two of the numbers correctly to an alternative form; **1 mark** for any three in the correct order; **1 mark** for all in the correct order. Total 3 marks.
5. Virus: $0.000\,000\,005 = 5 \times 10^{-8}\text{ m}$
 Bacteria cell: $4 \times 10^{-7} = 0.000\,0004\text{ m}$
 The virus is smaller.
1 mark for getting both numbers in the same form;
1 mark for correct conclusion.

Page 20, Calculating with standard form

1. a 6×10^2 b 2×10^{-4}
 c 8×10^{-2} d 6×10^7
1 mark for each correct answer.
2. Everly is not correct. 18 is not between 1 and 10 so it is not in standard form. The correct answer is 1.8×10^7
1 mark for 'No' and correct explanation.
3. $30\,000 = 3 \times 10^4$
 $(7 \times 10^{-2}) \times (3 \times 10^4) = 21 \times 10^{(-2)+4} = 21 \times 10^2 = 2.1 \times 10^3$
1 mark for 21×10^2 ; **1 mark** for correct answer.
4. a $(5 \times 10^4) + (6 \times 10^5) = 50\,000 + 600\,000 = 650\,000$
 $= 6.5 \times 10^5$
1 mark for converting to ordinary numbers or the same power of 10; **1 mark** for correct answer.
- b $(9 \times 10^{-3}) - (3 \times 10^{-4}) = 0.009 - 0.0003 = 0.0087$
 $= 8.7 \times 10^{-3}$
1 mark for converting to ordinary numbers or the same power of 10; **1 mark** for correct answer.
- c $(2.1 \times 10^8) \times (3 \times 10^{-5}) = 6.3 \times 10^{8+(-5)} = 6.3 \times 10^3$
1 mark for 10^3 ; **1 mark** for correct answer.
- d $(8.2 \times 10^3) \div (4.1 \times 10^7) = 2 \times 10^{3-7} = 2 \times 10^{-4}$
1 mark for 10^{-4} ; **1 mark** for correct answer.

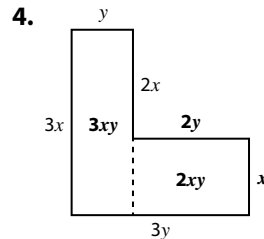
Page 21, Terms and expressions

1. a $n - 2$ b $n - 2 + 11 = n + 9$
1 mark for each correct answer.
2. $3g$
1 mark for correct answer.
3. $2x + 3y$
1 mark for $2x$ or $3y$; **1 mark** for correct answer.
4. $7 + 4p + 3q$
1 mark for correct answer (the three terms can be written in any order).
5. a $2a + 3b = 2 \times 5 + 3 \times 2 = 10 + 6 = 16$
 b $10 - c = 10 - (-4) = 14$
 c $\frac{8a}{c} = \frac{8 \times 5}{-4} = \frac{40}{-4} = -10$
 d $ac + b = 5 \times (-4) + 2 = -20 + 2 = -18$
 For each part, **1 mark** for substituting the numbers in the correct place; **1 mark** for correct answer.

Page 22, Simplifying expressions

1. a $2x + 3x - x = 4x$
1 mark for correct answer.

- b $3p - 5q + 7q - 2q + 4p = 7p$
1 mark for $7p$ or $0q$; **1 mark** for correct answer.
- c $7 + 5t - 2 - 9t = 5 - 4t$
1 mark for 5 or $-4t$; **1 mark** for correct answer.
2. a $x^2 + 4x + 3x^2 - 6x + 1 = 4x^2 - 2x + 1$
1 mark for $4x^2$ or $-2x$; **1 mark** for correct answer.
- b $9mn - 2m^2 + 7nm + 11m^2 = 16mn + 9m^2$
1 mark for $16mn$ or $9m^2$; **1 mark** for correct answer (terms can be written in any order).
3. $2x + 3x + x + 2 + x - 1 = 7x + 1$
1 mark for adding all the sides together; **1 mark** for correct answer.



- $3xy + 2xy = 5xy$
1 mark for $3xy$; **1 mark** for $2xy$; **1 mark** for correct answer.
 Total 3 marks.
 Note that there are alternative methods.
5. Nikita: x , Gabriella: $2x$, Paulo: $x + 2x + 3 = 3x + 3$
 Total number of figures: $x + 2x + 3x + 3 = 6x + 3$
1 mark for $2x$; **1 mark** for $3x + 3$; **1 mark** for correct answer.
 Total 3 marks.

Page 23, Formulae

1. a Cost = $80 + 5 \times 15 = 80 + 75 = \text{£}155$
1 mark for substituting in; **1 mark** for correct answer.
- b $\frac{275 - 80}{15} = 13$ hours
1 mark for 195 or subtracting 80 first; **1 mark** for correct answer.
2. a $d = \frac{4+5}{2} = \frac{9}{2} = 4.5$
1 mark for substituting in; **1 mark** for correct answer.
- b $d = 4^2 - 3 \times 4 = 16 - 12 = 4$
1 mark for substituting in; **1 mark** for correct answer.
- c $4 = 2d - 12$
 $2d = 4 + 12 = 16$
 $d = \frac{16}{2} = 8$
1 mark for substituting in; **1 mark** for rearranging;
1 mark for correct answer. Total 3 marks.
3. $a = \frac{24 - 0}{8} = \frac{24}{8} = 3\text{ m/s}^2$
1 mark for substituting in; **1 mark** for correct answer.
4. $C = 100 + 40t$ or $C = 40t + 100$
1 mark for $40t + 100$; **1 mark** for correct answer.
5. Number of tablets = $\frac{17.5}{3.5} = 5$
1 mark for substituting in; **1 mark** for correct answer.

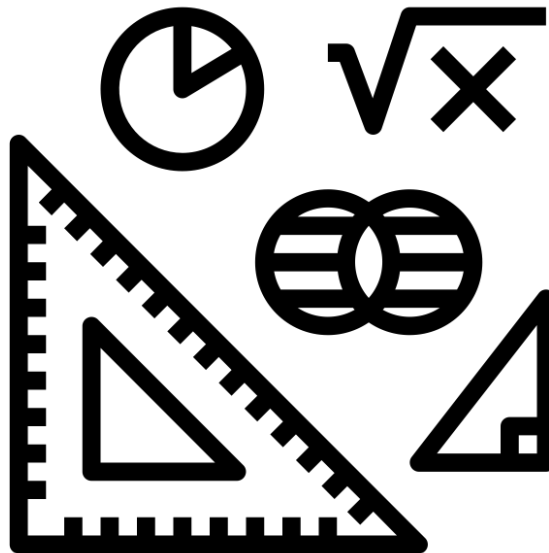
Page 24, Equations and identities

Expression	Formula	Equation	Identity
e, g	b, f	(a), c	d, h

- 1 mark** for each correct answer. Total 7 marks.
2. A, D, E
1 mark for each correct answer. Total 3 marks.

MATHS – HIGHER

On the following pages you will find a series of maths activities. Please start with the ones that are appropriate for your tier or set although of course you are welcome to try other activities if you wish. You can mark your own work by using the answers at the back of the section.



Calculations

Grade
3



1. Work out

a) $25.043 - 17.82$

..... [I got ___ / 2 marks]

b) 7.4×0.26

..... [___ / 2 marks]

c) $17.12 \div 0.8$

..... [___ / 2 marks]

Grade
4



2. Work out

a) $(12 - 4 \times 2)^3$

..... [___ / 1 mark]

b) $\frac{4 \times 5^2}{4 \times 5 \div 2}$

..... [___ / 1 mark]

c) $5\sqrt{50 - 1} + 6 \times 3$

..... [___ / 1 mark]

d) $5 + (-3.2) \times 4$

..... [___ / 1 mark]

e) $(1 - 0.1) \times 4 - (-10)$

..... [___ / 2 marks]

f) $\frac{(-0.2) \times (-6)}{-1 + 0.7}$

..... [___ / 2 marks]

Grade
4



3. Supermarket A sells a pack of six vegan burgers for £4.65

Supermarket B sells a pack of eight for £6.59

Which supermarket is better value? Show your working.

..... [___ / 3 marks]

Grade
4



4. Marina's fence measures 1.4 m by 10.5 m. It costs £0.60 to paint the fence per square metre. How much does it cost to paint the fence in total?


£..... [___ / 3 marks]


Rounding & truncation

- Grade 3** 1. Round 20 193 to
- a) 4 significant figures
..... [I got ___ / 1 mark]
 - b) 3 significant figures
..... [___ / 1 mark]
 - c) 2 significant figures
..... [___ / 1 mark]
 - d) 1 significant figure.
..... [___ / 1 mark]

- Grade 3** 2. Round 0.006 802 to
- a) 1 significant figure
..... [___ / 1 mark]
 - b) 2 significant figures
..... [___ / 1 mark]
 - c) 3 significant figures.
..... [___ / 1 mark]

Hint
Where do significant figures start?

- Grade 3** 3. a) Calculate $\frac{1}{3} (0.02 \times 11.9)^2$. Write all the figures on your calculator display.
- 
- [___ / 1 mark]
- b) Write your answer to part a
- i) truncated to 2 decimal places
..... [___ / 1 mark]
 - ii) rounded to 2 significant figures.
..... [___ / 1 mark]

- Grade 3** 4. One bag of grass seed covers an area of 3.66 m² and costs £4.99. Fabio needs grass seed for a lawn of 32 m². How much will the grass seed cost Fabio? Give your answer to the nearest pound.
- 
- £..... [___ / 3 marks]

- Grade 4** 5. Shirley rounds 0.065 29 to 2 significant figures and gives the answer 0.07. Shirley is wrong. Explain why.
- Hint**
Think about the difference between significant figures and decimal places.
- [___ / 1 mark]

Estimation

Grade
4



1. Estimate the value of $\frac{317 + 48.6}{9.683}$. Show your working.

Hint

Always round numbers before calculating.

..... [I got ___ / 2 marks]

Grade
4



2. Estimate the value of $\frac{2.67 \times 1.36}{0.11 + 0.42}$. Show your working.

..... [___ / 2 marks]

Grade
4



3. A biologist visits a lake at the start of January and works out that the number of fish in the lake is approximately 1000. She thinks that the population is growing at a rate of 17 fish per day. Estimate how many fish there will be in the lake five months later.

..... [___ / 3 marks]

Grade
5



4. In one week, an Italian restaurant sells 96 portions of lasagne. The restaurant sells a portion of lasagne for £8.95 and each portion costs £3.20 to make. Estimate the profit the restaurant makes from lasagne in the week.

£..... [___ / 3 marks]

Grade
5



5. James is driving to visit his Gran who lives 405 km away. He leaves at 8.30 am and drives at an average speed of 77 km/h, stopping for a 25-minute lunch break on the way. Estimate the time he arrives at his Gran's.

..... [___ / 3 marks]

Grade
6



6. Giving your answers to 1 decimal place, estimate the value of

a) $\sqrt{47}$

..... [___ / 1 mark]

b) $\sqrt{200}$

..... [___ / 1 mark]

Error intervals & bounds

Grade 5 1. The length, p m, of a football pitch is given as 110 m.
Write the error interval for p if this value is rounded to

a) the nearest 10 metres

..... $\leq p <$ [I got ___ / 2 marks]

b) the nearest 5 metres.

..... $\leq p <$ [___ / 2 marks]

Grade 5 2. A number, x , is given rounded to a particular degree of accuracy.
Write the error interval for x in each case.

a) $x = 4.67$ to 2 decimal places

..... $\leq x <$ [___ / 2 marks]

b) $x = 5000$ to 1 significant figure.

..... $\leq x <$ [___ / 2 marks]

Grade 5 3. A number, y , is given truncated. Write the error interval for y .

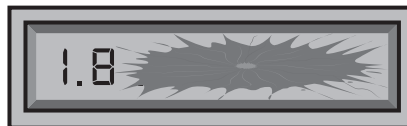
a) $y = 9$ truncated to an integer

..... $\leq y <$ [___ / 2 marks]

b) $y = 2.5$ truncated to 1 decimal place

..... $\leq y <$ [___ / 2 marks]

Grade 5 4. Sienna uses her calculator to answer a question. The display breaks and she can only see 1.8 at the start of her answer. Let x be the unknown number on the display and write the range of possible values for x as an error interval.



Hint
Remember your inequalities.

..... [___ / 2 marks]

Grade 7 5. The side length of a square is given as 15 cm to the nearest centimetre. Work out the error interval for the area, x cm², of the square.



..... [___ / 3 marks]

Grade 7 6. A car travels on the motorway at a speed of 110 km/h to 3 significant figures, for a distance of 45 km, correct to the nearest kilometre. By considering bounds, work out the time taken in hours to travel this distance to an appropriate degree of accuracy. Give a reason for your answer.



..... [___ / 5 marks]

Adding & subtracting fractions

Grade
3

1. Work out and simplify where possible



a) $\frac{2}{9} + \frac{5}{6}$

..... [I got ___ / 2 marks]

b) $3\frac{1}{6} - 2\frac{3}{4}$

..... [___ / 3 marks]

Grade
4

2. $\frac{1}{8}$ of the students in a class drive to school. $\frac{2}{3}$ of the students walk to school. The rest take the bus. What fraction of the students take the bus?



Hint
The whole class is represented by the number 1

..... [___ / 3 marks]

Grade
4

3. Daisy is building a model train track. Her track is $2\frac{4}{5}$ m long. She then takes out a piece of track which is $\frac{7}{8}$ m long and replaces it with a piece which is $1\frac{1}{20}$ m long. Work out the length of her track now.



.....m [___ / 3 marks]

Grade
4

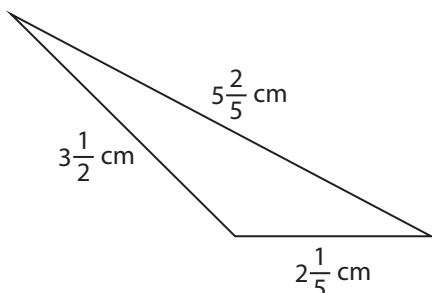
4. Maxwell is reading a book on his e-reader. When he picks it up one day, it tells him he is $\frac{1}{3}$ of the way through the book. He reads some and when he puts it down he is $\frac{3}{4}$ of the way through. What fraction of the book did he read?



..... [___ / 2 marks]

Grade
5

5. Work out the perimeter of the shape shown.




Hint
Add together the whole number parts and then add together the fraction parts.

.....cm [___ / 3 marks]


Multiplying & dividing fractions

Grade 3 1. A café uses up $\frac{2}{3}$ of a box of coffee beans every day. How many days will it take for it to use up 16 boxes of coffee beans?

 [I got ___ / 2 marks]

Grade 4 2. Work out and simplify where possible.


a) $1\frac{1}{2} \times 3\frac{5}{6}$

 [I got ___ / 3 marks]

b) $4\frac{4}{9} \div 2\frac{2}{3}$

..... [___ / 3 marks]


Grade 4 3. Rafael reserves $\frac{3}{10}$ of his monthly wage to pay his bills. $\frac{1}{4}$ of this amount is spent on his electricity bill.

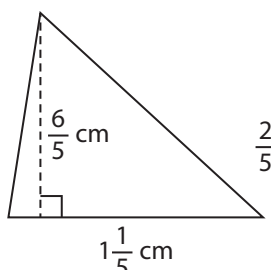
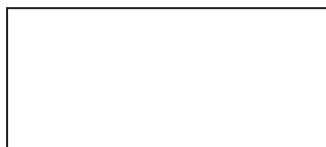
 What fraction of his monthly wage does Rafael spend on his electricity bill?

Hint
What calculation does the word 'of' represent?

..... [___ / 2 marks]

Grade 5 4. A triangle has base $1\frac{1}{5}$ cm and height $\frac{6}{5}$ cm. A rectangle has the same area as the triangle. If the width of the rectangle is $\frac{2}{5}$ cm, what is its length, x cm?

 Give your answer in its simplest form.

.....cm [___ / 3 marks]

Grade 5 5. Vasiliki has a piece of material $3\frac{3}{4}$ m long. She is cutting it into smaller pieces of length $\frac{5}{6}$ m.

How many smaller pieces can she get, and what fraction of a metre will be left over?

Number of small pieces = Fraction left =m

Hint
You need to divide fractions here.

..... [___ / 3 marks]

Fractions, decimals & percentages

Grade
4



1. In Lin's class, 6 out of 25 children read fantasy books. In Jay's class, 8 out of 32 children read fantasy books. Lin says the proportion of children who read fantasy books is greater in her class than in Jay's. Is Lin correct? Explain your answer.

.....
.....

[___ / 2 marks]

Grade
5



2. Sally says that multiplying by 0.01 is the same as dividing by 100. Is Sally correct? Explain your reasoning.

.....

[___ / 1 mark]

Grade
6



3. Explain, using prime factors, why $\frac{11}{28}$ is a recurring decimal.

.....
.....

[___ / 2 marks]

Grade
6



4. Jonathan ran some park races last year. 15% of his races were 5 km runs, $\frac{7}{10}$ of his races were 10 km runs and the rest were half marathons. If he ran 20 races in total, how many were half marathons?

.....

[___ / 3 marks]

Grade
6

5. In a city, 5.5 out of every 22 square metres are used for housing and services. If housing takes up $\frac{5}{8}$ of this space, what percentage of the total area is used for services?

.....

[___ / 3 marks]

Recurring decimals

Grade
6

1. Express these fractions as decimals.



a) $\frac{1}{18}$

..... [I got ___ / 2 marks]

b) $\frac{20}{33}$

..... [___ / 2 marks]

c) $\frac{3}{7}$

..... [___ / 2 marks]

Grade
7

2. Prove algebraically that $0.\dot{5} = \frac{5}{9}$

Hint

Let $x = 0.\dot{5}$ and find $10x$

[___ / 2 marks]

Grade
7

3. Write $0.\dot{8}\dot{4}$ as a fraction in its simplest form.



..... [___ / 3 marks]

Grade
8

4. Prove algebraically that $0.0\dot{5}\dot{6} = \frac{28}{495}$

[___ / 3 marks]

Surds

Grade
7

1. Write these expressions in the form $a\sqrt{2}$, where a is an integer.



a) $\sqrt{18} - \sqrt{8}$

..... [I got ___ / 2 marks]

b) $\sqrt{200} + \sqrt{72} - \sqrt{98}$

..... [___ / 2 marks]

c) $3\sqrt{2} + 7\sqrt{32}$

..... [___ / 2 marks]

d) $\frac{14}{\sqrt{2}}$

..... [___ / 2 marks]

Grade
8

2. Write these expressions in the form $a + b\sqrt{3}$, where a and b are integers.



a) $(1 + \sqrt{3})^2$

..... [___ / 2 marks]

b) $\frac{8}{2 - \sqrt{3}}$

Hint

Multiply numerator and denominator by the denominator with a changed sign.

c) $\frac{\sqrt{3} - 1}{\sqrt{3} + 1}$

..... [___ / 3 marks]

..... [___ / 3 marks]

Grade
8

3. Show that $(\sqrt{11} - \sqrt{8})(\sqrt{11} + \sqrt{8}) = 3$

..... [___ / 3 marks]

Index notation

Grade
4

1. Peter says that $2^3 \times 5^2$ simplifies to 10^5 . Peter is wrong. Explain why.

[I got ___ / 1 mark]

Grade
5

2. Simplify $\frac{(2^7 \times 2^4)^{-1}}{2}$ fully and leave your answer in index form.



Hint

A power of -1 gives the reciprocal and a power of $\frac{1}{n}$ gives the n th root.

..... [___ / 2 marks]

Grade
6

3. Write in simplified index form



a) $\left(3^{\frac{1}{4}}\right)^{\frac{1}{4}}$

..... [___ / 1 mark]

b) $\sqrt[3]{5^2}$

..... [___ / 2 marks]

Grade
7

4. Work out



a) $\left(\frac{2}{5}\right)^3$

..... [___ / 1 mark]

b) $25^{\frac{1}{2}}$

..... [___ / 1 mark]

c) $8^{\frac{2}{3}}$

..... [___ / 2 marks]

d) $\left(\frac{16}{9}\right)^{-\frac{3}{2}}$

..... [___ / 3 marks]

Grade
8

5. $3 \times \sqrt{27} = 3^n$

Find the value of n

..... [___ / 3 marks]

Grade
9

6. $2^x \times 2^y = 64$ and $2^x \div 2^y = 4$

Find the values of x and y

Hint

Start by finding two simultaneous equations.

$x =$ $y =$ [___ / 4 marks]

Prime factor decomposition

Grade
4

1. Write 110 as a product of its prime factors.



..... [I got ___ / 2 marks]

Grade
4

2. a) Write 540 as a product of powers of its prime factors.



..... [___ / 2 marks]

b) By looking at its prime factors, explain why 540 is divisible by 15

Hint
What are the prime factors of 15?

..... [___ / 1 mark]

Grade
4

3. a) Write 750 as a product of its prime factors. Give your answer in index notation.



..... [___ / 2 marks]

b) By looking at its prime factors, explain why 750 is not divisible by 4

..... [___ / 1 mark]

Grade
5

4. The prime factor decomposition of a number, x , is $2 \times 3^2 \times 7 \times 13$



a) Is x even or odd? Explain your reasoning.

..... [___ / 1 mark]

b) What is the prime factor decomposition of a number twice as big as x ?

..... [___ / 1 mark]

Grade
5

5. A number is a multiple of 4, 5 and 6. Write the prime factor decomposition of the smallest number it could be.



..... [___ / 2 marks]

Finding HCF and LCM

Grade 4 1. a) Write 160 as a product of prime factors.
 [I got ___ / 2 marks]



b) Find the highest common factor of 160 and 280
 [___ / 2 marks]

c) Find the lowest common multiple of 160 and 280
 [___ / 2 marks]

Grade 5 2. Two numbers have prime factor decompositions $2^3 \times 5 \times 11$ and $2 \times 3^2 \times 5$
 Find
 a) the highest common factor of the two numbers
 [___ / 2 marks]

b) the lowest common multiple of the two numbers.
 [___ / 1 mark]

Grade 5 3. Fran is sorting her books into piles. She has 225 yellow books and 324 orange books. She does not want to mix the colours and wants every pile to contain the same number of books. Work out the biggest number of books she can put in each pile.
 [___ / 3 marks]



Grade 6 4. Two numbers, A and B , have prime factor decompositions $A = 2 \times 3 \times 7 \times x$ and $B = 2^2 \times 5^2$
 The highest common factor of the two numbers is 4
 a) Work out the value of x .
 [___ / 1 mark]

Hint
 How does the HCF relate to the prime factor decomposition?

b) Work out the value of the number A .
 [___ / 1 mark]

Standard form

Grade
3

1. Write these as ordinary numbers.



a) 1.56×10^8

..... [I got ___ / 1 mark]

b) 8.02×10^{-3}

..... [___ / 1 mark]

Grade
3

2. Write these numbers in standard form.



a) 48 000 000 000

..... [___ / 1 mark]

b) 0.000 0703

..... [___ / 1 mark]

c) 95×10^6

..... [___ / 1 mark]

d) 0.68×10^{-4}

..... [___ / 1 mark]

Grade
3

3. The distance from the Sun to Earth is approximately 150 000 000 km. Write this number in standard form.



..... km [___ / 1 mark]

Grade
4

4. Put these numbers in order of size, starting with the biggest.

2.1×10^4

2.3×10^5

0.21×10^4

2200



Hint

Write all the numbers in the same form.

..... [___ / 3 marks]

Grade
4

5. The size of a bacteria cell is 4×10^{-7} m and the size of a virus is 0.000 000 05 m. Which is smaller, the bacteria cell or the virus? Show your working.



..... [___ / 2 marks]

Grade
4

6. Here are the populations of four countries.

Angola: 31.8×10^6

Uzbekistan: 3.29×10^7

Malaysia: 31.9 million


Mongolia: 3.2×10^6





Which country has the largest population? Show your working.


..... [___ / 2 marks]

Calculating with standard form

- Grade 5**  1. Work out the value of each expression, giving your answers in standard form.
- a) $(5 \times 10^4) + (6 \times 10^5)$
 [I got ___ / 2 marks]
- b) $(9 \times 10^{-3}) - (3 \times 10^{-4})$
 [___ / 2 marks]
- c) $(2.1 \times 10^8) \times (3 \times 10^{-5})$
 [___ / 2 marks]
- d) $(8.2 \times 10^3) \div (4.1 \times 10^7)$
 [___ / 2 marks]

- Grade 6**  2. The MiG 25 fighter jet can fly at 4×10^3 km/h. How long would it take to travel a distance of 3000 km? Give your answer in minutes.
- Hint**
Remember that
 $\text{speed} = \frac{\text{distance}}{\text{time}}$
- minutes [___ / 3 marks]

- Grade 6**  3. A region on a map forms the shape of a rectangle with width 1.2×10^2 km and length 7×10^3 km. Work out the area of this region in standard form.
- km² [___ / 3 marks]

- Grade 7**  4. The circumference of Earth is 4.0075×10^9 cm. The circumference of another planet is 0.2 times the circumference of Earth.
- Hint**
Start by rounding the circumference of Earth.
- a) Work out an estimate for the circumference of this planet. Give your answer in standard form.
 cm [___ / 3 marks]
- b) Is your answer in part a an underestimate or an overestimate? Explain your answer.
 [___ / 1 mark]

Guided answers

Page 1, Calculations

$$1. \text{ a } \begin{array}{r} 1 \quad 14 \quad 1 \\ 25.043 \\ - 17.820 \\ \hline 7.223 \end{array}$$

1 mark for lining up the digits correctly in columns;

1 mark for the correct answer.

$$\text{b } \begin{array}{r} 74 \\ \times 26 \\ \hline 444 \\ + 1480 \\ \hline 1924 \end{array}$$

$$\text{Since } 74 \times 26 = 1924,$$

$$7.4 \times 0.26 = 1924 \div 10 \div 100 = 1.924$$

1 mark for multiplying 74×26 to get 1924; **1 mark** for the correct answer.

$$\text{c } 17.12 \div 0.8 = 171.2 \div 8$$

$$\begin{array}{r} 21.4 \\ 8 \overline{)171.2} \end{array}$$

$$171.2 \div 8 = 21.4$$

1 mark for dividing 171.2 by 8; **1 mark** for the correct answer.

$$2. \text{ a } (12 - 4 \times 2)^3 = (12 - 8)^3 = 4^3 = 64$$

1 mark for correct answer.

$$\text{b } \frac{4 \times 5^2}{4 \times 5 \div 2} = \frac{4 \times 25}{10} = \frac{100}{10} = 10$$

1 mark for correct answer.

$$\text{c } 5\sqrt{50-1} + 6 \times 3 = 5 \times \sqrt{49} + 6 \times 3 = 5 \times 7 + 6 \times 3 = 35 + 18 = 53$$

1 mark for correct answer.

$$\text{d } 5 + (-3.2) \times 4 = 5 + (-12.8) = -7.8$$

1 mark for correct answer.

$$\text{e } (1 - 0.1) \times 4 - (-10) = 0.9 \times 4 - (-10) = 3.6 - (-10) = 13.6$$

1 mark for 3.6; **1 mark** for the correct answer.

$$\text{f } \frac{(-0.2) \times (-6)}{-1 + 0.7} = \frac{1.2}{-0.3} = -4$$

1 mark for either 1.2 in the numerator or -0.3 in the denominator; **1 mark** for the correct answer.

$$3. \text{ Supermarket A: } £4.65 \div 6 = £0.775 \text{ per burger}$$

$$\text{Supermarket B: } £6.59 \div 8 = £0.82375 \text{ per burger}$$

$$0.775 < 0.82375$$

Therefore, Supermarket A is better value.

1 mark for 0.775; **1 mark** for 0.82375; **1 mark** for correct conclusion with full justification. Total 3 marks.

$$4. \text{ Area of fence} = 1.4 \times 10.5 = 14.7 \text{ m}^2$$

$$\text{Cost} = 14.7 \times 0.6 = £8.82$$

1 mark for multiplying lengths; **1 mark** for multiplying by cost per square metre; **1 mark** for correct answer. Total 3 marks.

Page 2, Rounding & truncation

$$1. \text{ a } 20190 \quad \text{b } 20200$$

$$\text{c } 20000 \quad \text{d } 20000$$

1 mark for each correct answer.

$$2. \text{ a } 0.007 \quad \text{b } 0.0068 \quad \text{c } 0.00680$$

1 mark for each correct answer.

$$3. \text{ a } 21.568361\dots$$

$$\text{b i } 22 \quad \text{ii } 21.5$$

1 mark for each correct answer.

$$3. \text{ a } 0.0188813\dots$$

$$\text{b i } 0.01 \quad \text{ii } 0.019$$

1 mark for each correct answer.

$$4. 32 \div 3.66 = 8.743\dots$$

He can only buy whole bags, so round up to the next integer: 9 bags.

$$\text{Total cost} = 9 \times 4.99 = £44.91$$

$$= £45 \text{ to the nearest pound}$$

1 mark for correct division; **1 mark** for rounding up and multiplying by £4.99; **1 mark** for correct answer. Total 3 marks.

$$5. \text{ Shirley has rounded } 0.06529 \text{ to 2 dp instead of 2 sf. The correct answer is } 0.065$$

1 mark for a correct explanation.

Page 3, Estimation

$$1. \frac{317 + 48.6}{9.683} \approx \frac{300 + 50}{10} \approx \frac{350}{10} \approx 35$$

1 mark for rounding to 1 sf; **1 mark** for correct answer.

$$2. \frac{2.67 \times 1.36}{0.11 + 0.42} \approx \frac{3 \times 1}{0.1 + 0.4} \approx \frac{3}{0.5} \approx 6$$

1 mark for rounding to 1 sf; **1 mark** for correct answer.

$$3. \text{ Number of fish at start of January } \approx 1000$$

$$\text{Increase } \approx 20 \text{ fish per day}$$

$$\text{Five months } \approx 5 \times 30 \approx 150 \text{ days}$$

$$\text{Number of fish after five months } \approx 150 \times 20 + 1000 \approx 4000$$

1 mark for rounding rate of increase to 1 sf; **1 mark** for correct calculation for the number of fish after five months;

1 mark for correct answer. Total 3 marks.

$$4. \text{ Number of portions sold } \approx 100$$

$$\text{Sale price per portion } \approx £9.00$$

$$\text{Cost per portion } \approx £3.00$$

$$\text{Profit per portion } \approx £9.00 - £3.00 \approx £6.00$$

$$\text{Total profit } \approx £6.00 \times 100 \approx £600$$

1 mark for rounding portions, sale price and cost to 1 sf;

1 mark for a profit calculation; **1 mark** for correct answer.

Total 3 marks.

Note that there are alternative methods.

$$5. \text{ Distance driven } \approx 400 \text{ km}$$

$$\text{Average speed } \approx 80 \text{ km/h}$$

$$\text{Time driving } \approx \frac{400}{80} \approx 5 \text{ hours}$$

Time for whole journey ≈ 5 hours 30 minutes (including the break)

Time of arrival is roughly 2 pm (8.30 am + $5\frac{1}{2}$ hours).

1 mark for rounding distance and speed to 1 sf; **1 mark** for finding the time taken; **1 mark** for correct answer. Total 3 marks.

$$6. \text{ a } \sqrt{36} < \sqrt{47} < \sqrt{49}, \text{ so } 6 < \sqrt{47} < 7$$

$$\sqrt{47} = 6.9 \text{ to 1 dp}$$

1 mark for an answer of 6.8 or 6.9

$$\text{b } \sqrt{196} < \sqrt{200} < \sqrt{225}, \text{ so } 14 < \sqrt{200} < 15$$

$$\sqrt{200} = 14.1 \text{ to 1 dp}$$

1 mark for an answer of 14.1 or 14.2

Page 4, Error intervals & bounds

1. **a** $105 \leq p < 115$ **b** $107.5 \leq p < 112.5$
1 mark for each correct minimum; **1 mark** for each correct maximum.
2. **a** $4.665 \leq x < 4.675$ **b** $4500 \leq x < 5500$
1 mark for each correct minimum; **1 mark** for each correct maximum.
3. **a** $9 \leq y < 10$ **b** $2.5 \leq y < 2.6$
1 mark for each correct minimum; **1 mark** for each correct maximum.
4. Sienna can see a truncation to 1 dp so the error interval is $1.8 \leq x < 1.9$
1 mark for correct minimum and maximum; **1 mark** for correct interval notation.
5. Lower bound for the length is 14.5 cm, so lower bound for the area is $14.5^2 = 210.25 \text{ cm}^2$.
Upper bound for the length is 15.5 cm, so upper bound for the area is $15.5^2 = 240.25 \text{ cm}^2$.
Error interval for the area, $x \text{ cm}^2$, is $210.25 \leq x < 240.25$
1 mark for 14.5²; **1 mark** for 15.5²; **1 mark** for correct error interval. Total 3 marks.
6. The error interval for the speed, $s \text{ km/h}$, is $109.5 \leq s < 110.5$
The error interval for the distance, $d \text{ km}$, is $44.5 \leq d < 45.5$
The lower bound for the time taken is $\frac{44.5}{110.5} = 0.4027\dots$ hours
The upper bound for the time taken is $\frac{45.5}{109.5} = 0.4155\dots$ hours
Both of these answers round to 0.4 hours to 1 dp, so this is an appropriate degree of accuracy.
1 mark for upper and lower bounds for speed;
1 mark for upper and lower bounds for distance;
1 mark for lower bound for time; **1 mark** for upper bound for time; **1 mark** for correct answer. Total 5 marks.

Page 5, Adding & subtracting fractions

1. **a** $\frac{2}{9} + \frac{5}{6} = \frac{4}{18} + \frac{15}{18} = \frac{19}{18}$ or $1\frac{1}{18}$
1 mark for finding a common denominator; **1 mark** for correct answer.
- b** $3\frac{1}{6} - 2\frac{3}{4} = \frac{19}{6} - \frac{11}{4} = \frac{38}{12} - \frac{33}{12} = \frac{5}{12}$
1 mark for converting mixed numbers to improper fractions; **1 mark** for finding a common denominator; **1 mark** for correct answer. Total 3 marks.
2. $\frac{1}{8} + \frac{2}{3} = \frac{3+16}{24} = \frac{19}{24}$
 $1 - \frac{19}{24} = \frac{24}{24} - \frac{19}{24} = \frac{5}{24}$
1 mark for finding a common denominator of 24; **1 mark** for adding to get $\frac{19}{24}$; **1 mark** for correct answer. Total 3 marks.
3. $2\frac{4}{5} - \frac{7}{8} + 1\frac{1}{20} = \frac{14}{5} - \frac{7}{8} + \frac{21}{20} = \frac{112}{40} - \frac{35}{40} + \frac{42}{40} = \frac{119}{40} \text{ m}$ or $2\frac{39}{40} \text{ m}$
1 mark for converting mixed numbers to improper fractions; **1 mark** for finding a common denominator; **1 mark** for correct answer. Total 3 marks.
4. $\frac{3}{4} - \frac{1}{3} = \frac{9-4}{12} = \frac{5}{12}$
1 mark for finding a common denominator; **1 mark** for correct answer.
5. Perimeter = $3\frac{1}{2} + 5\frac{2}{5} + 2\frac{1}{5}$
 $= 3 + 5 + 2 + \frac{1}{2} + \frac{2}{5} + \frac{1}{5}$

$$\begin{aligned} &= 10 + \frac{5}{10} + \frac{4}{10} + \frac{2}{10} \\ &= 10 + \frac{11}{10} \\ &= 10 + 1\frac{1}{10} = 11\frac{1}{10} \text{ cm} \end{aligned}$$

1 mark for summing the lengths; **1 mark** for finding common denominator; **1 mark** for correct answer or equivalent. Total 3 marks.

Page 6, Multiplying & dividing fractions

1. $16 \div \frac{2}{3} = \frac{16}{1} \times \frac{3}{2} = \frac{16 \times 3}{1 \times 2} = \frac{8 \times 3}{1 \times 1} = \frac{24}{1} = 24$ days
1 mark for writing a division and turning it into a correct multiplication; **1 mark** for correct answer.
2. **a** $1\frac{1}{2} \times 3\frac{5}{6} = \frac{3}{2} \times \frac{23}{6} = \frac{3 \times 23}{2 \times 6} = \frac{1 \times 23}{2 \times 2} = \frac{23}{4} = 5\frac{3}{4}$
1 mark for converting to improper fractions; **1 mark** for multiplying; **1 mark** for correct answer. Accept correct improper fraction or mixed number. Total 3 marks.
- b** $4\frac{4}{9} \div 2\frac{2}{3} = \frac{40}{9} \div \frac{8}{3} = \frac{40}{9} \times \frac{3}{8} = \frac{40 \times 3}{9 \times 8} = \frac{5 \times 1}{3 \times 1} = \frac{5}{3} = 1\frac{2}{3}$
1 mark for converting to improper fractions; **1 mark** for writing a correct multiplication; **1 mark** for correct, simplified answer (improper fraction or mixed number). Total 3 marks.
3. $\frac{1}{4}$ of $\frac{3}{10} = \frac{1}{4} \times \frac{3}{10} = \frac{3}{40}$
1 mark for multiplying; **1 mark** for correct answer.
4. Area of triangle = $\frac{1}{2} \times 1\frac{1}{5} \times \frac{6}{5} = \frac{1}{2} \times \frac{6}{5} \times \frac{6}{5} = \frac{18}{25} \text{ cm}^2$
This is the area of the rectangle.
Length of rectangle = $\frac{18}{25} \div \frac{2}{5} = \frac{18}{25} \times \frac{5}{2} = \frac{18 \times 5}{25 \times 2}$
 $= \frac{9 \times 1}{5 \times 1} = \frac{9}{5} \text{ cm}$ or $1\frac{4}{5} \text{ cm}$
1 mark for writing a correct multiplication; **1 mark** for writing a division and turning into a correct multiplication; **1 mark** for correct, simplified answer (improper fraction or mixed number). Total 3 marks.
5. $3\frac{3}{4} \div \frac{5}{6} = \frac{15}{4} \div \frac{5}{6} = \frac{15}{4} \times \frac{6}{5} = \frac{90}{20} = \frac{9}{2}$ or $4\frac{1}{2}$ or 4.5
Vasiliki can get 4 smaller pieces.
 $\frac{1}{2} \times \frac{5}{6} = \frac{5}{12} \text{ m}$ will be left over.
1 mark for converting to improper fraction and writing a correct multiplication; **1 mark** for correct answer to the multiplication and identifying correct number of smaller pieces; **1 mark** for correct fraction left over. Total 3 marks.

Page 7, Fractions, decimals & percentages

1. Lin's class: $\frac{6}{25} = \frac{24}{100} = 24\%$
Jay's class: $\frac{8}{32} = \frac{1}{4} = \frac{25}{100} = 25\%$
Lin is not correct. Jay's class has a (slightly) higher proportion of students who read fantasy books.
1 mark for finding either 24% or 25% or for giving both fractions a common denominator; **1 mark** for a complete, correct explanation.
2. Since $0.01 = \frac{1}{100}$, multiplying by 0.01 is the same as multiplying by $\frac{1}{100}$, which makes the answer 100 times smaller, so it is equivalent to dividing by 100. Sally is correct.
1 mark for a correct explanation.
3. $\frac{11}{28} = \frac{11}{2 \times 2 \times 7}$
If a fraction produces a terminating decimal, the prime factors in the denominator can only be 2s or 5s. This

fraction has a prime factor of 7 in the denominator, so it will produce a recurring decimal.

1 mark for the prime factor decomposition of 28; **1 mark** for a correct explanation.

4. $\frac{7}{10} = 70\%$; $70\% + 15\% = 85\%$; $100\% - 85\% = 15\%$

15% of the runs were half marathons.

Since 15% of 20 is 3, Jonathan ran 3 half marathons.

1 mark for adding $\frac{7}{10}$ and 15% (either as percentages or fractions) and subtracting from 100% (or 1); **1 mark** for attempting to find 15% of 20; **1 mark** for the correct answer.

Total 3 marks.

Note that there are alternative methods.

5. Area used for housing and services = $\frac{5.5}{22} = \frac{1}{4}$

Fraction of this area used for services = $1 - \frac{5}{8} = \frac{3}{8}$

Total area used for services = $\frac{3}{8} \times \frac{1}{4} = \frac{3}{32} = 9.375\%$

1 mark for $\frac{3}{8}$; **1 mark** for multiplying by $\frac{1}{4}$; **1 mark** for correct answer as a percentage. Total 3 marks.

Page 8, Recurring decimals

1. a $18 \overline{) 0.05555}$ $\frac{1}{18} = 0.0\dot{5}$

b $33 \overline{) 0.6060}$ $\frac{20}{33} = 0.6\dot{0}$

c $7 \overline{) 0.4285714}$ $\frac{3}{7} = 0.4\dot{2}857\dot{1}$

For each part, **1 mark** for division; **1 mark** for the correct answer.

2. Let $x = 0.5\dot{5}$

Then $10x = 5.5\dot{5}$

Subtracting x from $10x$, you have $9x = 5$, so $x = \frac{5}{9}$

1 mark for finding x and $10x$ and subtracting; **1 mark** for the correct answer.

3. Let $x = 0.8\dot{4}$

Then $100x = 84.8\dot{4}$

Subtracting x from $100x$, you have $99x = 84$, so $x = \frac{84}{99} = \frac{28}{33}$

1 mark for finding x and $100x$ and subtracting; **1 mark** for $\frac{84}{99}$; **1 mark** for the correct answer. Total 3 marks.

4. Let $x = 0.05\dot{6}$

Then $10x = 0.5\dot{6}$

Also $1000x = 56.5\dot{6}$

Subtracting $10x$ from $1000x$, you have $990x = 56$, so

$x = \frac{56}{990} = \frac{28}{495}$

1 mark for finding $10x$ and $1000x$ and subtracting; **1 mark** for $\frac{56}{990}$; **1 mark** for the correct answer. Total 3 marks.

Page 9, Surds

1. a $\sqrt{18} - \sqrt{8} = 3\sqrt{2} - 2\sqrt{2} = \sqrt{2}$ ($a = 1$)

1 mark for simplifying both surds; **1 mark** for correct answer.

b $\sqrt{200} + \sqrt{72} - \sqrt{98} = 10\sqrt{2} + 6\sqrt{2} - 7\sqrt{2} = 9\sqrt{2}$ ($a = 9$)

1 mark for simplifying the three surds; **1 mark** for correct answer.

c $3\sqrt{2} + 7\sqrt{32} = 3\sqrt{2} + 7 \times 4\sqrt{2} = 3\sqrt{2} + 28\sqrt{2} = 31\sqrt{2}$ ($a = 31$)

1 mark for simplifying $7\sqrt{32}$; **1 mark** for correct answer.

d $\frac{14}{\sqrt{2}} = \frac{14\sqrt{2}}{2} = 7\sqrt{2}$ ($a = 7$)

1 mark for rationalising the denominator (multiplying numerator and denominator by $\sqrt{2}$); **1 mark** for correct answer.

2. a $(1 + \sqrt{3})^2 = (1 + \sqrt{3})(1 + \sqrt{3}) = 1 + \sqrt{3} + \sqrt{3} + 3 = 4 + 2\sqrt{3}$ ($a = 4$, $b = 2$)

1 mark for expanding the brackets; **1 mark** for simplifying expression to correct answer.

b $\frac{8}{2 - \sqrt{3}} = \frac{8(2 + \sqrt{3})}{(2 - \sqrt{3})(2 + \sqrt{3})} = \frac{16 + 8\sqrt{3}}{4 - 3} = \frac{16 + 8\sqrt{3}}{1} = 16 + 8\sqrt{3}$ ($a = 16$, $b = 8$)

1 mark for rationalising the denominator (multiplying numerator and denominator by $2 + \sqrt{3}$); **1 mark** for 1 in the denominator; **1 mark** for the correct answer. Total 3 marks.

c $\frac{\sqrt{3} - 1}{\sqrt{3} + 1} = \frac{(\sqrt{3} - 1)(\sqrt{3} - 1)}{(\sqrt{3} + 1)(\sqrt{3} - 1)} = \frac{3 - 2\sqrt{3} + 1}{3 - 1} = \frac{4 - 2\sqrt{3}}{2} = 2 - \sqrt{3}$ ($a = 2$, $b = -1$)

1 mark for rationalising the denominator (multiplying numerator and denominator by $\sqrt{3} - 1$); **1 mark** for 2 in the denominator; **1 mark** for the correct answer. Total 3 marks.

3. $(\sqrt{11} - \sqrt{8})(\sqrt{11} + \sqrt{8}) = 11 + \sqrt{11}\sqrt{8} - \sqrt{11}\sqrt{8} - 8 = 11 - 8 = 3$ as required

1 mark for attempt to expand brackets; **1 mark** for cancelling middle terms; **1 mark** for fully correct working. Total 3 marks.

Page 10, Index notation

1. Peter has multiplied the bases. Since the bases are different, this cannot be simplified as a simple power of 10
1 mark for a correct explanation.

2. $\frac{(2^7 \times 2^4)^{-1}}{2} = \frac{(2^{7+4})^{-1}}{2} = \frac{(2^{11})^{-1}}{2} = \frac{2^{11 \times (-1)}}{2} = 2^{-11-1} = 2^{-12}$

1 mark for 2^{11} in the brackets; **1 mark** for correct answer.

3. a $(3^4)^4 = 3^{4 \times 4} = 3^{16}$

1 mark for correct answer.

b $\sqrt[3]{5^2} = 5^{\frac{2}{3}}$

1 mark for a fractional index with 3 in the denominator;

1 mark for the correct answer.

4. a $\left(\frac{2}{5}\right)^3 = \frac{2^3}{5^3} = \frac{8}{125}$

1 mark for correct answer.

b $25^{\frac{1}{2}} = \sqrt{25} = 5$

1 mark for correct answer.

c $8^{\frac{2}{3}} = (\sqrt[3]{8})^2 = 2^2 = 4$

1 mark for 2; **1 mark** for correct answer.

d $\left(\frac{16}{9}\right)^{\frac{3}{2}} = \left(\frac{9}{16}\right)^{\frac{3}{2}} = \left(\frac{\sqrt{9}}{\sqrt{16}}\right)^3 = \left(\frac{3}{4}\right)^3 = \frac{27}{64}$

1 mark for $\frac{9}{16}$; **1 mark** for $\frac{3}{4}$; **1 mark** for correct answer. Total 3 marks.

5. $3 \times \sqrt{27} = 3 \times (27)^{\frac{1}{2}} = 3 \times (3^3)^{\frac{1}{2}} = 3^1 \times 3^{\frac{3}{2}} = 3^{1 + \frac{3}{2}} = 3^{\frac{5}{2}}$
 $n = \frac{5}{2}$ or $2\frac{1}{2}$ or 2.5

1 mark for attempting to rewrite 27 with base 3, **1 mark** for $3^{\frac{5}{2}}$; **1 mark** for correct answer. Total 3 marks.

6. $64 = 2^6$

$2^x \times 2^y = 2^6 \Rightarrow x + y = 6$ (1)

$4 = 2^2$

$2^x \div 2^y = 2^2 \Rightarrow x - y = 2$ (2)

(1) + (2): $2x = 8 \Rightarrow x = 4$

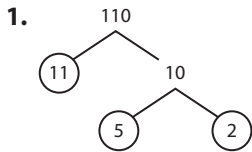
Substitute into (1): $4 + y = 6 \Rightarrow y = 2$

1 mark for attempting to rewrite 64 and 2 with base 2;

1 mark for either equation correct; **1 mark** for attempting to solve simultaneously; **1 mark** for correct values for x and y . Total 4 marks.

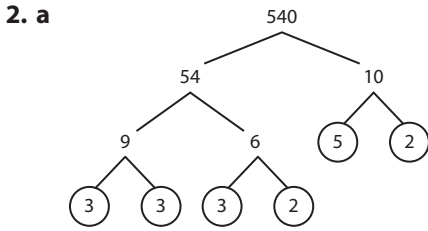
Page 11, Prime factor decomposition

You might use a factor tree in your working with the same start and end as shown here but with different middle branches.



$$110 = 2 \times 5 \times 11$$

1 mark for finding or listing the prime factors; **1** for correct answer.

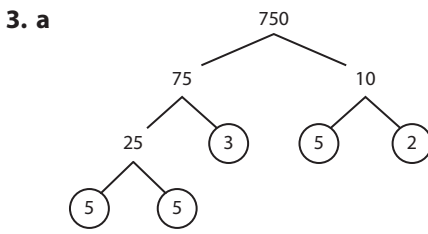


$$540 = 2^2 \times 3^3 \times 5$$

1 mark for finding or listing the prime factors; **1 mark** for correct answer.

b Since $15 = 3 \times 5$ and both 3 and 5 are prime factors of 540, then 540 must be divisible by 15

1 mark for a correct explanation.



$$750 = 2 \times 3 \times 5^3$$

1 mark for finding or listing the prime factors; **1 mark** for correct answer.

b Since $4 = 2 \times 2$, but 750 only contains the factor of 2 once, 750 is not divisible by 4

1 mark for a correct explanation.

4. a $2 \times 3^2 \times 7 \times 13$ is even since 2 is a prime factor.

1 mark for correct answer.

b To double a number, you multiply by 2, so the prime factor decomposition of a number twice as big will have another factor of 2. This is $2^2 \times 3^2 \times 7 \times 13$

1 mark for correct answer.

5. The prime factors of each number are:

$$4 = 2 \times 2; 5 = 5; 6 = 2 \times 3$$

Any number divisible by 4, 5 and 6 must have at least two 2s, one 5 and a 3, so the smallest such number is $2^2 \times 3 \times 5$

1 mark for listing the prime factors of 4 and 6; **1 mark** for correct answer.

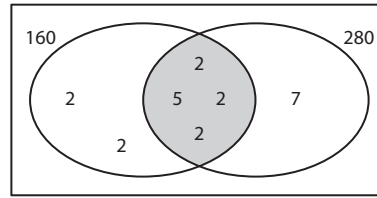
Page 12, Finding HCF and LCM

1. a $160 = 2^5 \times 5$

1 mark for finding or listing the prime factors; **1 mark** for correct answer.

b $280 = 2^3 \times 5 \times 7$

A Venn diagram to show the prime factors looks like this:



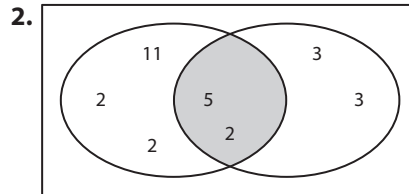
$$\text{HCF}(160, 280) = 2^3 \times 5 = 40$$

1 mark for multiplying the common factors; **1 mark** for correct answer.

c From the Venn diagram,

$$\text{LCM}(160, 280) = 2 \times 2 \times 2 \times 2 \times 2 \times 5 \times 7 = 1120$$

1 mark for multiplying all appropriate factors; **1 mark** for correct answer.



a $\text{HCF} = 2 \times 5 = 10$

b $\text{LCM} = 2 \times 2 \times 11 \times 2 \times 5 \times 3 \times 3 = 3960$

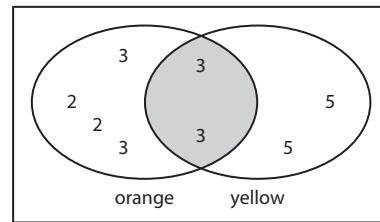
1 mark for correct Venn diagram or alternative method;

1 mark for HCF; **1 mark** for LCM. Total 3 marks.

3. $225 = 3^2 \times 5^2$

$$324 = 2^2 \times 3^4$$

A Venn diagram would look like this:



The HCF of the two numbers is 9, so Fran can sort her books into piles of a maximum of 9 if they are to be the same size.

1 mark for the prime factors of 225; **1 mark** for the prime factors of 324; **1 mark** for correct answer. Total 3 marks.

4. a You know that $4 = 2^2$ must divide into A, but $2 \times 3 \times 7$ only has one 2

Therefore, $x = 2$

b $A = 2 \times 2 \times 3 \times 7 = 84$

1 mark for each correct answer.

Page 13, Standard form

1. a $1.56 \times 10^8 = 156\,000\,000$ b $8.02 \times 10^{-3} = 0.008\,02$

1 mark for each correct answer.

2. a $48\,000\,000\,000 = 4.8 \times 10^{10}$ b $0.000\,0703 = 7.03 \times 10^{-5}$

c $95 \times 10^6 = 9.5 \times 10^7$ **d** $0.68 \times 10^{-4} = 6.8 \times 10^{-5}$

1 mark for each correct answer.

3. $150\,000\,000 \text{ km} = 1.5 \times 10^8 \text{ km}$

1 mark for each correct answer.

4. Putting all the numbers in either standard or ordinary form:

$$2.1 \times 10^4 = 21\,000; 2.3 \times 10^5 = 230\,000;$$

$$0.21 \times 10^4 = 2.1 \times 10^3 = 2\,100; 2200 = 2.2 \times 10^3$$

The order, starting with the biggest, is $2.3 \times 10^5, 2.1 \times 10^4, 2200, 0.21 \times 10^4$

1 mark for converting at least two of the numbers correctly to an alternative form; **1 mark** for any three in the correct order; **1 mark** for all in the correct order. Total 3 marks.

5. Virus: $0.000\,000\,05 = 5 \times 10^{-8}$ m
 Bacteria cell: $4 \times 10^{-7} = 0.000\,0004$ m
 The virus is smaller.
1 mark for getting both numbers in the same form; **1 mark** for correct conclusion.
6. Put all the populations in the same form.
 If you put them all in standard form, you have:
 Angola: 3.18×10^7 ; Uzbekistan: 3.29×10^7 ;
 Malaysia: 3.19×10^7 ; Mongolia: 3.2×10^6
 Uzbekistan has the biggest population.
1 mark for putting all numbers in the same form;
1 mark for correct answer.

Page 14, Calculating with standard form

1. a $(5 \times 10^4) + (6 \times 10^5) = 50\,000 + 600\,000$
 $= 650\,000 = 6.5 \times 10^5$
1 mark for converting to ordinary numbers or the same power of 10; **1 mark** for correct answer.
- b $(9 \times 10^{-3}) - (3 \times 10^{-4}) = 0.009 - 0.0003$
 $= 0.0087 = 8.7 \times 10^{-3}$
1 mark for converting to ordinary numbers or the same power of 10; **1 mark** for correct answer.
- c $(2.1 \times 10^8) \times (3 \times 10^{-5}) = 6.3 \times 10^{8+(-5)} = 6.3 \times 10^3$
1 mark for 10^3 ; **1 mark** for correct answer.
- d $(8.2 \times 10^3) \div (4.1 \times 10^7) = 2 \times 10^{3-7} = 2 \times 10^{-4}$
1 mark for 10^{-4} ; **1 mark** for correct answer.
2. Using time = $\frac{\text{distance}}{\text{speed}}$,
 time = $\frac{3000}{4 \times 10^3} = \frac{3 \times 10^3}{4 \times 10^3} = \frac{3}{4}$ hour = 45 minutes
1 mark for dividing distance by speed; **1 mark** for $\frac{3}{4}$ hour;
1 mark for correct answer in minutes. Total 3 marks.
3. Area = $(1.2 \times 10^2) \times (7 \times 10^3) = 8.4 \times 10^{2+3} = 8.4 \times 10^5$ km²
1 mark for multiplying; **1 mark** for 10^5 ; **1 mark** for correct answer. Total 3 marks.
4. a Circumference $\approx 4 \times 10^9 \times 0.2 = 0.8 \times 10^9 = 8 \times 10^8$ cm
1 mark for rounding 4.0075; **1 mark** for multiplication;
1 mark for correct answer in standard form. Total 3 marks.
- b It is an underestimate because 4.0075 is rounded down.
1 mark for correct answer with explanation.

Page 15, Simplifying expressions

1. a $3p - 5q + 3p^2 + 2q + 2q^2 - 9p^2 = 3p - 3q - 6p^2 + 2q^2$
1 mark for $-3q$ and $-6p^2$; **1 mark** for the correct answer.
- b $5x^3 - 2xy - 6 + 6x^3 - 2 - 7xy + 8 = 11x^3 - 9xy$
1 mark for $11x^3$ or $9xy$; **1 mark** for the correct answer.
2. a Perimeter = $3x + 3x + 7y + 7y = 6x + 14y$
1 mark for an unsimplified expression; **1 mark** for the correct answer.
- b Area = $3x \times 1.5x = 4.5x^2$
1 mark for an unsimplified expression; **1 mark** for the correct answer.
3. a $(2a)^3 = 8a^3$
1 mark for 8; **1 mark** for a^3 .
- b $(5a^2b^3)^2 = 25a^4b^6$
1 mark for 25; **1 mark** for $a^4 b^6$.

c $\frac{6x^2y^{-3}}{18yx^{-1}} = \frac{1}{3}x^3y^{-4}$ or $\frac{x^3}{3y^4}$
1 mark for $\frac{1}{3}$; **1 mark** for x^3y^{-4} or $\frac{x^3}{y^4}$.

d $\sqrt{x^4y^6} = (x^4y^6)^{\frac{1}{2}} = x^2y^3$
1 mark for x^2 ; **1 mark** for y^3 .

4. a $\frac{3^{-2} \times 3^8}{3^7} = \frac{3^6}{3^7} = 3^{-1}$
 $3^{-1} = 3^x$, so $x = -1$

1 mark for 3^6 in the numerator; **1 mark** for 3^{-1} ; **1 mark** for identifying that $x = -1$. Total 3 marks.

b $2^5 \times 4^2 = 8^x$
 $2^5 \times (2^2)^2 = (2^3)^x$
 $2^5 \times 2^4 = 2^{3x}$
 $2^9 = 2^{3x}$
 $3x = 9$, so $x = 3$

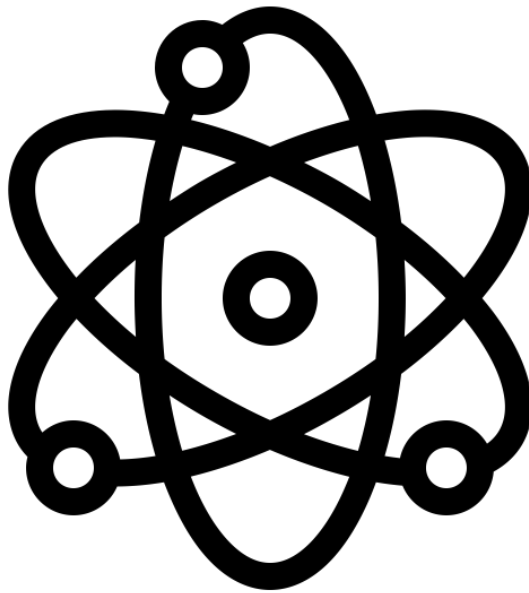
1 mark for writing 4 as 2^2 or 8 as 2^3 ; **1 mark** for 2^9 on the left-hand side; **1 mark** for the correct answer. Total 3 marks.

Page 16, Solving linear equations

1. a $\frac{5-x}{2} = 12$; $5 - x = 24$; $5 = 24 + x$; $x = -19$
1 mark for $5 - x = 24$; **1 mark** for the correct answer.
- b $\frac{2}{y} = 5$; $2 = 5y$; $y = \frac{2}{5}$
1 mark for $2 = 5y$; **1 mark** for the correct answer.
- c $3 + p = 4p - 6$; $3 + 6 = 4p - p$; $9 = 3p$; $p = 3$
1 mark for $9 = 3p$; **1 mark** for correct answer.
- d $3(3 - 2p) = 4 - 11p$
 $9 - 6p = 4 - 11p$
 $-6p + 11p = 4 - 9$
 $5p = -5$
 $p = \frac{-5}{5} = -1$
1 mark for $5p = -5$; **1 mark** for correct answer.
2. Sarah: n , Ewan: $n - 5$, Cameron: $2n$
 Total: $n + (n - 5) + 2n = 35$
 $4n - 5 = 35$
 $4n = 40$
 $n = 10$, so Sarah plays 10 holes.
1 mark for $n - 5$ and $2n$; **1 mark** for adding and writing equal to 35; **1 mark** for correct answer. Total 3 marks.
3. $2x + 3 = 3x - 4$; $3 + 4 = 3x - 2x$; $7 = x$
 Rosalind's number is 7
1 mark for a correct equation; **1 mark** for a correct rearrangement; **1 mark** for correct answer. Total 3 marks.
4. a $2x - 1 = x + 3$; $2x - x = 3 + 1$; $x = 4$
1 mark for a correct equation; **1 mark** for a correct rearrangement; **1 mark** for correct answer. Total 3 marks.
- b If $x = 4$, the shorter side is $x + 3 = 4 + 3 = 7$ cm
 (or $2x - 1 = 2 \times 4 - 1 = 7$ cm).
 The perimeter is $7 + 7 + y + y = 14 + 2y$.
 Since $14 + 2y = 34$, $2y = 20$, $y = 10$
 This means the area of the rectangle is $10 \times 7 = 70$ cm².
1 mark for finding the length of the shorter side (7 cm);
1 mark for setting up an equation to find y ; **1 mark** for $y = 10$; **1 mark** for correct answer. Total 4 marks.

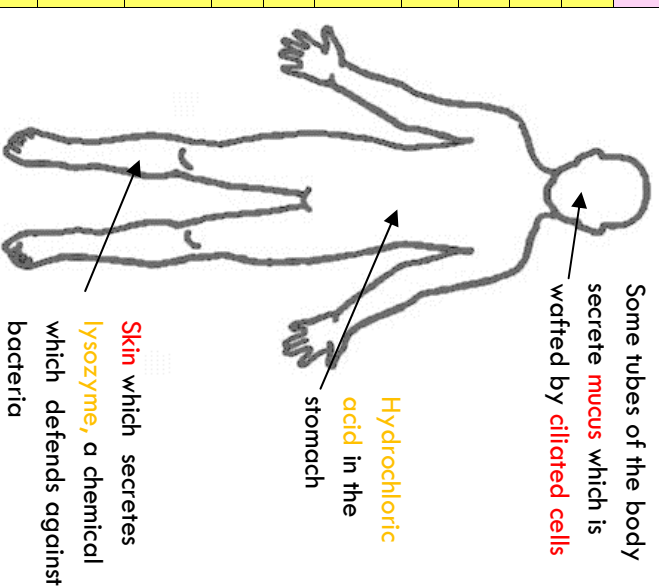
SCIENCE

Use the knowledge organisers to create mind maps or flashcards for each topic. Then, when you have finished, answer the practice questions on the back of each knowledge organiser.



Biology Topic 5—Health, Disease and the Development of Medicine (CB5) Part 1

Disease	An illness that prevents the body functioning normally.
Pathogen	An organism that causes disease.
Communicable Disease	Any disease that can be spread directly from one person to another.
Non-communicable	When an animal that cannot be spread from one person to another.
Immune system	All the organs in the body that protect against disease.
Cholera	A bacterial infection of the small intestine which causes diarrhoea
Diarrhoea	Loose or watery faeces.
Tuberculosis	A communicable disease that infects the lungs.
Viruses	A particle that can infect cells and cause them to make copies of the virus.
Malaria	A dangerous disease caused by a protist that causes serious fever, headaches and vomiting, damages to the blood and liver and can lead to death.
Chalara dieback	A disease of ash trees caused by a fungi. (ash dieback)
Haemorrhagic fever	A disease that causes a fever and internal bleeding.
HIV	Human immunodeficiency virus (HIV) which is a virus which attacks white blood cells, often leading to AIDs
AIDs	Acquired immune deficiency syndrome which is when a persons immune system has been damaged and they are more likely to get secondary infections.
Secondary infections	An infection because an immune system is weakened.
Hygiene	Keeping things clean by removing or killing pathogens.
Epidemic	When many people over a large area are infected with the same pathogen at the same time.
Vectors	Something that transfers things from one place to another.
Physical barrier	A structure that stops a pathogen entering the body e.g. skin
Chemical defence	The use of chemical compounds to defend against attacks e.g. hydrochloric acid in the stomach.
Mucus	A sticky secretion that lines openings to the body i.e. snot
Ciliated cell	A cell which has small hair-like features to waft mucus.



A mosquito is a vector for malaria.



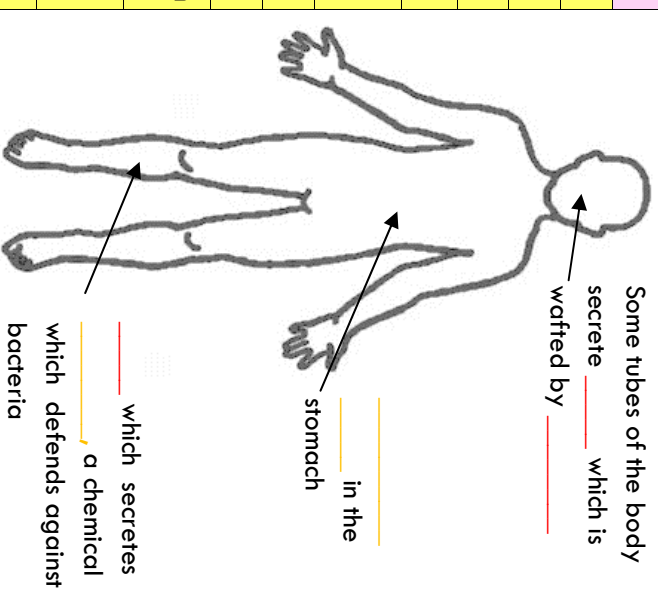
Biology Topic 5—Health, Disease and the Development of Medicine (CB5) Part 1

An illness that prevents the body functioning normally.
An organism that causes disease.
Any disease that can be spread directly from one person to another.
When an animal that cannot be spread from one person to another.
All the organs in the body that protect against disease.
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Loose or watery faeces.
A communicable disease that infects the lungs.
A particle that can infect cells and cause them to make copies of the virus.
A dangerous disease caused by a protest that causes serious fever, headaches and vomiting, damages to the blood and liver and can lead to death.
A disease of ash trees caused by a fungi.
A disease that causes a fever and internal bleeding.
Human immunodeficiency virus (HIV) which is a virus which attacks white blood cells, often leading to AIDs
Acquired immune deficiency syndrome which is when a persons immune system has been damaged and they are more likely to get secondary infections.
An infection because an immune system is weakened.
Keeping things clean by removing or killing pathogens.
When many people over a large area are infected with the same pathogen at the same time.
Something that transfers things from one place to another.
A structure that stops a pathogen entering the body e.g. skin
The use of chemical compounds to defend against attacks e.g. hydrochloric acid in the stomach.
A sticky secretion that lines openings to the body i.e. snot
A cell which has small hair-like features to waft mucus.

Your immune system

Red = physical barrier

Orange = chemical defence



A mosquito is a vector for _____.



Bitesize



Quizlet



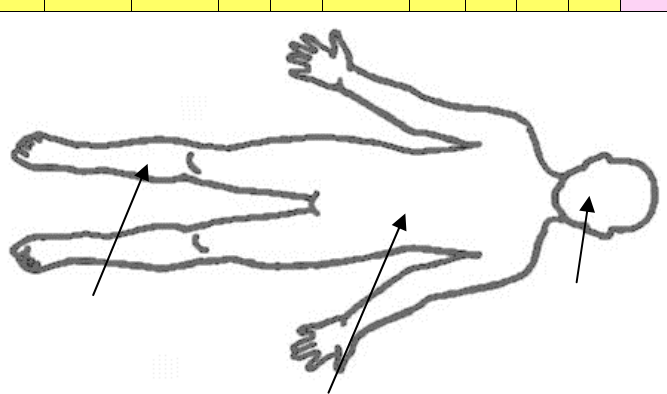
Biology Topic 5—Health, Disease and the Development of Medicine (CB5) Part 1

Disease	
Pathogen	
Communicable Disease	
Non-communicable	
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Viruses	
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Chalalara dieback	
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HIV	
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Secondary infections	
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Your immune system

Red = physical barrier

Orange = chemical defence

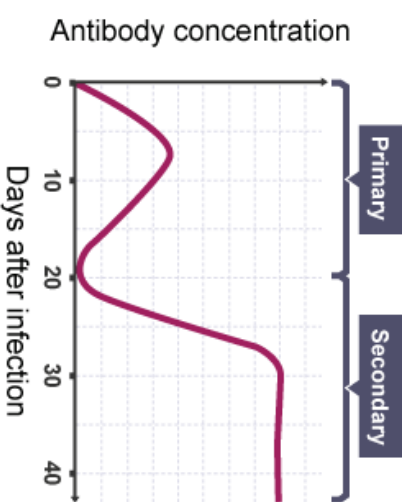
Biology Topic 5—Health, Disease and the Development of Medicine (CB5) Part 1

Learning Outcome	Strengthen	PQ- Extend
5.1, 5.2, 5.3	<ol style="list-style-type: none"> 1. What is a pathogen? 2. What is the immune system? 3. How do communicable and non-communicable diseases differ? 	<ol style="list-style-type: none"> 4. Suggest why somebody infected with the HIV virus is more likely than people without the virus to get communicable diseases. 5. Suggest why where you live might affect how long you live
5.4, 5.5	<ol style="list-style-type: none"> 1. What is tuberculosis? 2. What is a haemorrhagic fever? 3. Describe the signs of malaria. 	<ol style="list-style-type: none"> 3. Explain how HIV can lead to Aids. 4. Draw a table with the following headings: disease, name of pathogen, host of organism and disease. Complete the table with all the examples of diseases on the other side of
5.6	<ol style="list-style-type: none"> 1. What is an epidemic? 2. What is a vector? 3. How can pathogens spread? 	<ol style="list-style-type: none"> 4. Explain why it is important to wash your hands thoroughly after going to the toilet. 5. Explain how isolating infected people and wearing full-body protective clothing helped to bring the 2014-2015
5.8, 5.12	<ol style="list-style-type: none"> 1. Name an example of a chemical defence. 2. Name an example of a physical barrier. 3. What is a hygiene? 	<ol style="list-style-type: none"> 4. Explain how cilia help cells lining tubes in the lungs to carry out their function well. 5. Millions of pathogens are breathed into the nose and mouth every day. Describe all the barriers and defences that the body has to prevent those pathogens causing disease.

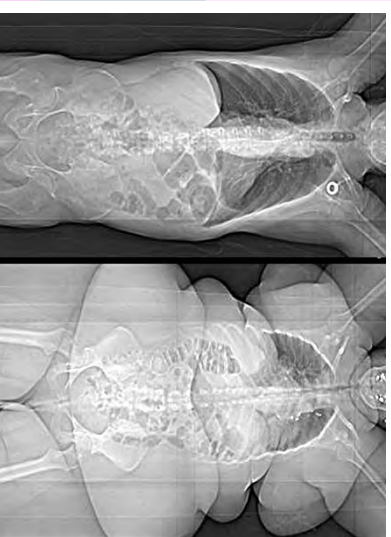


Biology Topic 5—Health, Disease and the Development of Medicine (CB5) Part 2

Antigens	An protein on the surface of the cell of a pathogen.
Lymphocytes	A type of white blood cell that produces antibodies
Antibodies	A protein produced by lymphocytes which neutralises microorganisms.
Activated	When an animal that cannot be spread from one person to another.
Memory lymphocytes	A lymphocyte which stays in the blood after the pathogen has left.
Secondary response	When the immune system responds for a second time due to memory lymphocytes
Immune	When a person does not get the symptoms because they're body destroys the pathogen quickly.
Vaccine	A substance containing a dead or weakened form of the pathogen to make a person immune.
Penicillin	The first kind of antibiotic extracted from a mould.
Antibiotics	Medicine that kills the bacteria.
Pre-clinical	The testing of a drug before it is tested on humans e.g. tissue or animals
Side effects	Unintended harmful effect of a medicine.
Clinical trial	The testing of a medicine on people.
Genetic disorder	A disorder caused by faulty genes.
Malnutrition	Bad diet. Health problems caused by eating too much or too little of one or more nutrients.
Deficiency disease	An illness due to insufficient supply of an essential dietary requirement.
Drug	A chemical substance that alters the functioning part of the body.
Cirrhosis	Damage to the liver caused by drinking too much alcohol over long periods of time.
Obesity	A condition where someone has a BMI above 30 and is too fat for their height.
Heart attack	When the heart stops pumping blood properly due to a lack of oxygen reaching part of it.
Stent	A small mesh tube used to widen narrowed blood vessels and allow blood to flow more easily.



$$\text{BMI} = \frac{\text{Weight (kg)}}{\text{Height (m)}^2}$$



Bitesize

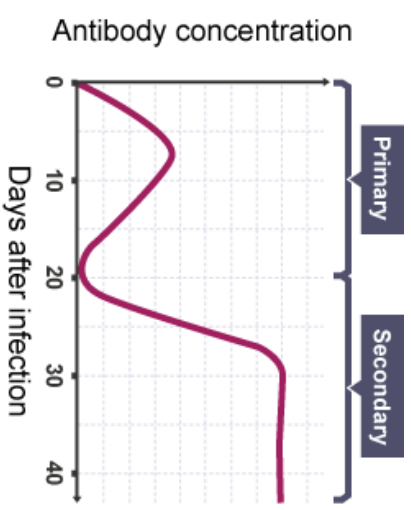


Quizlet

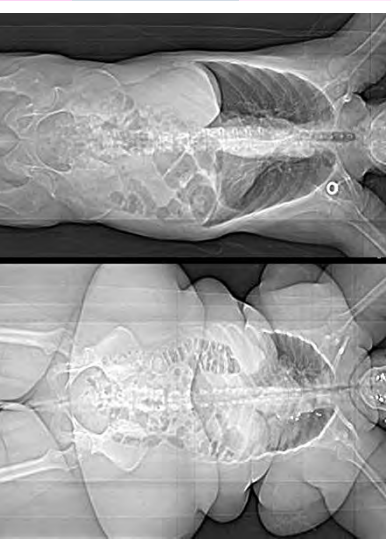


Biology Topic 5—Health, Disease and the Development of Medicine (CB5) Part 2

An protein on the surface of the cell of a pathogen.
A type of white blood cell that produces antibodies
A protein produced by lymphocytes which neutralises microorganisms.
When an animal that cannot be spread from one person to another.
A lymphocyte which stays in the blood after the pathogen has left.
When the immune system responds for a second time due to memory lymphocytes
When a person does not get the symptoms because they're body destroys the pathogen quickly.
A substance containing a dead or weakened form of the pathogen to make a person immune.
The first kind of antibiotic extracted from a mould.
Medicine that kills the bacteria.
The testing of a drug before it is tested on humans e.g. tissue or animals
Unintended harmful effect of a medicine.
The testing of a medicine on people.
A disorder caused by faulty genes.
Bad diet. Health problems caused by eating too much or too little of one or more nutrients.
An illness due to insufficient supply of an essential dietary requirement.
A chemical substance that alters the functioning part of the body.
Damage to the liver caused by drinking too much alcohol over long periods of time.
A condition where someone has a BMI above 30 and is too fat for their height.
When the heart stops pumping blood properly due to a lack of oxygen reaching part of it.
A small mesh tube used to widen narrowed blood vessels and allow blood to flow more easily.



$$\text{BMI} = \frac{\text{Weight (kg)}}{\text{Height (m)}^2}$$



Bitesize

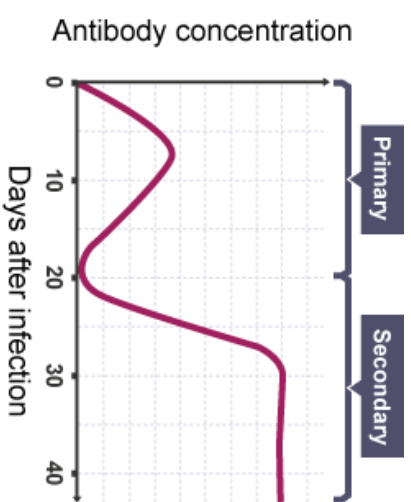


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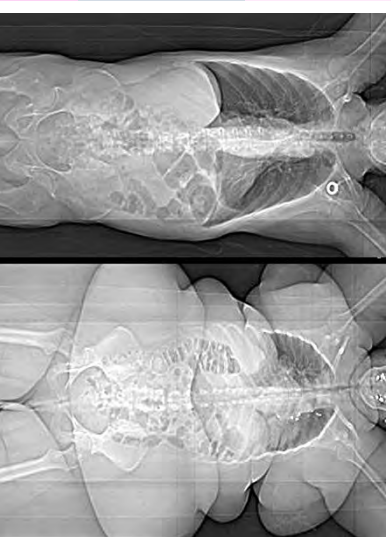


Biology Topic 5—Health, Disease and the Development of Medicine (CB5) Part 2

Antigens	
Lymphocytes	
Antibodies	
Activated	
Memory Lymphocytes	
Secondary response	
Immune	
Vaccine	
Penicillin	
Antibiotics	
Pre-clinical	
Side effects	
Clinical trial	
Genetic disorder	
Malnutrition	
Deficiency disease	
Drug	
Cirrhosis	
Obesity	
Heart attack	
Stent	



$$\text{BMI} = \frac{\text{Weight (kg)}}{\text{Height (m)}^2}$$



Bitesize



Quizlet



Biology Topic 5—Health, Disease and the Development of Medicine (CB5) Part 2

Learning	Strengthen	PQ- Extend
5.13 and 5.14	<ol style="list-style-type: none"> 1. What is the function of the immune system? 2. What is an antigen? 3. What is an antibody? 	<ol style="list-style-type: none"> 4. Describe how a body responds if a pathogen gets past the body's physical defences. 5. Compare the body's natural response to infection with immunisation.
5.16 and 5.20	<ol style="list-style-type: none"> 1. What are antibiotic? 2. Why are antibiotics useful? 3. How is a clinical trial different to a pre-clinical trial? 	<ol style="list-style-type: none"> 3. A new antibiotic has been made. Describe how the antibiotic will be tested before doctors are allowed to use it on patients. 4. A new medicine can only move to the next stage of testing when it has been successful in the previous stage. Describe the advantages and disadvantages of this including time and cost of development.
5.23	<ol style="list-style-type: none"> 1. What is genetic disorder? 2. What is a deficiency disease? 3. Explain how deficiency diseases and malnutrition are linked. 	<ol style="list-style-type: none"> 4. Give one reason why too much alcohol over a long period of time is a problem for: <ol style="list-style-type: none"> A) the person who drinks it B) Their family C) The society they live in. 5. The UK Department of Health recommends that all children from 6 months to 5 years should take vitamin drops everyday to supplement their diet. Discuss
5.24 and 5.25	<ol style="list-style-type: none"> 1. What is cardiovascular disease? 2. State the equation used to calculate BMI. 3. What is the BMI of someone with a height of 1.5m and a mass of 68 kg? 4. What effects do smoking and drinking have on the risk of developing cardiovascular disease? 	<ol style="list-style-type: none"> 4. Explain why a doctor may advise a patient with a high BMI to given up smoking and exercise more. 5. Explain why 'prevention is better than cure' is a good approach to the problem of cardiovascular disease.



HISTORY

Complete the revision tasks on the following pages.



Revision checklist:

	Topic	Revision tasks completed (Y/N)	RAG your confidence	Checked by teacher?
1	MAIN causes			
2	Assassination of Franz Ferdinand and July Crisis			
3	The Schlieffen Plan			
4	The Marne and Race to the Sea			
5	Technological advancements during the war			
6	Verdun			
7	The Somme			
8	Passchendaele			
9	The wider war: Gallipoli and Jutland			
10	Unrestricted Submarine warfare			
11	America's entry into the war			
12	The Russian Revolutions			
13	Spring Offensive			
14	100 Day Offensive			
15	The Home front			
16	Armistice			
17	Exam style questions			

TASK 1: MAIN causes:

Information:

Militarism: The desire to build a bigger army/have the greatest military power. Most clearly visible in the Anglo German Arms Race (to build the most Dreadnoughts), which started in 1904.

Alliances: Two sets of 'alliance' systems developed, resulting in two 'superblocks' dominating Europe

- Triple Alliance: Germany, Italy, Austria Hungary
 - o Alliance signed 1882.
- Triple Entente (Entente = friendly understanding): Britain, France, Russia.
 - o France Russian Alliance 1894
 - o Anglo-French Entente Cordial 1904
 - o Anglo Russian Entente 1907



Imperialism: The desire for countries to own the biggest Empire (be in control of the most other countries). The British Empire was by far the largest at the time.

- Example of this are the Moroccan Crises:
 - o 1905-6: France wanted to take over Morocco, Kaiser Wilhelm made a speech to 'defend Moroccan Independence'. This led to the Algeiras conference, where Germany was humiliated; however France did not take Morocco.
 - o 1911 'Agadir' Crisis: France again tried to take Morocco, this time Kaiser Wilhelm sent the gunboat 'panther' to threaten France. Another conference was held, and once again Germany didn't make any headway.
 - These crises are often interpreted as Germany trying to drive a wedge between France and Britain, but they failed.

Nationalism: The belief that your country was better than all others, and that your country has the right to control others. Almost all countries in Europe were intensely nationalistic at this time.

- Example of this are the Balkan Wars
 - o Balkan War 1: 1912 = Balkan League (Serbia, Bulgaria, Greece, Montenegro) forms to attack the Ottoman Empire (Turkey), after Italy had defeated the Ottomans in Libya, demonstrating Ottoman weakness. The League succeeds in pushing the Ottomans out of the Balkan region.

- o Balkan War 2: 1913 = Bulgaria turns on the rest of the League but is quickly defeated. Serbia grows in strength and size and tension between Serbia and Austria-Hungary grows.

Task:

Complete the table below to demonstrate what the causes were, what an example of each cause is, and how this contributed to causing WWI.

Factor	Definition	Example	Impact
M.....			
A.....			
I.....			
N.....			

TASK 2: The Assassination of Franz Ferdinand

Information:

28th June 1914, Arch Duke Franz Ferdinand (heir to the throne of Austria-Hungary) is visiting Sarajevo in Bosnia. This is an important day for Bosnian's - one where they think about their independence and nationalist feelings are high.

Terrorist organisation 'The Black Hand' want to force Austria-Hungary to 'release' Bosnia, and allow it to join the greater Serbian community. 5 members of the Black Hand gang attempt to assassinate Franz Ferdinand but initially failed.

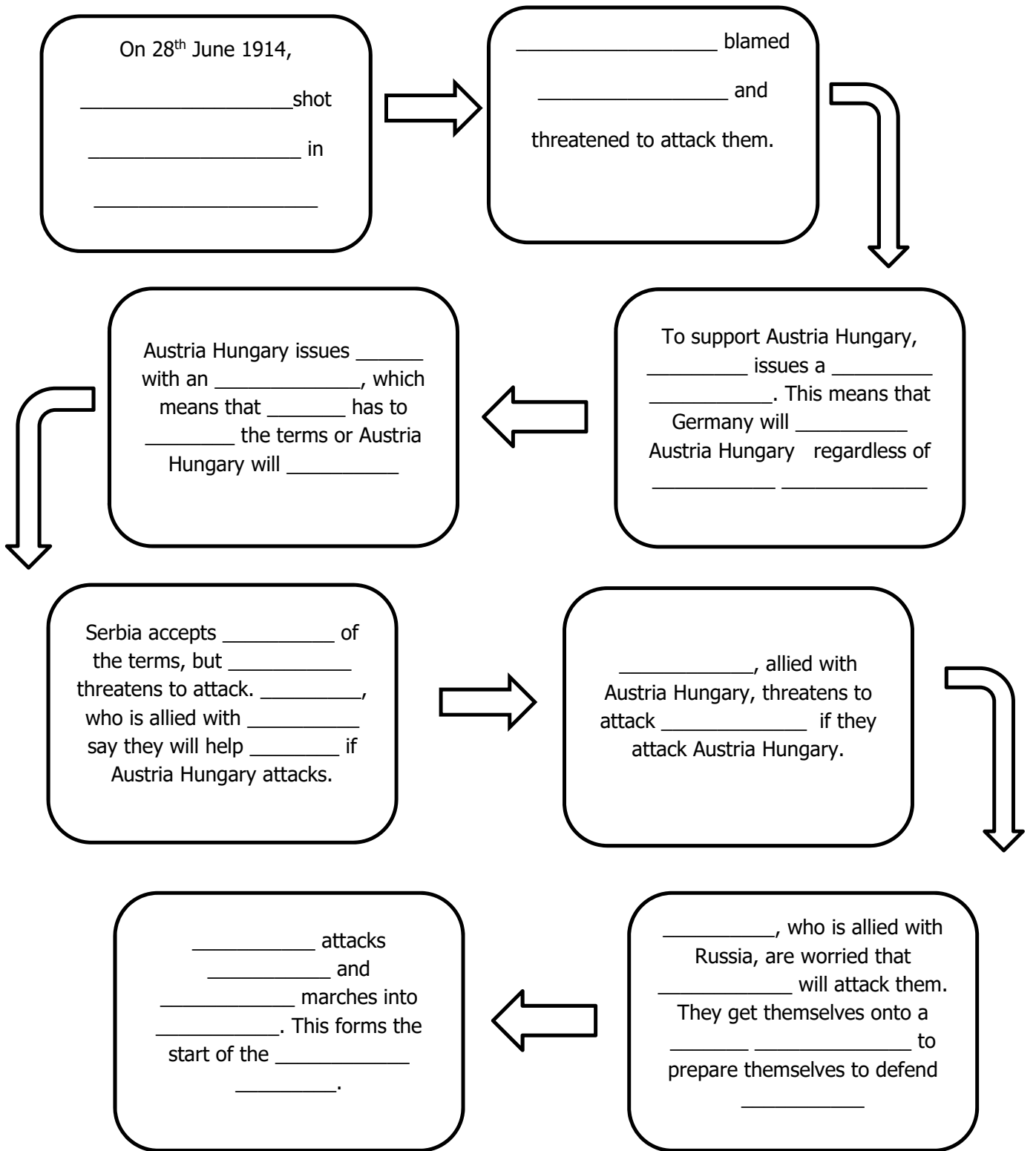
Franz Ferdinand's driver takes a wrong turn and leads directly to Gavrilo Princip, one of the assassins. Princip fires two shots, one hits the Arch Duke and one hits his wife. Both die, this leads to the 'July Crisis' between 28th June and 4th August 1914.

The July Crisis

- Austria-Hungary blames Serbia for the assassination of Franz Ferdinand, and threaten to attack.
- Germany issues a 'blank cheque', to declare that they will help Austria-Hungary regardless of future actions.
- Austria-Hungary issues an ultimatum to Serbia, saying 'either you accept these terms or we will attack'.
- Serbia accepts most of the terms, but Austria Hungary doesn't accept.
- Russia, allied with Serbia, threatens to attack Austria Hungary if Serbia is attacked.
- Germany, allied with Austria Hungary, threatens to attack Russia if Russia attacks Austria Hungary.
- France begins to get on a 'war footing' - preparing itself to defend Russia if Germany attacks.
- Austria Hungary attacks Serbia, setting the fire of alliances alight.



Task: On the following page, complete the flow diagram to demonstrate what happened to lead to war.



Task 3: The Schlieffen Plan

Information

- On August 3rd 1914, Germany declares war on France and invades neutral Belgium.
 - o Their plan is to attack France quickly through Belgium. They would defeat France in 6 weeks, then swing round back through Germany to attack Russia, who they didn't believe would have mobilised their army before 8 weeks.
- Belgium refuses to let Germany march through, and begins to fight back.
- Britain issues Germany an ultimatum to withdraw from Belgium, or they will attack.
- Germany doesn't withdraw, so Britain joins the war on August 4th 1914.
- Britain sends the BEF (British Expeditionary Force), a small but well-trained army to help defend Belgium.
- The Schlieffen plan fails for three key reasons:
 - o Britain gets involved
 - o Belgium fights back
 - o Russia mobilises within 10 days, forcing Germany to split their army.

Task A: Draw on the German aim for the Schlieffen Plan.



Task B: Complete the sentence below:

The Schlieffen plan failed for three reasons. Firstly, because of _____. This led to it failing because _____. Secondly, because of _____. This led to it failing because _____. Finally, it failed because of _____ this led to it failing because _____

Task 4: The battle of the Marne and Race to the Sea

Information

Having been slowed down by Belgium, Germany decided to swing south and meet the French head on, instead of go round Paris. They got to within 20miles of Paris, before they met a combined force of French and British Troops at the River Marne. Between September 5th and September 12th 1914 the first major battle of the war was fought, resulting in a German defeat.

Both armies then realised that the only way to flank (get around) the enemy was to capture the land in the North, back near Belgium. This led to the race to the sea, where both armies stretched out in thin lines to capture the land in the North. Eventually, this resulted in two long lines of armies, stretching from the English channel to the Alps, over 400 miles. Because of this, trenches began to develop as the only way to attack the enemy became through direct assault.

- Stalemate: Where neither side can make a winning move.
- War of Attrition: Constantly chipping away at the enemy, hoping that they will run out of men/weapons/resources before you do.

Task: Complete the table and the sentences below it:

Event	What was it?	What did it lead to?
Battle of the Marne		

Race to the Sea		

Stalemate is _____

War of Attrition is _____

Task 5: Technological advancements during the war

Information

Artillery: These are the large guns (canons) that would be set up a few miles behind the front lines. They would provide almost constant fire (known as a barrage), to attempt to destroy the enemy from afar. Historians estimate artillery caused about 60% of all deaths in WWI.



- Counter battery = using your own artillery to target enemy artillery, rather than targeting the enemy people. First used 1916.
- Creeping barrage = Firing your artillery just in front of your own soldiers, to create a wall of explosions and stop the enemy from firing back. First used 1916.

Machine Guns: Machine guns were used throughout the war, they were heavy pieces of equipment that took between 2 and 5 men to operate. They were devastating as weapons of defence, easily able to take out many men at once.

Planes: Planes were not hugely important in WWI, both fighter and bomber planes did develop from 1916, including the British 'Royal Flying Corps'. However, they were limited in power and accuracy and never significantly changed the outcome of a battle.

Tanks: Tanks were considered by some to be the wonder weapon of the war, they could crush barbed wire and provide cover for advancing troops. However, they had some limitations as they were slow (only about 4mph), often broke down in no man's land and the troops inside could become ill from the engine fumes.

Gas: Gas was first used on a Canadian force at Vimy ridge on April 22nd 1915. The two main types of gas were **chlorine** and **mustard**. Chlorine would liquidise your breathing organs, and mustard would burn the skin and eyes. A limitation was that gas attacks were entirely dependent on wind direction.

Mining: Both sides attempted to tunnel underneath the enemy trenches to lay explosives underground. This was dangerous work as the mines could collapse and flood, or you could meet the enemy tunnelers underground. The main mine explosion was at Messine ridge, where 20 mines were blown up at the same time, including 10,000lbs of explosive - the explosion was heard in London.

Task: Complete the table on the following page about technological developments during the war.

Technology	Draw an image of it	How was it used and when from?	Important limitations?	Rating out of 10
Counter Battery				
Creeping Barrage				
Machine Guns				
Planes				
Tanks				



Task 7: The Somme

Information

Fought between July 1st 1916 and November 18th 1916.

The first day:

- The plan:
 - o 7 day bombardment would destroy all Germans, 'not even a rat would be left alive'. 2 million shells would be fired.
 - o Barbed wire would be cut by bombardment.
 - o Spotter planes would check the destruction before sending troops out.
 - o 100,000 troops would walk easily to victory over enemy lines.
- The reality:
 - o The bombardment failed to kill the Germans - who had hidden in deep dug-outs.
 - o The barbed wire hadn't been cut.



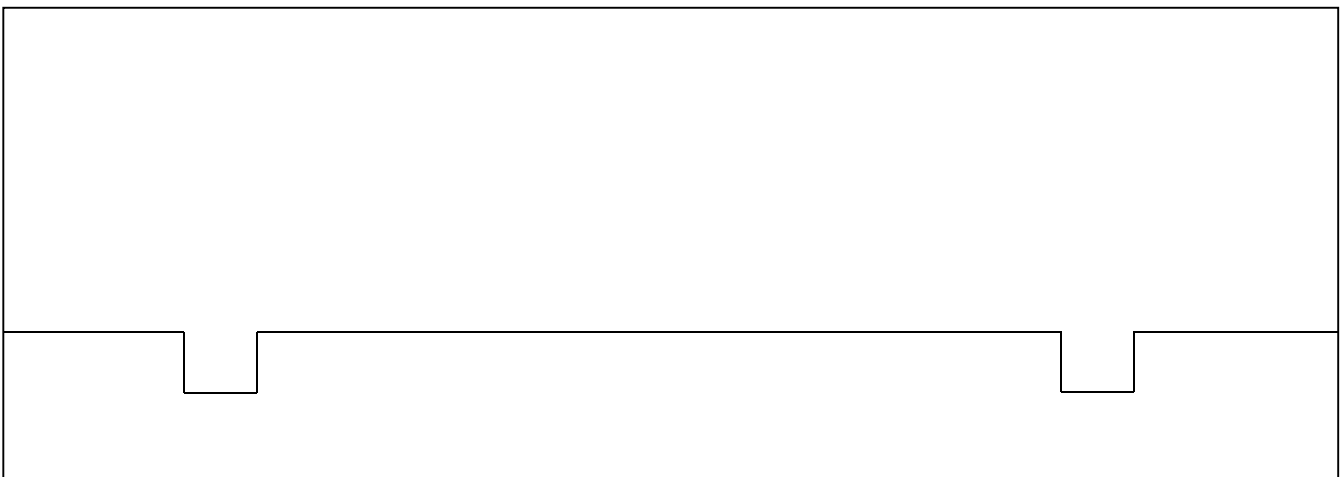
- 1/3 of the shells didn't explode.
- Low cloud prevented the planes from seeing anything.
- The men went over the top to be met by German machine gun fire, which killed 20,000 and injured 60,000. The worst single day in British Military history.

The remainder of the battle:

- Historians claim it was overall a victory for a number of reasons:
 - Verdun did not fall, meaning the aim of the Somme being a distraction was successful.
 - Officers were given more autonomy, letting them change battle plans - this helped in future victories.
 - New technologies such as tanks and creeping barrage were successfully used, these would be essential in eventually winning the war.
- However, it shouldn't be forgotten that:
 - 20,000 had died on the first day
 - 620,000 British soldiers died overall
 - It had taken 5 months for the British army to advance 2 miles.

Task: On the following page, create two labelled images; one to demonstrate the plan at the Somme, the other to demonstrate the reality. Then complete the sentences.

The plan at the Somme:



The reality at the Somme:



Some historians claim the Somme was a victory overall because

Overall I think it was a victory/defeat for the British because

Task 8: Passchendaele

Information

Fought between July 18th 1917 and November 1917

The battle of Passchendaele was fought around the Belgium area of Flanders/Ypres from The aim of the battle was to capture the German Submarine pens which were wreaking havoc on Britain and beginning to starve it.

Initially the battle went well, but then the rain came - the heaviest rain in 30 years. This turned the ground became a quagmire - totally waterlogged. This meant that tanks got stuck, shell craters filled with water and the men struggled to cope in knee high mud.

By November, little had been gained and the attack was called off, the British had lost 310,000 men and the Germans 260,000.



Task: Complete the table below on all three key battles of the Western front.

Battle	What was the objective?	Key points of the battle	Success or failure and why?
Verdun			
The Somme			
Passchendaele			

Task 9: The Wider War

The Battle of Gallipoli

- Fought between April 1915 and January 1916
- This was an attempt to attack somewhere new, seen as there was little movement on the Western front.
- The aim was to open trade links to Russia, so that Britain could help Russia defeat the Austro-Hungarians.
- The landings were disastrous, the ships landed at the wrong beach and troops had to try and fight their way up steep cliffs. The attack had been badly planned and Churchill had assumed the Ottomans would not be good fighters.
- The key forces were the ANZAC troops, standing for 'Australian and New Zealand Army Corps'



The Battle of Jutland

- Fought from 31st May - 1st June 1916
- The aim was for Germany to break the British Naval Blockade, which was beginning to starve Germany of resources.
- This was the main naval encounter of the war. German and British Dreadnoughts met in the North Sea near the Jutland peninsula.
- The Germans sank more ships than the British, and killed more men.
- However, the British sank enough ships that Germany was never able to effectively challenge the British navy again.

Task: Complete the sentences below:

1. Gallipoli was a disaster for the allies because
2. I would argue that won the battle of Jutland because
3. Jutland was important because

Task 10: Unrestricted Submarine Warfare

- The Germans first used this in 1915, where they declared they would sink any ships in British water without warning. Their aim was to starve Britain of supplies.
- This led to the sinking of the ship the 'Lusitania' on May 7th 1915 - which included American passengers. With American anger, Germany agreed to stop the unrestricted warfare.
- Feb 1917 - Germany relaunched USW in desperation to stop the British. This further angered the Americans and other neutral countries.
- Summer 1918 - Britain, with America's help, finally captured the German submarine pens. This effectively stopped Germany using U-boats to surround and starve Britain.

Task: The source below opposes Germany's use of Unrestricted Submarine Warfare, how do you know? (on the ships in the background it says: 'American Rights, National Honour, Freedom of the seas, International Law')



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In Source A I can see.....

.....

This clearly opposes Germany's use of
 Unrestricted Warfare because.....

.....

This links to my knowledge that

.....

Task 11: America's entry into the war

Information

America entered into WWI on April 6th 1917, for three key reasons:

- Unrestricted Submarine Warfare: The sinking of the Lusitania in 1915, followed by the sinking of more American merchant ships in 1917 turned America very much against Germany.
- The Zimmerman Telegram: In January 1917, a telegram was intercepted by the British in which Germany was asking Mexico for help in a potential war against the USA. In return, Mexico would be allowed to take land from the USA. After being intercepted, the telegram was shown to President Woodrow Wilson.
- Money: Over the years 1914-1917, America had lent a considerable amount of money to Britain and France. They needed to make sure Britain and France won so that they could get all those loans back!



Impact of America:

- American troops arrived slowly, but to great effect:
 - o 85,000 initially as part of the AEF (American Expeditionary Force)
 - o 175,000 by January 1918
 - o 584,000 by June 1918.
 - o After this point, there were approximately 10,000 American troops arriving every day.
 - o This had a massive impact on the morale of British and French forces.

Task A: Rank the four reasons for America's entrance into the war and explain your reasoning.

1. I think the most important reason for America entering the war was
because
2. I think the second most important reason for America entering the war was
because
3. I think the third most important reason for America entering the war was
because
4. I think the least important reason for America entering the war was
because

Task B: Complete the table below to consider the impact of America's entrance

Date	Number of American troops in Europe	Size of Impact on forces and why?
Straight after declaration of war		
January 1918		
June 1918		

July-November 1918		

Task 12: The Russian Revolutions

Information

There were two Russian Revolutions, one in February 1917, where the Tsar (King) was deposed (kicked out), and another in October 1917, when a Communist government took over.

In March 1918, the new government officially pulled out of the war at the treaty of Brest-Litovsk. At this treaty, it was agreed that Germany would take money, land and lots of resources from Russia.

After this point, German troops began to move west to fight the British and French, now that the Russian problem was over. This led to 500,000 troops moving to the Western Front.

Task: Match the keywords/facts to their definitions

February Revolution 1917

The treaty where Russia pulled out of the war.

October Revolution 1917

The number of German troops going to the Western front

Brest Litovsk

The Tsar (King) of Russia was overthrown.

March 1918

The impact Russia leaving had on Germany

500,000

When Russia became Communist

Raised Morale

Spring Offensive

When Russia pulled out of the war.

Knowing that American troops were arriving, General Ludendorff decided that Germany had to make one last 'all-out' attack to destroy the British and French before Americans arrived. Because he was in charge of it, the Spring Offensive is sometimes called the Ludendorff Offensive. The attack was launched in March 1918, and was very successful at first for a number of reasons:



- Element of surprise: Germany used a short (4 hour) bombardment to catch the British off guard.
- Troops advanced using a carefully calibrated Creeping Barrage
- Stormtroopers: Lightly armoured fast moving troops captured ground quickly, using new weapons like flamethrowers.

However, the attack was eventually stopped for two reasons:

- The German army ran out of supplies - the supply train couldn't keep up!
- Enough American troops arrived to hold the Germans and began to push them back.

Task: Complete the story board below to show how the German's attacked, their initial gains, and how the attack was stopped.

The German method of attack was:	They initially made gains because...	However, eventually they were stopped because...

Task 14: The 100 day offensive

Information

Fought from 8th August to November 1918

General Ferdinand Foch was made 'Supreme Allied Commander' - in control of all forces (the French, American and British). He decided to push the Germans back along the whole front, in the 'Grand Offensive'. His British counterpart (Field Marshall Haig) supported Foch, however he was not given overall command due to a number of mistakes he had made earlier in the war.

The first battle was Amiens, where the Germans were pushed back 7 miles in one day. Eventually the Germans were pushed out of France. The Hindenburg line was broken, which had been the Germans last line of defence. This led to German generals realising that victory was now impossible and many of them started to talk about surrender. This offensive continued until eventually Germany asked for an armistice in November.

Task: Complete the table below

	What was it/What did he do?	What was the impact?
Ferdinand Foch		

100 Days Offensive		

Task 15: The Home Front

By the end of the war, the people in Germany had lost faith and were asking for peace. This was due to a number of reasons:

- Thanks to the British Naval Blockade of Germany, Germany was starving and the people had lost interest in the war. This meant that more and more people began to protest against the war - people were hungry, not interested in fighting!
- The Spring Offensive had cost the German army the last of its strength and resources, meaning it was unable to hold off the continuous attack of the 100 days offensive.
- The American's entering the war had made it seem hopeless as so many more 'enemy' were arriving in Europe each day.
- In Germany itself, political unrest began. Parts of the army stopped obeying orders, and eventually (on November 9th) the Kaiser was forced to abdicate (leave the throne) which left the country without a clear leader.

Task: Complete the sentences below, ranking the four above causes of the end of the war.

1. The most important reason for Germany losing the war was.....
This was because
2. The second most important reason for Germany losing the war was.....
This was because.....
3. The most third important reason for Germany losing the war was.....
This was because.....
4. The least important reason for Germany losing the war was.....
This was because.....

Task 16: Armistice

On 11th November at 11am, the armistice (peace treaty) was signed. This brought an end to the fighting in WWI, the following year the treaty of Versailles was to formally end the war and 'punish' Germany for their actions.

The treaty of Versailles was signed in 1919 and included a number of key points, which we remember as BRAT (Blame, reparations, army, territory).

- Blame refers to the fact that Germany had to accept blame for the war. This angered many Germans who felt it was not only their fault.
- Reparations - this is for the money that Germany had to pay the victorious countries in order to help 'repair' them.
- Army - This refers to the fact that Germany's army was to be limited to 100,000 men, and it was not allowed any Navy or Airforce.
- Territory - this refers to the land that was taken away from Germany, some given to France, some to Poland and some to Czechoslovakia.

Ultimately, it was the harsh nature of the treaty of Versailles which would lead to WWII 20 years later.

Task: Complete the table to explain what BRAT means.

	What does it mean and refer to?
B	
R	

A	
T	

Task 17: Exam Style Questions

There are four question styles for the WWI Unit.

On the following pages, you will find a number of practice questions, followed by guidance on how to answer each one.

Q1:

- Source A supports the United States joining the First World War. How do you know? Explain your answer using Source A and your contextual knowledge. **4 marks** (use the source below)

Source A

President Woodrow Wilson, in a speech to the US Congress made on 2 April 1917.

Property can be paid for; the lives of peaceful and innocent people cannot be. The present German submarine warfare is a warfare against mankind. The German policy has swept every restriction aside. Neutrality is no longer possible or desirable where the peace of the world is involved.

We do not act for selfish reasons. We desire no conquest. The world must be made safe for democracy. We shall fight for the things which we care deeply about.

- Source A opposes Kaiser Wilhelm II. How do you know? Explain your answer using **Source A** and your contextual knowledge. **4 marks** (use the source below)

Source A A British postcard cartoon of Kaiser Wilhelm produced in late 1914.



Q2:

- How useful are sources B and C to a historian studying the Battle of the Somme? Explain your answer using Sources B and C and your contextual knowledge 12 marks

Source B

A drawing published in 'The Illustrated London News' on 27 July 1916. It showed the East Surrey Regiment advancing into battle on 1 July 1916.



Source C

From a report completed in July 1916 containing the evidence of two front line officers. They were giving evidence to an army inquiry after their Division had been accused of 'lacking courage' on the first day of the Battle of the Somme.

Captain Kerr: 'the smoke had at that time [8.10 am] practically disappeared and the enemy's trenches and wire were plainly visible – my men were shot down as soon as they showed themselves and I was unable to get forward beyond 70 or 80 yards'.

Lieutenant Auden: 'I was in the third wave of the attack and from what I saw I don't think the wire had been successfully cut by the artillery as the posts were all standing and the grass in which the wire was standing was not destroyed. There was a heap of British dead and wounded in one small gap in the wire'.

- How useful are sources B and C to a historian studying opinions in Austria about Serbia? Explain your answer using **Sources B and C** and your contextual knowledge. **12 marks**

Source B

An Austro-Hungarian postcard produced in 1914 after the assassination of Archduke Franz Ferdinand in Sarajevo.

The fist represents Austria-Hungary, while the writing says 'Serbia must die'.



Source C

From advice given by Conrad von Hotzendorf, the leader of the Austro-Hungarian armed forces, to the Austro-Hungarian government after the assassination of Archduke Franz Ferdinand in 1914.

This is not the crime of a single fanatic; the assassination is Serbia's declaration of war on Austria-Hungary. If we miss this chance, Austria-Hungary will break up. We must wage war to prevent this. To wait any longer means a diminishing of our chances – there must be a final and fundamental reckoning with the Serbs. It will be a hopeless fight – nevertheless it must be waged.

Q3

- Write an account of how events following the Ludendorff Offensive became a crisis for both sides during the Spring of 1918. **8 marks**

- Write an account of how events in Morocco became an international crisis in 1905 and 1906 **8 marks**
- Write an account of how the assassination of Franz Ferdinand led to the start of the first World War **8 marks**
- Write an account of how the Battle of the Somme became a disaster for the British **8 marks**

Q4

- 'The actions of Austria Hungary were the main reason for the start of the First World War' How far do you agree with this statement? Explain your answer.
16 marks + 4 SPaG
- 'The war at sea was the main reason for Germany's defeat in the First World War' How far do you agree with this statement? Explain your answer.
16 marks + 4 SPaG
- 'Tanks were the wonder weapon which won the allies' How far do you agree with this statement? Explain your answer. **16 marks + 4 SPaG.**

Q1. Source Question - How do you know?

Where will I find this question type?

PAPER 1, Section B, Question 1:

- eg. Source A supports the United States joining the First World War. How do you know?
- Eg. Source A opposes Kaiser Wilhelm II. How do you know?
- You will be given a primary source with a statement about it, saying that it either supports or opposes something.
- You need to describe the source and explain how it links to supporting or opposing.
- You need to link it to your knowledge about the topic, and around the source.
- You **must** pick out specific ideas from the source to demonstrate support or opposition.



Structure:

D Describe the source

E Explain how this supports OR opposes (depending on the statement)

L Link this to your own knowledge about the source topic and/or the time it was made (eg. What was happening at that time?)

Mark Scheme:

Level 2: (3-4 marks)

- Specific analysis of the source
- Supported by specific factual knowledge
- Some consideration of why the
- Features of the source are identified and linked to support/opposition.
- Linked to some simple factual knowledge.

Model plan:

Arrogant stance, 'the world is mine' - power hungry



'Dream' - sarcastic, won't happen

Other leaders = slaves

Link to: 'Weltpolitik' - Kaiser's desire for more world influence.

Keywords/Phrases:

This is demonstrated by...

This shows opposition/support because...

Q2. Source Question - How useful?

Where will I find this question type?

PAPER 1, Section B, Question 2

- How useful are sources B and C to a historian studying the battle of the Somme?
- How useful are Sources B and C to a historian studying opinions about Austria and Serbia?

Guidance

- You will be given two primary sources
- You need to think about two things; how much accurate information it gives you and how reliable that information is (TAP).
- You must compare and contrast the sources based on how useful they are.
- Remember no source is 100% useful or useless - consider, is it telling the full story? Is it biased towards one side?



Structure: for each source =

- **Content** - how useful? **Must** include quote or specific part of source.

T T - Time, when was it written, what had happened? How is this useful?

A A - Author - who wrote it? Are they biased in one way or the other?

P P - Purpose - why was it written? Does this make it useful?

- **Link** - how does it compare to the other source?

Mark Scheme:

Level 4: (10-12 marks)

- Complex analysis of content and provenance (TAP)
- Linking and comparing the sources

Level 3: (7-9 marks)

- Analysis of content and provenance of both sources (TAP)
- Specific parts of sources examined.

Level 2: (4-6 marks)

- Analysis of either content OR
- Some basic inferences about one or both sources.
- Must be relevant to the question

Model plan: (for each source)

	Values	Limitations
Content		
Time		
Author		
Purpose		

Keywords/Phrases:

- | | |
|--------------|------------------|
| - TAP | - Accurate |
| - Reliable | - Useful |
| - Unreliable | - Because |
| - Limited | - Biased against |
| | - Biased towards |

Q3: Write an account

Where will I find this question type?

PAPER 1, Section B, Question 3.

- Write an account of how events in Morocco became an international crisis in 1905 and 1906.
- Write an account of how events following the Ludendorff Offensive became a crisis

Guidance

- This question is focussed on cause and consequence.
- You need to include events in **chronological** order that link to the question.
- You **must** explain how one event resulted in the development of the next.
- Be careful not to write a story! Explain how events are linked - analyse don't tell.



Structure: 2x PEEL

- P** Point:
The first event/development was...
- E** Evidence:
For example/Such as...
- E** Explanation:
This led to/Consequently/this resulted
- L** Link:
Therefore this developed into...

Mark Scheme:

Level 4: (7-8 marks)

- Provides a range of specific knowledge with detail
- Details are related to analysis of how/why tension was created

Level 3: (5-6 marks)

- Clear sequencing of events supported by factual knowledge.
- At least one stage has analysis of why this led to tension.

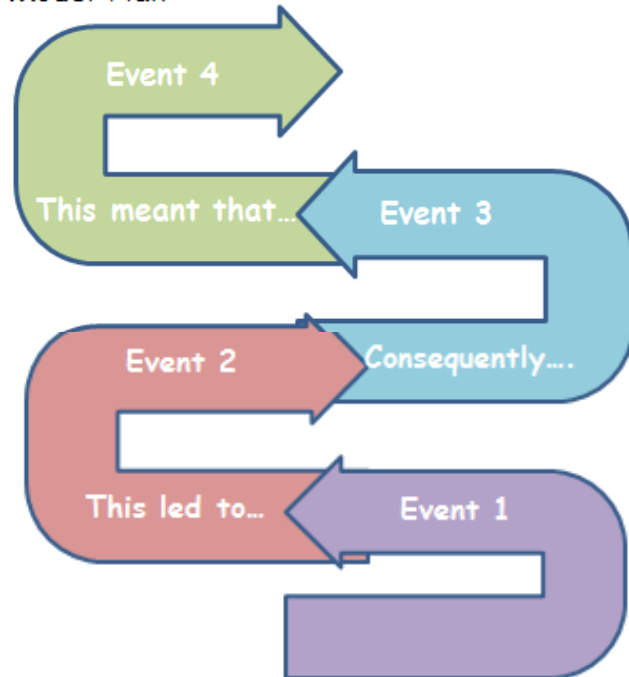
Level 2: (3-4 marks)

- Simple understanding of sequencing

Level 1: (1-2 marks)

- Some causes/consequences identified.

Model Plan:



Keywords/Phrases:

- This led to
- Consequently
- This resulted in
- This developed into

Q4: How far do you agree?

Guidance

- You will be given a statement and asked to give your opinion on whether you agree with it.
- You **must** talk about the statement, and 2 other factors from **your knowledge**, comparing their importance.
- You **must** use evidence to support your opinions.
- You **must** link your argument back to agreeing or disagreeing with the statement.

SPaG

- You will be marked on your use of English and specialist key terms
- Spend time to ensure spelling and grammar are correct on this question!



Structure: 3x PEEL + Conclusion

- P** Point: ... was a significant factor because.../Another important factor was...
 - E** Evidence: This is evident from...
 - E** Explanation: This demonstrates that it was significant because...
 - L** Link: This is more/less important than... because...
- (X3) - statement factor +2**
- C** Conclusion: Overall the statement is correct/incorrect because...

Where will I find this question type?

PAPER 1, Section B, Question 4.

- 'The war at sea was the main reason for Germany's defeat in the First World War.'
How far do you agree?
- 'The actions of Austria-Hungary were the

Mark Scheme:

Level 4: (13-16 marks)

- Clear explanation of stated factor and 2 others using specific evidence
- Sustained judgement throughout with well-reasoned evaluation
- Consideration of the relationship between factors.

Level 3: (9-12 marks)

- Explanation of stated factor and 2 others using specific evidence
- Logical sustained judgement.

Level 2: (5-8 marks)

- Simple evaluation using factor and 1 other.

Level 1: (1-4 marks)

- Basic explanation of 1 or more factors.

Model Plan:

Factor	Relevance	Evidence	Importance
Factor in Statement			/10
Other factor 1			/10
Other factor 2			/10

GEOGRAPHY

Use the information that follows to fill in the keyword bank. Then, answer the practice exam questions at the end of this section.



Revision Guide: Hazards

Section 3.1 – Natural Hazards

Topic	Key ideas	RAG Coding		
Natural Hazards	I can explain why natural hazards pose major risks to people and property.			
Tectonic Hazards	I can explain how earthquakes and volcanoes are the results of physical processes.			
	I can explain why the effects of and responses to tectonic hazards vary between areas of contrasting levels of wealth.			
	I can explain how management can reduce the effects of tectonic hazards.			

Lesson Number	Lesson Topic
1	What are natural hazards?
2	How do convection currents cause plates to move?
3	What is a constructive and destructive plate boundary?
4	What is a conservative plate boundary?
5	How are tectonic hazards globally distributed?
6	Sichuan earthquake 2008 – What were the causes, effects and responses?
7	Philippine earthquake 2013 - What were the causes, effects and responses?
8	How does the global atmospheric circulation help to determine patterns of weather and climate?
9	Where do tropical storms occur?
10	How do tropical storms form?
11	Typhoon Haiyan 2013 - What were the causes, effects and responses?
12	How can we reduce the impact of tropical storms by using the 3 P's?
13	What extreme weather events occur in the UK?
14	Cumbria Floods 2015 - What were the causes, effects and responses?

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15	What is the evidence that weather is becoming more extreme?
16	What is the evidence for climate change?
17	What are the natural causes of climate change?
18	What are the human causes of climate change?
19	What will be the impacts of climate change?
20	How can we mitigate climate change?
21	How can we adapt to climate change?

Keyword List

Keyword	Definition
Hazard risk	
Natural hazard	
Tectonic Plate	
Conservative plate margin	
Plate margin	
Constructive plate margin	
Destructive plate margin	
Earthquake	
Immediate Responses	
Long – term responses	
Monitoring	
Planning	
Predicting	
Management strategies	
Primary effects	
Secondary effects	
Volcano	
Economic impact	
Environmental impact	
Social impact	
Extreme weather	
Global	

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atmospheric circulation	
Tropical storm	
Climate change	
Mitigation	
Orbital changes	
Quaternary period	
Adaptation	

Content

Lesson 1: What are natural hazards?

- A **natural hazard** is a natural event that threatens people or has the potential to cause damage, destruction and death.

Factors affecting natural hazard risk:

- **Magnitude** - the size of the event massively affects the impact it has
- **Frequency** – this is how often the hazard occurs. The more often a hazard occurs generally the more prepared people are, and the more used to coping they are.
- **Population density and distribution** – this is the number of people in an area and where they are. Generally, the greater the number of people in an area, the greater the potential for disaster.
- **Level of development of the place (HIC/LIC)** - this determines how much money is available to prepare for the event in advance, and also determines how the country responds after the event, wealthy places tend to respond quicker.

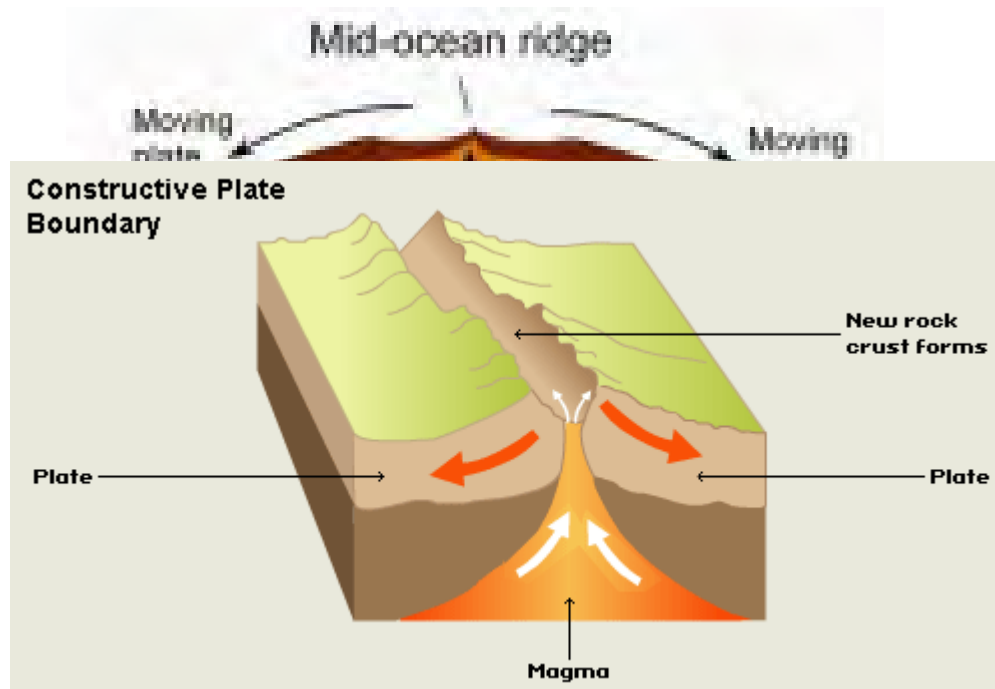
Lesson 2: How do convection currents cause plates to move?

- **Convection currents** – currents within the mantle that cause tectonic plates to move

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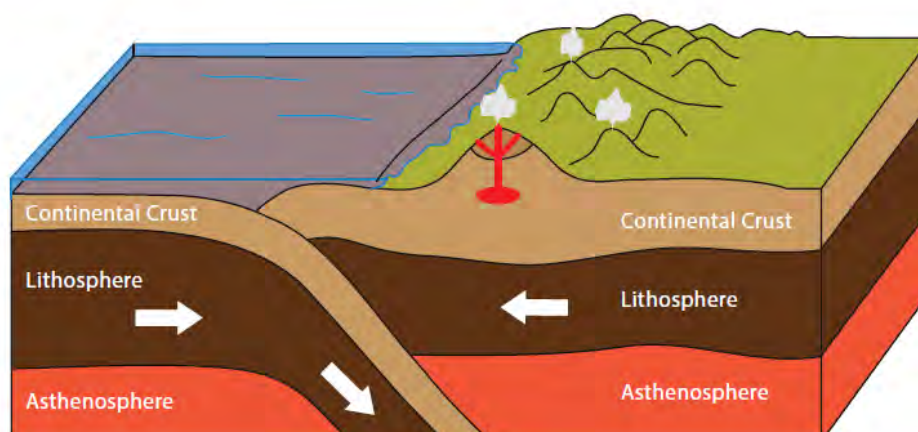
The heat from the core causes the mantle to be heated at its base. The hot rock rises gradually towards the crust. As it rises, it moves further away from its heat source at the core and starts to cool down. When it reaches the crust, it is forced out sideways because it cannot easily pass through the solid rock above it. It continues to cool and as it cools, it begins to sink back down towards the core.

Lesson 3: What is a constructive and destructive plate boundary?



- **Constructive boundary** - occurs when plates move apart, volcanoes are formed as magma wells up to fill the gap, and eventually new crust is formed. An example of a constructive plate boundary is the mid-Atlantic Ridge.
- **Destructive boundary** – occurs when oceanic and continental plates move

Destructive Plate Figure

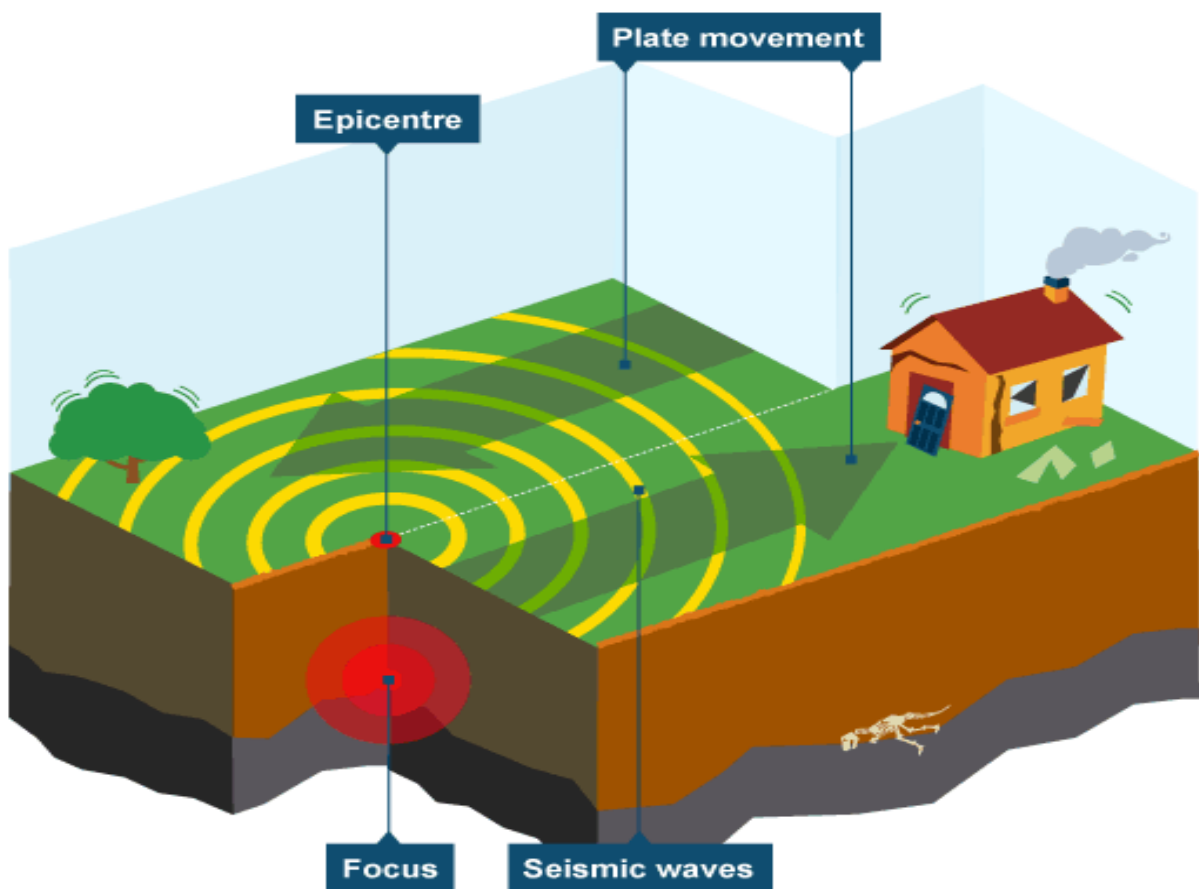


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together. The oceanic plate is forced under the lighter continental plate. Friction causes melting of the oceanic plate and may trigger earthquakes. Magma rises up through cracks and erupts onto the surface (volcano). An example of a destructive plate boundary is where the Nazca plate is forced under the South American Plate.

Lesson 4: What is a conservative plate boundary?

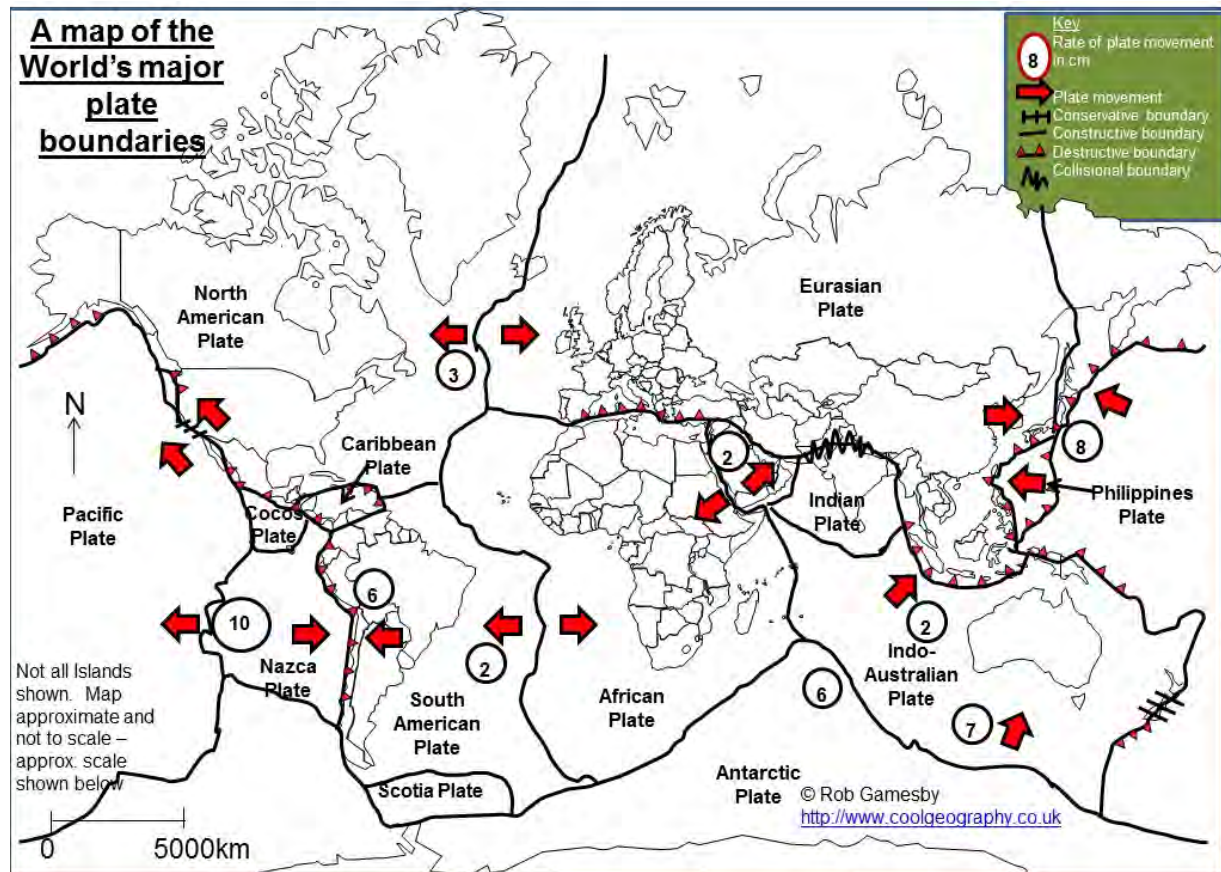
- **Conservative boundary** - occurs where plates slide past each other in opposite directions, or in the same direction but at different speeds. Friction is eventually overcome and the plates slip past in a sudden movement. The shockwaves created produce an earthquake. This occurs at the San Andreas Fault in California.



Lesson 5: How are tectonic hazards globally distributed?

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Plate tectonics cause earthquakes and volcanoes. The point where two plates meet is called a plate boundary. Earthquakes and volcanoes are most likely to occur either on or near plate boundaries.



Lesson 6: Sichuan earthquake 2008 – What were the causes, effects and responses?

CAUSES	Sichuan is positioned close to the collision zone between the Eurasian plate and Indian plate	
	These plates became temporarily stuck, causing a build-up of pressure	
EFFECTS	The pressure built up until it was released with a sudden jolt along a major fault	
	This slippage along the major fault caused the earthquake.	
EFFECTS	Primary effects	Secondary effects
	87,150 people killed	4,800,000 people left homeless

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	<p>1.5 million houses destroyed</p> <p>Schools destroyed</p> <p>Farms destroyed</p> <p>Two chemical plants destroyed</p> <p>21 million buildings destroyed</p>	<p>\$137.5 billion money spent on rebuilding the affected area</p> <p>Crops destroyed</p> <p>Areas were cut off by landslides</p>
RESPONSES	Effective Responses	Ineffective
	<p>Disease outbreaks were avoided</p> <p>Medical services were restored quickly</p> <p>45,000 medical workers contributed to care following the earthquake</p> <p>Populations in danger from flooding or landslides were safely relocated</p> <p>14 minutes after the earthquake the Chinese government deployed</p> <p>By 2012, 99% of the destroyed buildings had been rebuilt</p>	<p>Little psychological support was provided, and the effects of trauma are ongoing</p> <p>Insufficient number of tents were provided</p>

Lesson 7: Philippine earthquake 2013 - What were the causes, effects and responses?

CAUSES	<p>7.2 Richter scale</p> <p>The energy released was enough to equal 32 atomic bombs</p> <p>Focus depth – 33km</p>	
EFFECTS	Primary effects	Secondary effects
	<p>222 were reported dead</p> <p>976 people were injured</p>	<p>One in every five households in Bohol had electrical power</p>

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	<p>More than 73,000 structures were damaged, of which about 14,500 were totally destroyed</p> <p>Damaged roads and bridges, schools and hospitals, offices, houses and airports</p>	<p>disruption a week after the earthquake hit</p> <p>Lack of safe drinking water after the quake lead to cases of diarrhea</p> <p>Food supply was also disrupted with many markets unable to operate a week after the quake.</p> <p>Aftershocks forced the population to take residence in makeshift shelters, afraid to go inside weakened buildings.</p> <p>Landslides</p>
RESPONSES	Short Term Responses	Long Term Responses

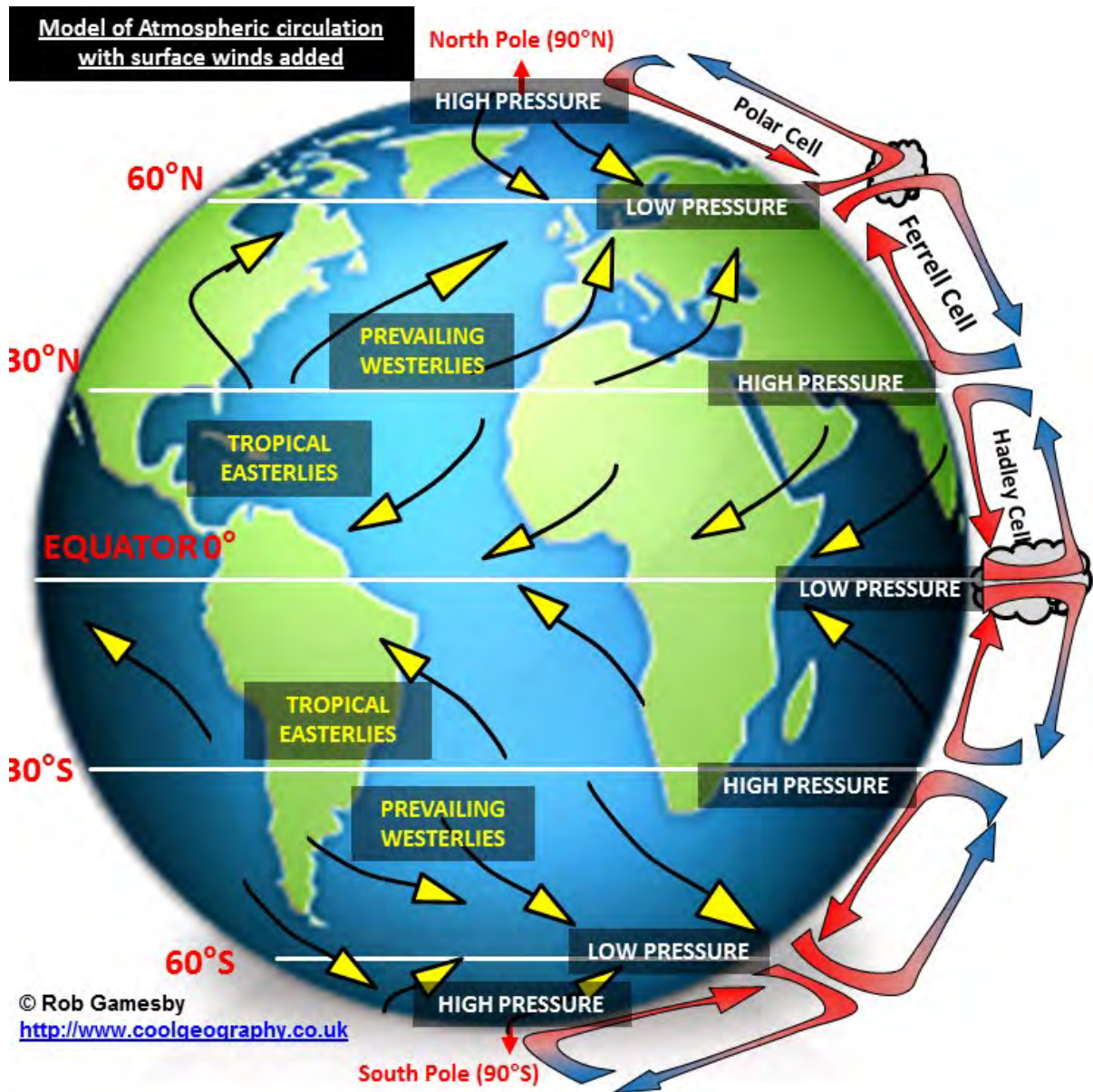
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	<p>Appealed for \$46.8 million to meet the needs of the victims of the Bohol earthquake. By April 2014 only 40% of this target had been met.</p> <p>Provided emergency shelter for 344,000 displaced and homeless people.</p> <p>35,000 families provided with plastic sheeting or tents, some tools and fixings and basic non-food items.</p> <p>Temporary learning spaces set up to restore children's learning environment.</p> <p>2,404 Water kits distributed</p> <p>35 medical teams deployed</p> <p>300,000 family food packs distributed</p> <p>Clean water has been provided to 60,000 households.</p>	<p>Rubble and debris cleared through cash-for-work activities; reducing health risks while providing income to affected people and stimulating the local economy.</p> <p>Teach disaster risk reduction-related knowledge, skills and system in schools, and in the wider community.</p> <p>Rice, corn and assorted vegetable seeds and sets of garden tools are distributed to help restore the agriculture-based livelihoods to around 17,500 households.</p> <p>Psychological first aid conducted for 480 teachers in Bohol. Selected teachers are to be trained to serve other affected teachers and students.</p>
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Lesson 8: How does the global atmospheric circulation help to determine patterns of weather and climate?

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The Earth's atmosphere is in constant motion and is driven by the energy we receive from the sun. The air moving around the globe does so because we get more energy in tropical areas and less at the poles. Air movements or winds help to balance this out. They do so according to the model below.



The cells are called the Hadley, Ferrel and Polar cells, giving 6 in total (3 in either hemisphere).

Where air is sinking in the model this gives high pressure. These areas coincide with many of the earth's deserts and dry areas as the air is sinking so little condensation occurs as the air warms.

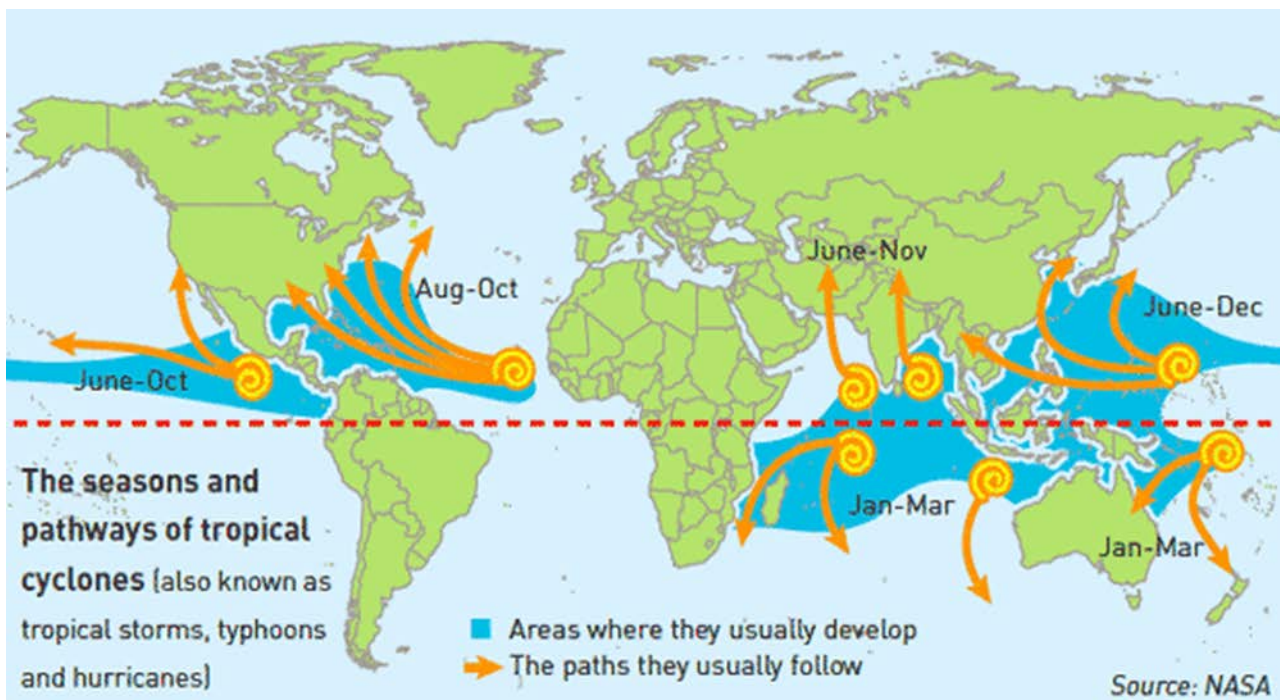
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Where air is rising in the model this gives low pressure. These areas coincide with wetter areas with lush vegetation as air cools as it rises, allowing water vapour to condense to droplets allowing more rain.

Winds occur because air molecules move from areas of high pressure to areas of low pressure.

Lesson 9: Where do tropical storms occur?

- Tropical Storm - An area of low pressure with winds moving in a spiral around the calm central point called the eye of the storm. Winds are powerful and rainfall is heavy.



They are known by many names, including hurricanes (North America), cyclones (India) and typhoons (Japan and East Asia).

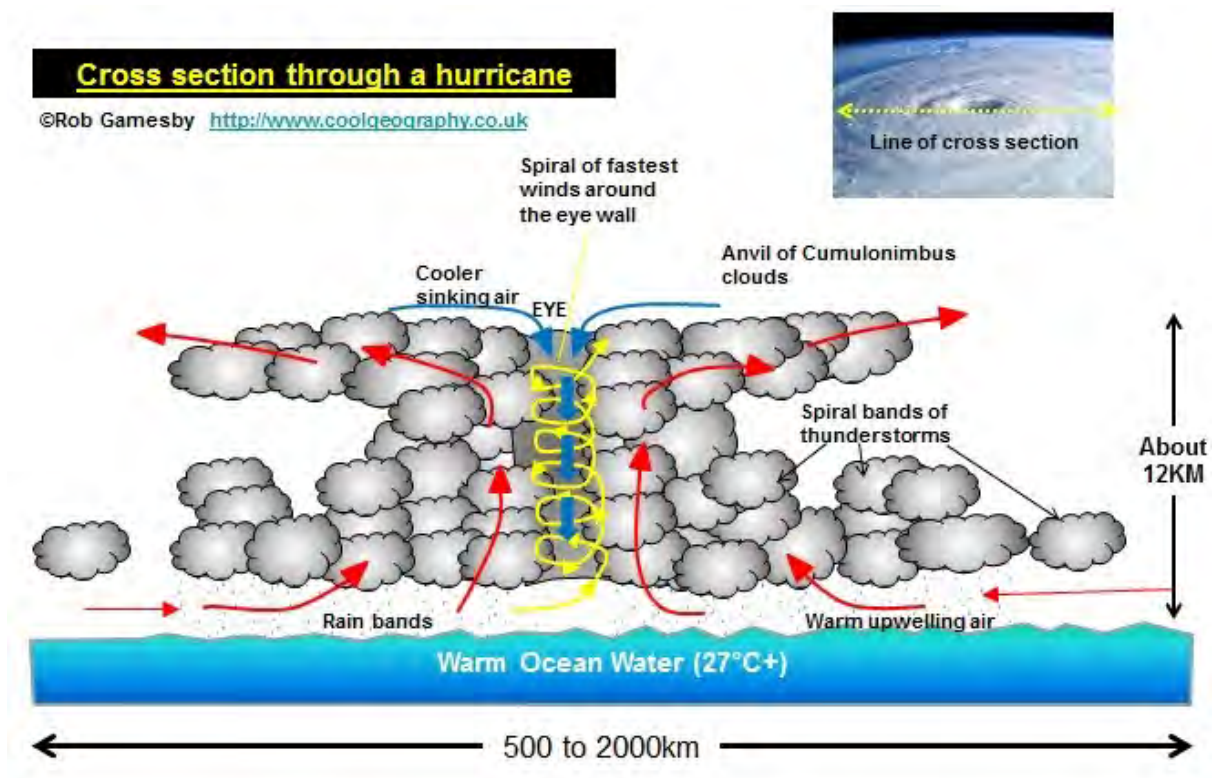
Lesson 10: How do tropical storms form?

Firstly, the water has to be warm (at least 27°C). This is why they only occur in tropical places. The warm water rises (evaporates), which means there is low air pressure. At the same time, the evaporated sea air will start to condense to make storm clouds which lead to heavy rain.

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The low air pressure allows more windy weather to rush in. When the strong winds reach 75mph, it is officially called a tropical storm. The strong winds will make the storm start to spin, due to the spinning of the earth (known as the Coriolis Effect).

The storm will die out when it reaches land because can no longer get energy from the sea.



Lesson 11 – Typhoon Haiyan 2013 - What were the causes, effects and responses?

CAUSES	The Philippines sits in an area of seasonally warm ocean water (sea temperatures over 27°C) and has enough Coriolis Force to create rotating winds over the ocean's surface.	
EFFECTS	Primary effects	Secondary effects
	Killed approximately 7000 people Over 14 million people were affected 30000 fishing boats destroyed	A storm surge – a wall of water – that was 25 feet high in some areas Flooding caused landslides Looting and violence broke out in Tacloban

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	<p>550,000 houses destroyed and an additional 580,000 houses were severely damaged</p> <p>Tacloban airport terminal building was completely destroyed</p>	
RESPONSES	Short Term Responses	Long Term Responses
	<p>International government and aid agencies responded quickly</p> <p>Over 1 200 evacuation centers set up to help homeless</p> <p>Field hospitals set up to help the injured</p> <p>UK government sent shelter kits to provide emergency shelter for families</p>	<p>Rebuilding of roads, bridges, and airport</p> <p>'Cash for work' programs – people paid to help clear debris and rebuild the city</p> <p>Rice farming and fishing quickly reestablished</p> <p>Homes rebuilt away from areas prone to flooding</p>

Lesson 12 – How can we reduce the impact of tropical storms by using the 3 P's?

- Prediction - Forecasting where and when a tropical storm will occur
 - Satellite imagery
 - Previous storm data

- Planning – raising individual and community awareness about the potential dangers and how to respond
 - Evacuation routes
 - Warning systems (alarm/text messages/social media alerts)

- Protection - Actions taken before a hazard strikes to reduce its impact, such as educating people or improving building design
 - Storm drains to prevent flooding
 - Windows, doors and roofs reinforced to strengthen buildings and withstand strong winds

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Lesson 13 – What extreme weather events occur in the UK?

The UK's weather appears to be becoming more extreme. Temperatures seem to be following the global pattern and continually and slowly rising. The ten hottest years on record have all come within the last 20 years. In addition, 6 of 10 wettest years on record have come in the last 20 years. For example,

- 2003 – The UK was affected by a summer anticyclone which brought a period of settled weather. This allowed a heat wave to develop that gave the highest ever recorded temperatures of 38.5°C in Kent. The heatwave was responsible for 2,000 deaths in the UK.
- 2010 - The winter big freeze; huge amounts of snowfall paralysed the country and brought roads to a standstill, closed schools and put enormous strain on the NHS.

Lesson 14 – Cumbria Floods 2015 - What were the causes, effects and responses?

CAUSES	High rainfall Fell on already saturated ground Steep hill slopes Town built on floodplain		
EFFECTS	Social Effects 43,000 homes are suffering from power cuts 5,200 homes have been affected by flooding More than 1,000 people evacuated Road and rail closures 40 schools closed Appointments at NHS hospitals were cancelled	Economic Effects £500m of damage	Environmental effects Thousands of trees which once lined rivers in the area affected were ripped from river banks. Landslides occurred in many places as the result of heavy rainfall and the land becoming saturated.

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			Millions of tons of sediment was transported by the river and deposited on floodplains
RESPONSES	Short Term Responses	Long Term Responses	
	<p>£500 for each household affected</p> <p>Invest £2.3 billion in flood defences</p> <p>200 military personnel and supporting assets deployed</p> <p>Royal Engineers were deployed to help in the emergency response and recovery</p>	<p>Farmers affected by the recent flooding given up to £20,000 to help restore land</p> <p>Provide £40 million of funding to help repair flood-damaged roads and bridges.</p> <p>£400,000 to help people repair sports pitches and facilities</p>	

Lesson 15 – What is the evidence that weather is becoming more extreme?

Warming world = greater rates of evaporation from oceans = more water vapour that can condense into rain/snow

Evidence UK weather is getting worse:

- 2014 – wettest weather in 250 years, leading to severe flooding
- December 2015 was the wettest month ever recorded
- Major flood events increased since 1960s e.g. Cumbria 2015
- 2003 – a heat wave that gave the highest ever recorded temperatures of 38.5°C in Kent
- 2010 - The winter big freeze; huge amounts of snowfall

Lesson 16 - What is the evidence for climate change?

1. Climate change is a long-term change in the earth's climate, especially a change due to an increase in the average atmospheric temperature.

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There are several sources of evidence for Climate change:

1. Instrumental readings

It has been shown that over the last 100 years, Earth's average surface temperature increased by about 0.8 °C (1.4 °F) and the rate of temperature increase sped up towards the end of that time frame. Scientists are more than 90% certain most of it is caused by human activities which have increased concentrations of greenhouse gases such as deforestation and burning fossil fuels.

2. Retreating glaciers and shrinking ice sheets

The World Glacier monitoring Service collects information every year on the sizes of glaciers around the world. Data shows that glaciers are shrinking significantly all around the world. The Arctic ice sheet has also thinned to half its thickness over the past 30 years, and we have seen the breakup of huge Ice Shelves in Antarctica.

3. Ice cores

Scientists have drilled out a huge core of ice in Antarctica. The air trapped in bubbles in the ice can be analysed and this has shown that the Earth is normally cooler than it is now and that Ice ages are common. It also shows a very strong link between CO₂ concentrations and temperature.

4. Seasons shifting – such as spring arriving earlier

Spring is arriving earlier in the UK. Birds are nesting earlier and bulbs such as daffodils are flowering earlier. The Telegraph reported that spring now arrives 11 days earlier than in the 19th century.

Lesson 17 - What are the natural causes of climate change?

1. Volcanic activity

Volcanic activity can reduce global temperatures because of the dust and ash that goes into the atmosphere and sulphur dioxide that creates aerosols. These volcanic materials reflect incoming radiation back out to space cooling the Earth. The Mount Pinatubo eruption of 1991 resulted in cooling of 0.4 degrees Celsius.

2. Sunspots

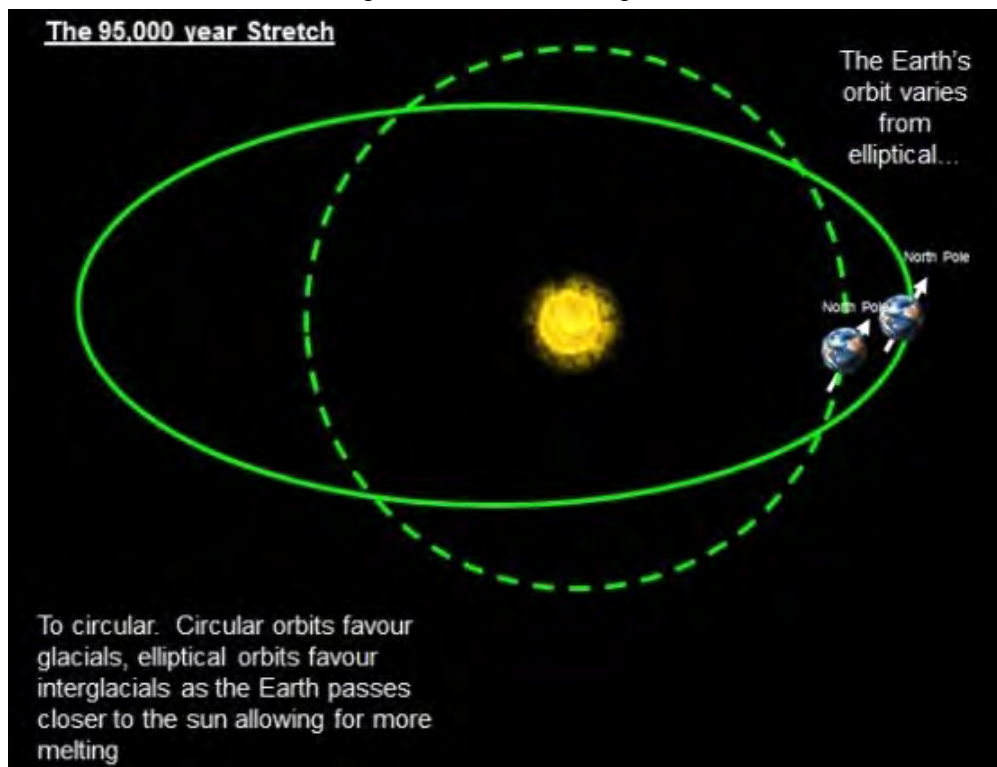
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Sunspots are storms on the sun's surface that are marked by intense magnetic activity and play host to solar flares and hot gassy ejections from the sun. Increased sunspot activity has been noted at times of increased temperatures, and decreased activity in cooler times.

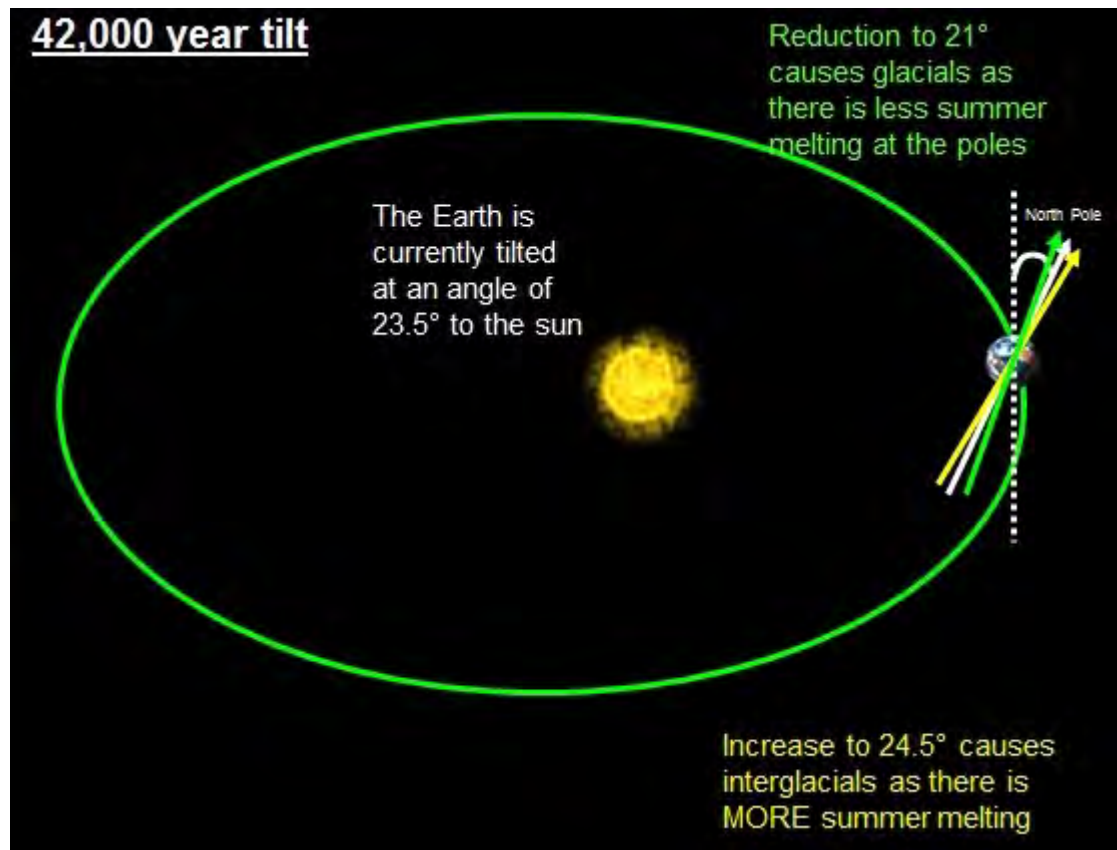
3. Variations in the way the Earth orbits the sun over time

The Earth's journey around the sun changes slowly over time, it does three things that sound like a dance – stretch, tilt and wobble!

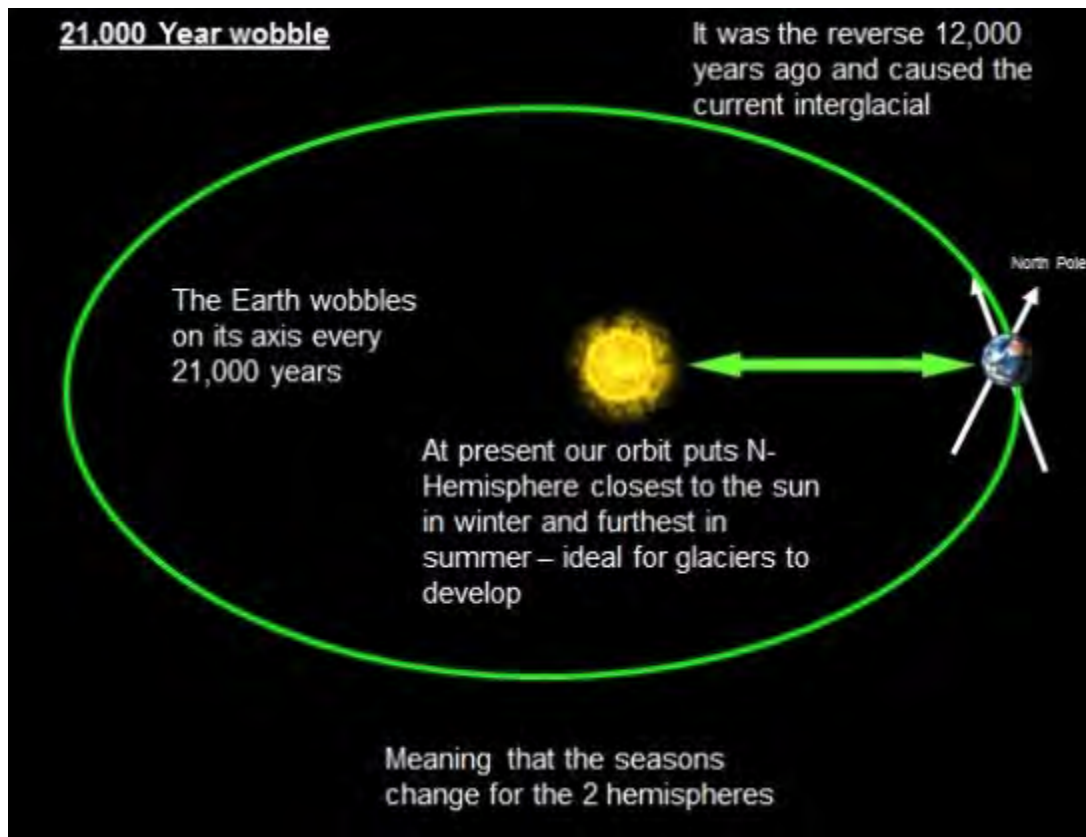
2. The 95,000 year stretch - The Earth's orbit slowly changes from elliptical to circular and back again over a 95,000 year period. Circular orbits favour glacials, elliptical orbits favour interglacials as the Earth passes closer to the sun allowing for more melting



3. The 42,000 year tilt - The tilt of the earth varies slowly over 42,000 year cycles. The Earth is currently tilted at an angle of 23.5° to the sun but it can reduce to 21° causes glacials as there is less summer melting at the poles and increase to 24.5° causes interglacials as there is MORE summer melting



4. The 21,000 year wobble - The Earth wobbles on its axis every 21,000 years meaning that the seasons change for the 2 hemispheres. At present our orbit puts N-Hemisphere closest to the sun in winter and furthest in summer – ideal for glaciers to develop. It was the reverse 12,000 years ago and caused the current interglacial



Lesson 18 - What are the human causes of climate change?

1. Fossil Fuels - We use fossil fuels (including coal, oil and gas) in power stations across the world to generate energy.

Coal is the remains of ancient plants and trees that grew over 200 millions of years ago. Oil and gas is made up of the remains of microscopic plankton. Over millions of years these remains become the carbon-rich coal, oil and gas we can use as fuel.

When fossil fuels are burned they release carbon dioxide into the atmosphere which contributes to global warming. Using fossil fuels to generate energy also releases pollutants into the atmosphere - such as sulphur dioxide.

2. Agriculture - Producing food globally uses a lot of fossil fuels in the production of fertiliser and pesticides, and in the transportation of food. Changing forest cover and marshes to farmland also releases greenhouses gases and removes a greenhouse gas store. Some types

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of agriculture also create a lot of greenhouse gases. Keeping animals in large quantities for meat production or dairy products produces a lot of Methane (CH₄), a potent greenhouse gas. Rice paddies are also known to produce lots of greenhouse gases

3. Deforestation - Forests have a vital role to play in the fight against global warming. Forests absorb and store carbon in their trees and soil. But if forests are cleared or disturbed, this carbon is released as carbon dioxide and other greenhouse gases. Up to a fifth of global greenhouse gas emissions come from deforestation and forest degradation.

Lesson 19 - What will be the impacts of climate change?

1. Agriculture

- Crop yields are expected to decrease for all major world crops
- Agricultural land on the edge of deserts becomes unusable, through the process of desertification.
- Crops could be wiped out in low-lying areas that suffer from flooding. With less crops available on the world market, prices are likely to increase.
- The growing season in some areas will increase. This is a benefit to places such as the UK as more crops could be grown.

2. Sea level changes

- Coastal land is at risk, especially land on deltas.
- Sea defences are under more stress.
- Low-lying land is threatened so the lives of 80 million people across the globe are threatened.

3. Water and ice

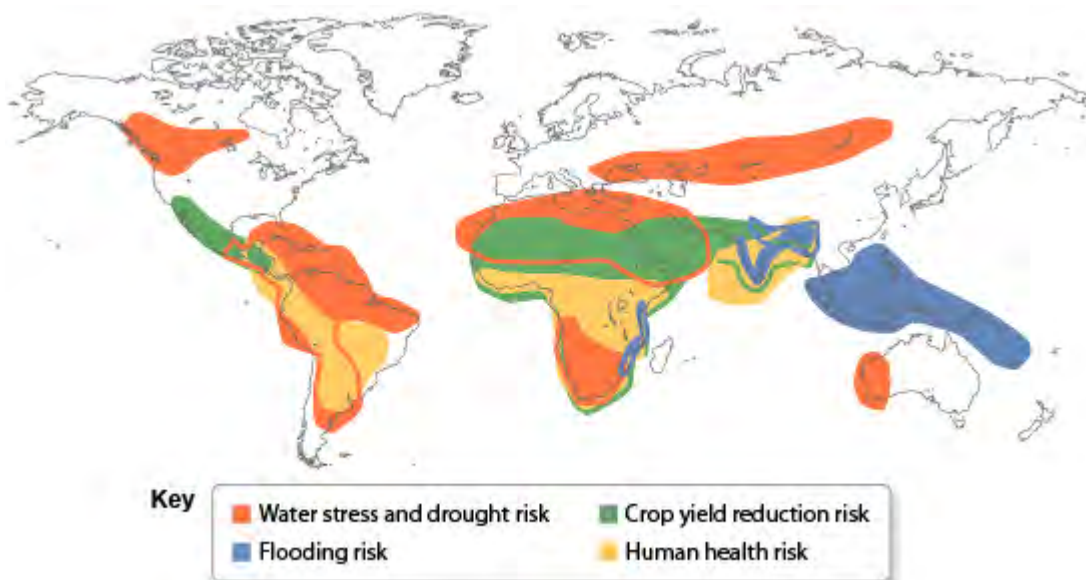
- More mass movement can occur as glaciers melt.
- Communities that use the melt water from glaciers may see this supply decrease. This is especially the case in Asia.
- Economies that rely on skiing as a form of income may suffer as the skiing season is reduced or disappears through lack of snow.
- Locations suffering from water stress will increase in number.

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- Less fresh water will be available in coastal areas as it will mix with sea water, which is salty.

4. Population

- People will migrate from areas suffering drought. Any that remain will be in danger of dying from starvation and lack of water.
- 17 million people in Bangladesh alone will be threatened by flooding.
- As the world population increases, more people will be living in cities located on the coast. More people will be affected by coastal flooding as a result.



Lesson 20 - How can we mitigate climate change?

- Mitigation - Action taken to reduce or eliminate the long-term risk to human life and property from natural hazards, such as building earthquake - proof buildings or making international agreements about carbon reduction targets.

Mitigation Strategies:

1. Alternative energy production - The major current cause of the rise in the World's temperature is that people are reliant on the burning of fossil fuels for producing energy, for heat and for transport. To mitigate against this as a planet we need to reduce the amount of non-renewable fossil fuels that we burn, as these produce carbon dioxide in large quantities

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when burnt. Instead we could look at alternative RENEWABLE forms of energy.

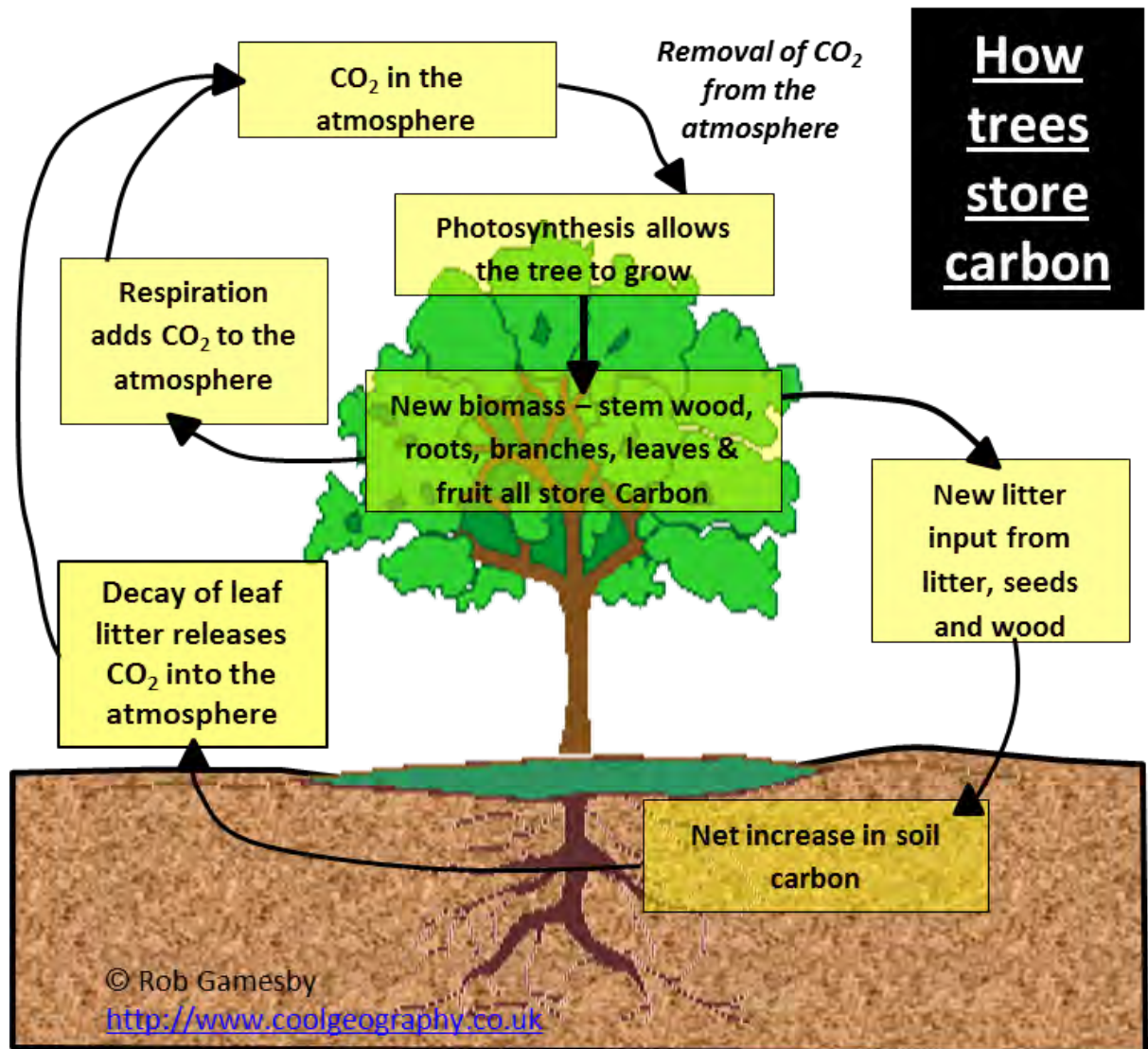
Renewable Energy Source	Facts and description	Advantages	Disadvantages
Wind	Modern windmills, called wind turbines, turn wind energy into electricity. If the turbines are in a group it's called a wind farm.	This is a renewable energy source, that's because we will never run out of wind. The price of wind energy is stable; it doesn't go up and down like the price of coal or oil. The UK gets lots of wind annually	There is some local opposition and concern about noise and impact on landscape. Wind is more expensive than fossil fuels to set up and wind levels fluctuate over time.
Solar Power	Solar power is the conversion of sunlight into electricity. Sunlight can be converted directly into electricity using photovoltaics (PV), or indirectly with concentrated solar power (CSP), which normally focuses the sun's energy to boil water which is then used to provide power	Solar panels give off no pollution; the only pollution produced as a result of solar panels is the manufacturing, transportation and installation. Solar energy produces electricity very quietly & can be used globally. Can be used in remote locations that are not linked to a national grid and batteries allow capture of energy during the day for use at night.	Solar panels cost a lot. Currently, prices of highly efficient solar cells can be above £1000, and most households may need more than one. Solar energy is only able to generate electricity during daylight hours. The weather can affect the efficiency of solar cells.

- Carbon capture - carbon capture is the trapping of the carbon dioxide released when we burn fossil fuels. The UK has good potential for Carbon Capture. The North Sea has gas and oil fields and saline aquifers where we could store CO₂ produced by the UK's gas and coal-fired power plants. The positives of this are that we can reduce our carbon emissions whilst still being able to use cheap fossil fuels to produce our electricity. It has lots of potential for storing CO₂ and will reduce our carbon emissions. The negatives are that it means we remain stuck using a non-renewable

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resource and not all CO₂ can be captured. It is also very expensive to “capture” the carbon.

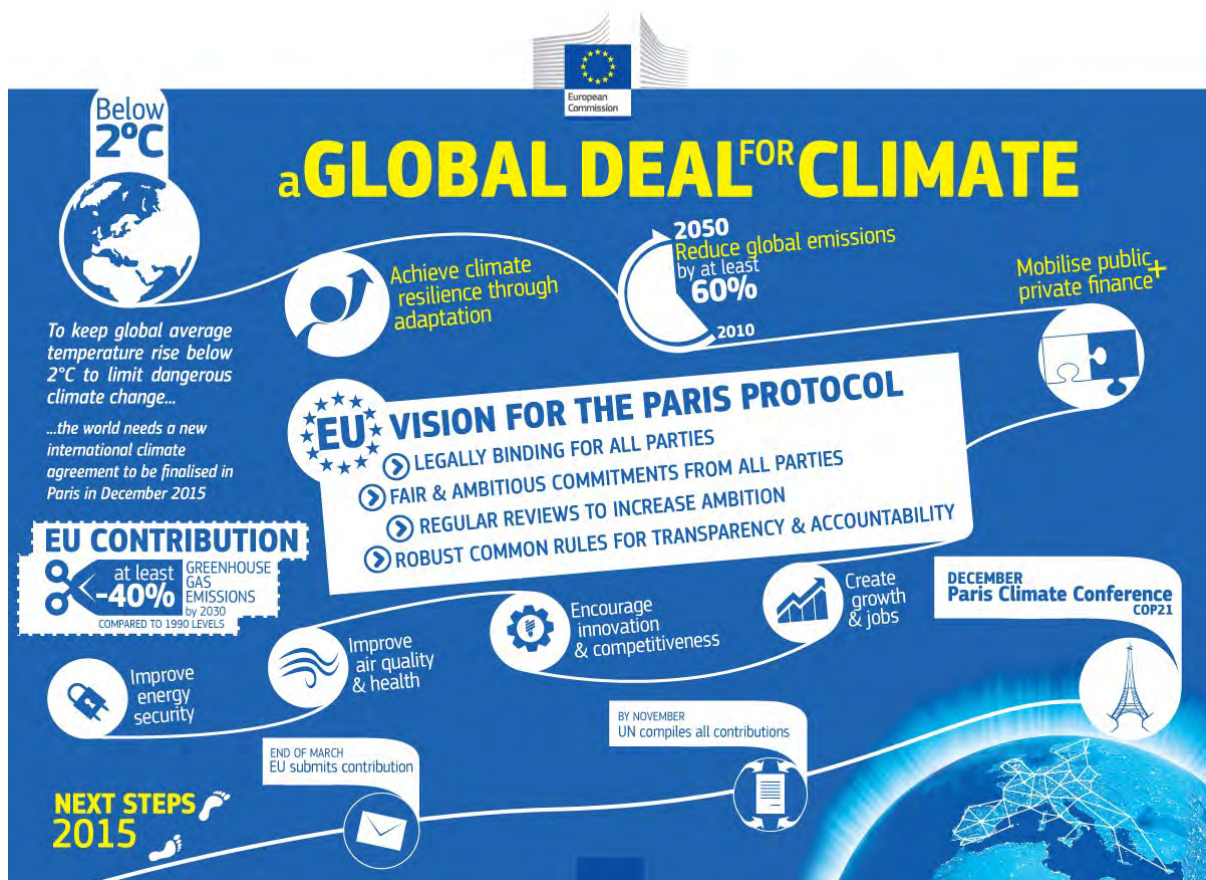
3. Planting trees - A practical way to mitigate climate change is to plant more trees in order to take more carbon out of the atmosphere. This is known as afforestation.



Younger trees absorb carbon dioxide quickly while they are growing, but as a tree ages a steady state is eventually reached, and at this point the amount of carbon absorbed through photosynthesis is similar to that lost through respiration and decay. If trees are harvested carefully near this time in the growth cycle, and new trees are planted or allowed to regenerate, then this can keep the forest as a net “sink” of carbon. Therefore careful woodland management can mean that woodlands are able to take up the maximum amount of carbon possible.

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4. International agreements - Climate change is a global issue, so it needs all countries to work together to try and sort it out. Global warming was identified as an issue that needed sorting out in 1988 when the IPCC (Intergovernmental Panel on Climate Change) was established to assess the "risk of human-induced climate change". The most recent UN climate talks were held in Paris in 2015. It was agreed that the EU would put its current emission-cutting pledges inside the legally-binding Kyoto Protocol, a key demand of developing countries. Most major countries have signed up to the Paris Protocol.



Lesson 21 - How can we adapt to climate change?

- Adaptation -Actions taken to adjust to natural events such as climate change, to reduce potential damage, limit the impacts, take advantage of opportunities, or cope with the consequences.

Ways of adapting to climate change,

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1. Change in agricultural systems - Agriculture (farming) will need to adjust to climate change. There will be positive and negative impacts for agriculture from climate change. In the UK we can expect increased yields for current crops such as wheat, sugar beet and potatoes, better grass yields for feeding livestock and the introduction of new crops and tree species. Certain fish stocks, like plaice, may increase as species move north. However, farmers could experience crop losses due to flooding and the forestry industry could see timber yield and quality reduced by drier weather and spreading pests. Some fish species could shift north, reducing the UK's cod fishery. To adjust farmers and governments will need to consider,
 - Altering the species they farm to the climate of the future
 - Use technology to “harvest” water such as dams and reservoirs and conserve soil moisture in areas where rainfall decreases.
 - Draining water to prevent water logging, erosion, and nutrient leaching where rainfall increases.
 - Altering the timing or location of cropping activities. The South of Britain is increasingly becoming a great vineyard for example.
 - Improving pest, disease, and weed control as these might change location with climate change.

2. Managing water supply - Fresh water is crucial to human survival; we use it for drinking, farming, washing and many other activities. Only 2% of all of the water on planet Earth is fresh, and of that fresh water 70% is locked up as snow and ice. Climate change is expected in the future to,
 - Make water supplies in some parts of the world increasingly scarce in the future. This includes regions in the sub-tropics such as the Sahel region south of the Sahara, where water is already scarce.
 - Make some parts of the world wetter and more humid.
 - Make the air warmer so it can hold more water, which will lead to more and heavier rainfall.
 - Melt land ice and snow more quickly, many millions of people rely upon this as a water source and will be vulnerable if it disappears

The overall effect is likely to be more extreme floods and droughts globally. The IPCC say that many dry regions including the Mediterranean and southern Africa will suffer badly from reduced rainfall and increased evaporation. They estimate that around one billion people in dry regions may

face increasing water scarcity. There are other factors increasing water scarcity,

- Increasing global population
- Increasing demands from farming (agriculture)
- Water pollution limiting supply
- Rising wealth in some countries means a larger number of people living water-intensive lifestyles, including watering of gardens, cleaning cars and using washing machines and dishwashers.

The solutions against possible climate change impacts include many engineering solutions. The common method is reservoirs to store it and pipelines to transfer it. An example of this is the Kielder water transfer scheme in the North east of England. Efforts are also being made to increase water saving, reuse and recycling, and in the UK there is currently major investment into education and water-saving technology by the government and water industry.

3. Reducing risk from rising sea levels - Climate change is causing sea levels to rise. In the UK rising sea levels could hit beaches, low lying land and buildings including tourist attractions and historical monuments, with knock-on impacts for businesses that rely on them. Rising sea levels could also flood large parts of our valuable agricultural land. Flooding costs could rise from the current £1.2 billion a year to between £2.1 billion and £12 billion a year by the 2080s, with issues including insurance industry exposure to UK flood risks, the availability of insurance and provision of mortgages to at-risk properties. To reduce the risk of this we can,

- Abandon areas at most risk and not worth saving economically. Already in the UK homeowners can get a £6000 grant to help with the costs of demolishing their home from Defra if at risk from being destroyed by coastal erosion.
- Put plans in place locally to provide a strategy for long term coastal adaptation to rising sea levels on a local scale.
- Build more costly coastal defences using hard engineering such as sea walls and groynes or soft engineering such as sand dune creation. The Thames Barrier defends central London and would cost £7 billion to replace.

Questions

- Q1.** What is an earthquake? (2)
- Q2.** Explain how convection currents work. (4)
- Q3.** Describe the differences between oceanic and continental crust. (4)
- Q4.** Explain how volcanoes form at constructive plate margins. (4)
- Q5.** Explain why earthquakes occur at destructive plate margins. (4)
- Q6.** Describe how the effects of an earthquake in a richer area of the world are different from the effects of an earthquake in a poorer area of the world.(6)
- Q7.** Study the table below showing the largest and deadliest earthquakes from 2008 to 2012.

	Largest Earthquakes			Deadliest Earthquakes		
Year	Location	Magnitude (Richter Scale)	Number of deaths	Location	Magnitude (Richter Scale)	Number of deaths
2012	Sumatra	8.6	No data	Philippines	6.7	113
2011	Japan	9.0	20 896	Japan	9.0	20 896
2010	Chile	8.8	507	Haiti	7.0	316

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2009	Samoa Islands	8.1	192	Sumatra	7.5	1 117
2008	China	7.9	87 587	China	7.9	87 587

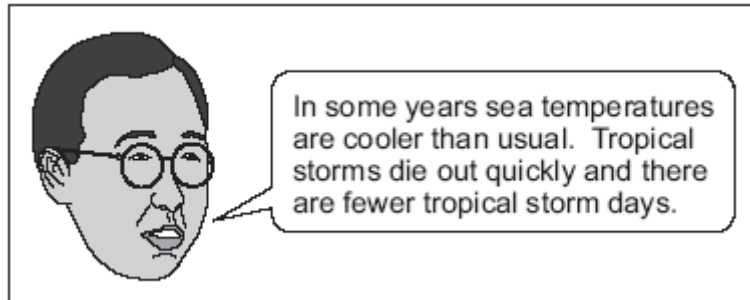
- (a) To what extent is there a relationship between the largest and deadliest earthquakes shown in the table? **(3)**
- (b) Outline **one** reason why the largest earthquakes do not always cause the most deaths. **(2)**

Q8. The figure below shows the total number of tropical storm days between 1980 and 2010.



- (i) Which year had the highest total number of tropical storm days? **(1)**
- (ii) Describe the pattern of tropical storm days between 1980 and 2010 shown in the figure above. **(2)**
- (iii) The figure below gives information about tropical storms.

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In which year could sea temperatures have been cooler than usual?

Use the figure above.

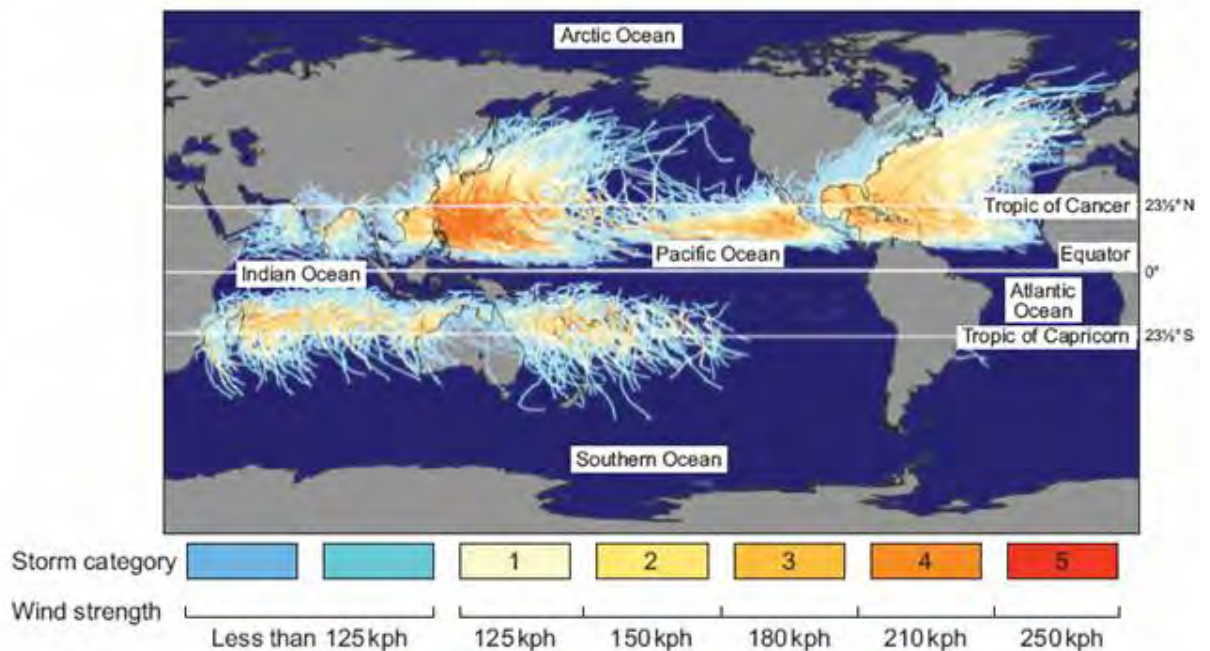
Circle the correct answer. (1)

1993

1998

2001

Q9. The figure below is a map of the world. The map shows the distribution and strength of tropical storms. (4)



Complete the paragraph below.

Choose the **four** correct terms from the list below.

Indian
rthern

30

Equator

no

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Pacific
thern

5

Tropics

sou

Most tropical storms are found between latitudes 10 degrees and

degrees north and south of the _____ .

Tropical storms are more common in the _____ hemisphere.

The greatest number of category five storms happen in the

Ocean.

Q10. Describe the conditions that lead to the formation of tropical revolving storms. (3)

Q11. The figure below describes natural hazards in urban areas in less developed countries.

EARTHQUAKE FLATTENS CAIRO SLUMS	LANDSLIDES DESTROY PARTS OF RIO DE JANEIRO
<p>There was a powerful earthquake in the Egyptian city of Cairo yesterday. Hundreds of people died and thousands of people were injured. The modern, high-rise buildings next to the River Nile were not affected. However, many of the poorer slum areas were badly damaged. In these areas the poorly built, illegal homes collapsed, trapping people under rubble.</p>	<p>After days of heavy rainfall, flooding and landslides have caused devastation in parts of Rio de Janeiro, one of the largest cities in Brazil. In one area a block of flats fell down when floodwater washed away the foundations.</p> <p>Many poor people live in slums built on steep hillsides. The rainfall caused landslides on many of these slopes. Thousands of tons of mud and rocks flowed down hillsides, burying everything.</p> <p>Over a hundred people were killed and thousands of people were made homeless because of the floods.</p>

(i) Suggest **two** reasons why large numbers of people are at risk from natural hazards in urban areas.

Use the figure above to help you. (4)

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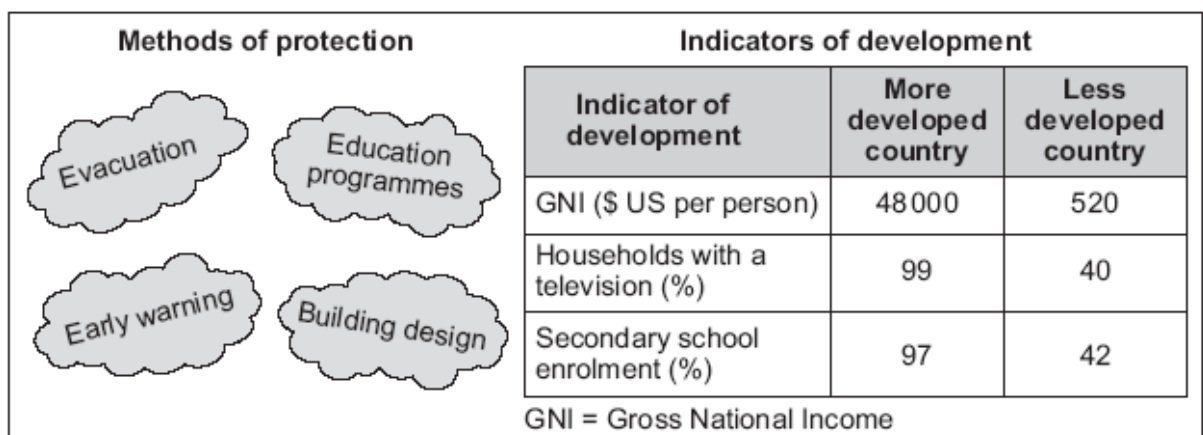
- (ii) Describe the problems that natural hazards cause in urban areas.

Use the figure above and your own knowledge. (6)

- (iii) Explain how the effects of natural hazards in urban areas can be reduced.

Use an example(s) you have studied. (6)

Q12. The figure below shows information about methods of protection from the effects of tropical storms, and indicators of development for two countries.



'Only more developed countries can protect themselves effectively from the damage caused by tropical storms.'

Do you agree?

YES

NO

Give reasons for your choice. Use the figure above and your own knowledge. (6)

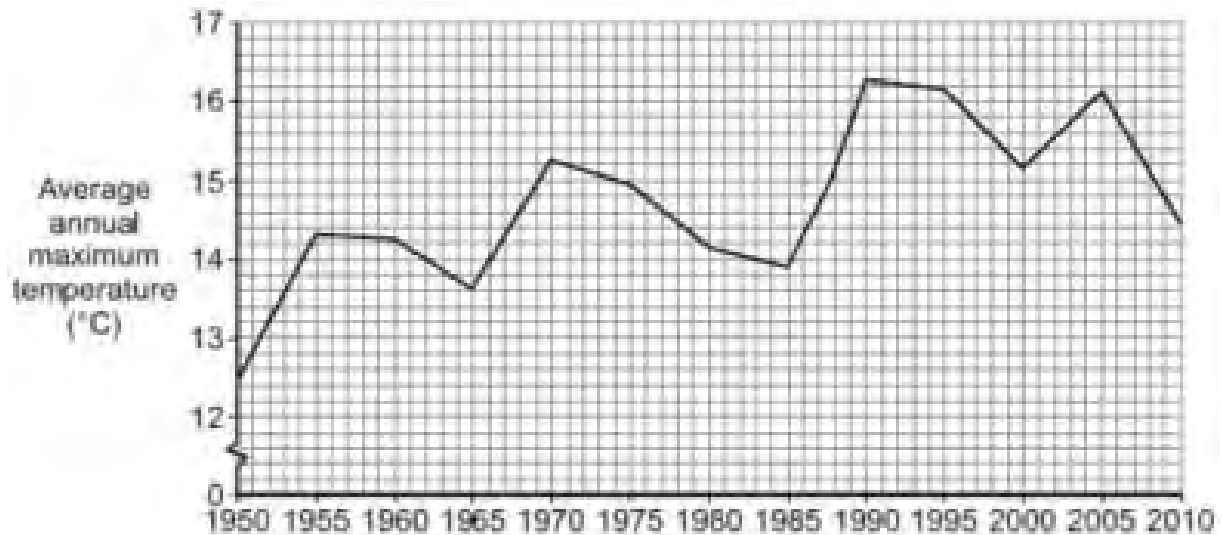
Q13: Describe the characteristics of extreme weather. (3)

Q14. 'UK weather is becoming more extreme.' Discuss. (4)

Q15. Use a case study to describe the effects of flooding. (6)

Q16. Study the figure below, a graph showing average annual maximum temperatures at Heathrow Airport, London from 1950 to 2010. Describe the trends shown in the graph below. (4)

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Q17. What evidence is there to suggest that people are not the only cause of global warming? (4)

Q18. Explain two human causes of climate change. (4)

Q19. Describe the possible environmental consequences of climate change for the UK. (4)

Q20. Describe local responses to the threat of global climate change. (4)

Q21. Rising sea levels are a major consequence of global warming. How may the problem of rising sea levels be managed? (4)

FRENCH

Use the information that follows to either test yourself on key words/phrases for each topic (using the look/cover/check technique) or create flashcards with the Spanish on one side and the English translation on the other. Either test yourself or get someone else to test you. When you feel confident, write a short paragraph about each topic using the vocabulary you have revised.



GCSE FRENCH KNOWLEDGE ORGANISER

DESCRIBING A PHOTO

Sur la photo il y a... (In the photo there is...)

PEOPLE

<i>un homme</i>	a man
<i>une femme</i>	a woman
<i>un garçon</i>	a boy
<i>une fille</i>	a girl
<i>des jeunes</i>	some young people
<i>il est vieux</i>	he is old
<i>elle est vieille</i>	she is old
<i>grande</i>	tall
<i>petite</i>	short
<i>jolie</i>	pretty/handsome

ACTIONS

<i>il est en train de/</i>	he is/they are in the
<i>ils sont en train de</i>	middle of
<i>...parler</i>	...talking
<i>...rire</i>	...laughing
<i>se disputer</i>	arguing
<i>marcher</i>	walking
<i>fêter</i>	celebrating
<i>travailler</i>	working
<i>jouer</i>	playing
<i>manger</i>	eating

LOCATIONS

<i>il/elle est</i>	he/she is
<i>ils sont</i>	they are
<i>dehors</i>	outside
<i>dedans</i>	inside
<i>à la maison</i>	at home
<i>en plein air</i>	in the open air
<i>des arbres</i>	some trees
<i>des édifices</i>	some buildings
<i>au collège</i>	at school
<i>au travail</i>	at work

MOOD

<i>il/elle semble</i>	he/she seems
<i>ils semblent</i>	they seem
<i>(mal)contente/s</i>	(un)happy
<i>triste/s</i>	sad
<i>fatiguée/s</i>	tired
<i>énervée/s</i>	angry
<i>surprise</i>	surprised
<i>pressée</i>	in a hurry
<i>ennuyée</i>	bored
<i>ravie</i>	delighted

WEATHER

<i>il fait beau</i>	it's nice
<i>il fait du soleil</i>	it's sunny
<i>il pleut</i>	it's raining
<i>il neige</i>	it's snowing
<i>il y a du vent</i>	it's windy
<i>il fait beau</i>	it's nice
<i>il fait du soleil</i>	it's sunny
<i>il pleut</i>	it's raining
<i>il neige</i>	it's snowing
<i>il y a du vent</i>	it's windy

GENERAL

<i>au premier plan</i>	in the foreground
<i>au deuxième plan</i>	in the background
<i>à gauche</i>	on the left
<i>à droite</i>	on the right
<i>près de</i>	next to
<i>devant</i>	in front of
<i>au milieu</i>	in the middle
<i>derrière</i>	behind
<i>je peux voir</i>	I can see
<i>la photo montre</i>	the photo shows

GIVING YOUR OPINION

You can also give your opinion of the photo and add a little information, e.g.
J'aime cette photo parce que c'est coloré (colourful) et j'adore jouer au foot

TOPIC 1: Me, my family and friends

Je m'appelle Emilie et j'ai quatorze ans	I'm called Emilie and I'm 14 years old
J'aurai 15 ans dans trois mois	I will be 15 years old in three months
Je pense que je suis assez typique	I think that I am quite normal
Quand j'étais petit, j'étais un peu pénible	When I was little I was a bit annoying
mais plus maintenant car j'ai grandi	but not anymore because I've grown up
Tout le monde dit que je suis sociable	Everyone says that I am sociable
et que j'aime m'amuser	and that I like to have fun
Il y a cinq personnes dans ma famille	There are five people in my family
Mes parents sont mariés depuis 2001	My parents have been married since 2001
Ma mère qui s'appelle Ellie est généreuse	My mum who is called Ellie is generous
mais mon père, Albert, est très sévère	but my dad, Albert, is very strict
Je m'entends bien avec ma soeur Aline	I get on well with my sister Aline
J'ai de la chance de l'avoir	I'm lucky to have her
Ma grand-mère est morte il y a cinq ans	My grandmother died five years ago
Elle était sympa et elle me manque	She was nice and I miss her
Je pouvais parler de tout avec elle	I could talk about everything with her
Hier je suis allée en ville avec mon ami	Yesterday I went into town with my friend
car il y avait le marché de Noël	because there was the Christmas market
Nous avons acheté des cadeaux pour...	We bought presents for...
Ensuite nous sommes allés voir un film	Next we went to see a film
À l'avenir je voudrais me marier	In the future I would like to marry
Mon mari/femme idéale serait...	My ideal husband/wife would be...
J'aurai un grand mariage romantique	I will have a large and romantic wedding
Bien que j'aie une grande famille	Although I have (subjunctive) a large family
je ne voudrais pas avoir des enfants	I wouldn't like to have children

TOPIC 2: Technology in everyday life

Je me sers de mon portable <i>pour tchatter</i>	I use my phone (<i>for</i>) to chat
Je l'utilise aussi pour surfer sur internet	I also use it to surf the internet
Je ne m' en sers pas pour faire mes devoirs	I don't use it to do my homework
car l'écran est trop petit	because the screen is too small
J'aime écouter de la musique	I like to listen to music
et faire des recherches sur internet	and do research on the internet
Hier soir j'ai téléchargé des films	Last night I downloaded some movies
Puis je suis allée sur les réseaux sociaux	Next, I went on social media
et j'ai actualisé ma page personnelle	and I updated my homepage
Avant de me déconnecter	Before switching off
j'ai partagé un photo sur Instagram	I shared a photo on Instagram
Selon moi l'internet peut être dangereux	According to me the internet can be dangerous
Il est important de sécuriser son mot de passe	It's important to secure (y)our password
Il faut faire attention quand on est <i>en ligne</i>	You must pay attention when you're <i>online</i>
Et il ne faut pas <i>ajouter en ami</i>	And you must not <i>add as a friend</i>
les gens qu' on ne connaît pas	people that you don't know
D'autre part, ce n'est pas dangereux	On the other hand, it's not dangerous
Dans le passé les portables étaient <i>lents</i>	In the past phones were <i>slow</i>
Il était difficile de communiquer	It was difficult to communicate
Les ordinateurs étaient grands et <i>chers</i>	Computers were large and <i>expensive</i>
et la connexion n'était pas fiable	and the connection was not reliable
À l'avenir il y aura des robots	In the future there will be robots
et des voitures sans conducteur	and cars without drivers
La technologie sera plus avancée	Technology will be more advanced
et plus rapide dans vingt ans	and faster in twenty years

TOPIC 3: Free-time activities

Je fais beaucoup de sports comme le foot	I do a lot of sport such as football
pour développer mes capacités	in order to develop my skills
Je joue au tennis mais je ne fais pas <i>du vélo</i>	I play tennis but I don't go <i>cycling</i>
parce que je le trouve <i>trop</i> fatiguant	because I find it <i>too</i> tiring
Normalement je regarde <i>les infos</i>	Normally I watch <i>the news</i>
car ça m'intéresse beaucoup	because it interests me a lot
et je ne rate jamais les feuilletons	and I never miss the soaps
Au ciné je préfère voir les films d'action	At the cinema I prefer to see action films
en mangeant ... et <i>en buvant</i> ...	while eating ... and <i>while drinking</i> ...
Je trouve les films bon pour ma culture	I find films good for my culture
et j'aime regarder les films étrangers	and I like to watch foreign films
pour améliorer mes compétences linguistiques	in order to improve my language skills
Je suis un rat de bibliothèque	I'm a bookworm
Récemment j'ai lu un bon roman	Recently I read a good novel
Mais normalement je préfère écouter	But normally I prefer to listen
de la musique ou à la radio	to music or to the radio
plus que lire des livres	more than reading books
Le weekend prochain je vais aller au parc	Next weekend I'm going to go to the park
Il faut acheter <i>des choses</i> pour le collège	I have to buy <i>some things</i> for school
Ensuite je vais traîner avec <i>mes potes</i>	Next I'm going to hang out with <i>my homies</i>
Les loisirs sont importants pour déstresser	Hobbies are important for destressing
Je peux oublier mes soucis	I can forget my worries
Bien que je sois/je lise/je fasse...	Although I am/I read/I do...
C'est une perte de temps	It's a waste of time
On aurait préféré	We would have preferred

TOPIC 4: Customs and festivals in the French-speaking world

À mon avis les fêtes et <i>les jours fériés</i>	In my opinion festivals and <i>bank holidays</i>
sont importants pour passer du bon temps	are important for having a good time
Mais en ce qui concerne la Saint Valentin	But as far as Valentine's day is concerned
C'est une perte d'argent	It's a waste of money
Ma fête religieuse préférée est Pâques	My favourite religious holiday is Easter
Le chocolat, c'est mon péché mignon!	Chocolate is my guilty pleasure!
Nous la célébrons avec <i>toute la famille</i>	We celebrate it with <i>all the family</i>
Nous cherchons les œufs dans le jardin	We look for eggs in the garden
La fête de la musique <i>a lieu</i> en France	World Music Day <i>takes place</i> in France
pour célébrer le début de l'été le 21 juin	to celebrate the start of summer on 21 st June
L'année dernière j' y ai participé	Last year I took part in it
et tout le monde jouait dans les rues	and everyone was playing in the streets
Quand j' avais quinze ans	When I was fifteen years old
J'ai fêté mon anniversaire avec mes amis	I celebrated my birthday with my friends
Nous sommes allés regarder un film	We went to watch a film
et quand je suis rentrée à la maison	and when I got back home
j'ai reçu de nombreux cadeaux	I received a lot of presents
Ce sera différent l'année prochaine	It will be different next year
J'aurai une grande boum	I will have a big party
Et toute ma famille sera là	And all my family will be there
Je serai traitée comme une <u>princesse</u>	I will be treated like a <u>princess</u>
Mon cadeau idéal serait un portable	My ideal present would be a phone
et je pourrais télécharger des applis	and I would be able to download apps
Je voudrais aussi des nouveaux vêtements	I'd also like some new clothes
pour porter à ma fête d'anniversaire	to wear to my birthday party

TOPIC 5: Home, town, neighbourhood and region

J'habite à Highbridge, une petite ville	I live in Highbridge, a small town
dans le sud-ouest de l'Angleterre	in the south-west of England
J'y habite avec ma famille <i>depuis</i> un an	I have lived there <i>for</i> a year
C'est situé au bord de la mer	It's situated by the seaside
Il n'y a grand-chose à faire pour les jeunes	There's not a lot for young people to do
Mais il y a des magasins et <i>un jardin public</i>	But there are some shops and <i>a park</i>
J'aime habiter à la campagne	I like living in the countryside
parce que c'est plus tranquille qu' en ville	because it's quieter than in town
Selon moi , ma région est très jolie	According to me , my region is very pretty
et en été il y a beaucoup de touristes	and in summer there are a lot of tourists
Ma région est connue pour le cidre	My region is known for its cider
et le fameux fromage de Cheddar	and the famous Cheddar cheese
C'est une région historique aussi	It's a historic region too
La semaine dernière j'ai visité le musée	Last week I visited the museum
et j'y ai appris beaucoup	and I learned a lot there
J'ai aussi fait des courses <i>en ville</i>	I also did some shopping <i>in town</i>
J'ai rencontré mes am <u>i</u> es au cinéma	I met my friends at the cinema
et on a regardé un film d'horreur	and we watched a horror film
Ça m'a donné la chair de poule!	It gave me goosebumps!
À l'avenir je voudrais habiter <i>en ville</i>	In the future I would like to live <i>in town</i>
À Londres ou même Bristol <i>c'est plus animé</i>	In London or even Bristol <i>it's livelier</i>
J'achèterais un appartement spacieux	I would buy a spacious apartment
Je sortirais tous les soirs	I would go out every evening
J'irais à toutes les boîtes de nuit	I would go to all the nightclubs
Je m'amuserais bien	I would have a lot of fun

TOPIC 6: Social issues

Pour aider les SDF/les démunis	To help the homeless/those in need
je travaille comme bénévole pendant l'été	I work as a volunteer during the summer
Je pense que les associations caritatives	I think that charities
jouent un rôle important dans la société	play an important role in society
en aidant ceux qui <i>ont besoin</i> d'eux	by helping those who <i>need</i> them
Bien que ne j'aie pas <i>trop</i> le temps	Although I don't have <i>too much</i> time
je voudrais créer une association caritative	I would like to create a charity
pour aider les mères <i>célibataires</i>	to help <i>single</i> mums
et leurs enfants car ça m'inquiète le plus	and their children because that worries me the most
Je vais collecter des choses nécessaires	I'm going to collect essential things
comme des produits d'hygiène	such as hygiene products
Je vais essayer de faire <i>mon mieux</i>	I'm going to try to do <i>my best</i>
pour que ces femmes <i>ne manquent de rien</i>	so that these women <i>don't lack anything</i>
Si j'avais plus de temps et d'argent	If I had more time and money
j'aiderais le monde entier	I would help the entire world
J'ai le cœur sur la main	I am all heart
Les jeunes font face à la pression des pairs	Young people face peer pressure
En étant connectés <i>en ligne</i> tout le temps	By being connected <i>online</i> all the time
les jeunes peuvent être intimidés	young people can be intimidated
ce qui peut avoir un impact	which can have an impact
sur leur santé mentale et <i>travail scolaire</i>	on their mental health and <i>schoolwork</i>
Ils peuvent avoir d'autres problèmes	They can have other problems
comme l'anorexie , <i>les drogues</i> ou <u>l'alcool</u>	such as anorexia , <i>drugs</i> or <u>alcohol</u>
Il est important de parler de <i>ses</i> problèmes	It's important to talk about <i>one's</i> problems
pour les résoudre	in order to resolve <i>them</i>

PERFECT TENSE ("has done/did")

Start with the present tense of *avoir/être*, then add the past participle of the second verb:

-er	-ir	-re
Remove -er	Remove -r	Remove -re
Add -é		Add -u
jouer → (j'ai) joué	finir → (j'ai) fini	vendre → (j'ai) vendu

VERBS USING ÊTRE e.g. je suis allé(e)

monter entrer sortir venir aller naître partir descendre arriver tomber rester mourir retourner (**and all reflexive verbs**)

The past participle for these verbs must agree with the subject in gender and number:

je suis allé (m) je suis tombée (f)
on est entrés (mpl) on est entrées (fpl)

IMPERFECT TENSE ("was doing/used to do")

Remove **-ons** from the **nous** form of the present tense, add these endings (*ais/aiss/ait/fions/iez/aient*)

	jouer	finir	vendre
je	jouais	finissais	vendais
tu	jouais	finissais	vendais
il/elle/on	jouait	finissait	vendait
nous	jouions	finissions	vendions
vous	jouiez	finissiez	vendiez
ils/elles	jouaient	finissaient	vendaient

PRESENT TENSE ("does/is doing")

Remove the **-er/-ir/-re** and add these endings:

	jouer	finir	vendre
je	joue	finis	vends
tu	joues	finis	vends
il/elle/on	joue	finit	vend
nous	jouons	finissons	vendons
vous	jouez	finissez	vendez
ils/elles	jouent	finissent	vendent

ÊTRE

je suis / tu es / il est / nous sommes / vous êtes / ils sont

AVOIR

j'ai / tu as / il a / nous avons / vous avez / ils ont

NEAR FUTURE TENSE ("is going to do")

Use the present tense of *aller* followed by the infinitive:

je	vais	jouer
tu	vas	finir
il/elle/on	va	vendre
nous	allons	être aller
vous	allez	vouloir etc.
ils/elles	vont	

SIMPLE FUTURE TENSE ("will/shall do")

Add these endings to the infinitive:

	jouer	finir	vendrai
je	jouerai	finirai	vendrai
tu	joueras	finiras	vendras
il/elle/on	jouera	finira	vendra
nous	jouerons	finirons	vendrons
vous	jouerez	finirez	vendrez
ils/elles	joueront	finiront	vendront

IRREGULAR STEMS

être (ser-) avoir (aur-) faire (fer-)
venir (viendr-) savoir (saur-) aller (ir-)
devoir (devr-) pouvoir (pourr-) voir (verr-)

CONDITIONAL TENSE ("would do")

Begin with the future stem, add imperfect endings:

	jouer	finir	vendrais
je	jouerais	finirais	vendrais
tu	jouerais	finirais	vendrais
il/elle/on	jouerait	finirait	vendrait
nous	jouerions	finirions	vendrions
vous	joueriez	finiriez	vendriez
ils/elles	joueraient	finiraient	vendraient

IRREGULAR STEMS

Same as for the simple future

EXTRA MARKS: USE WITH THE IMPERFECT TENSE

Si j'avais le temps, j'irais... (If I had time, I'd go to...)

PLUPERFECT TENSE ("had done")

Very similar to the perfect tense, except you start with the *imperfect* tense of auxiliary verbs *avoir/être*:

e.g. *j'avais joué, il avait fini, nous étions allés, elles s'étaient brossées les dents*

SUBJUNCTIVE MOOD (expressing hope/fear/desire/wish etc.)

Remove *-ent* from the *ils* form of the present tense, add endings (*e/es/e/ions/iez/ent*)

e.g. ils jouent ent		jouer	finir	vendre
que	je	joue	finisse	vende
	tu	joues	finisses	vendes
	il/elle/on	joue	finisse	vende
	nous	jouions	finissions	vendions
	vous	jouiez	finissiez	vendiez
	ils/elles	jouent	finissent	vendent

IRREGULAR VERBS	
<i>être</i>	(je sois)
<i>avoir</i>	(j'aie)
<i>faire</i>	(je fasse)
<i>venir</i>	(je vienne)
<i>savoir</i>	(je sache)
<i>aller</i>	(j'aille)
<i>devoir</i>	(je doive)
<i>pouvoir</i>	(je puisse)
<i>vouloir</i>	(je veuille)
<i>falloir</i>	(il faille)

ONLY USE THE SUBJUNCTIVE AFTER THESE PHRASES SUCH AS:

<i>bien que</i>	(although)	<i>vouloir que</i>	(to want that)
<i>falloir que</i>	(to be necessary that)	<i>préférer que</i>	(to prefer that)
<i>désirer que</i>	(to desire that)	<i>être important que, être essentiel que</i>	
<i>penser que, croire que</i>	(negative only)	<i>être urgent que</i>	

e.g.	<i>je veux que tu le fasses</i>	(I want you to do it – lit: I want that you do it)
	<i>je préfère qu'il soit sympa</i>	(I prefer that he be nice)
	<i>il ne pense pas qu'elle soit belle</i>	(He doesn't think that she is beautiful)
	<i>bien que je n'aie pas l'argent</i>	(although I don't have the money)

PRONOUNS (SAYING "it")

Put *le, la* or *les* in front of the main verb

<i>je le mange</i>	I eat it
<i>je l'ai mangé</i>	I ate it
<i>je le mangeais</i>	I was eating it
<i>je vais le manger</i>	I'm going to eat it
<i>je le mangerai</i>	I will eat it
<i>je le mangerais</i>	I would eat it
<i>que je le mange</i>	that I eat it (subj.)

If the pronoun is feminine or plural, you need to make the past participle agree:

<i>je les ai mangés</i>	I ate them
<i>je l'avais vu</i>	I had seen her

Use *y* for 'there', and *en* for 'some/any':

<i>j'y suis allé</i>	I went there
<i>je n'en ai pas</i>	I don't have any [of them]

THE NEGATIVE

Put the negative around the main verb

<i>ne...pas</i>	not
<i>ne...jamais</i>	never
<i>ne...rien</i>	nothing
<i>ne...personne</i>	nobody
<i>ne...que</i>	only
<i>ne...plus</i>	no more/any more
<i>ne...aucun</i>	not a single one
<i>ne...guère</i>	hardly, barely
<i>ne...ni...ni</i>	neither...nor

EXAMPLES

<i>il n'a jamais</i>	He never has
<i>il n'a rien bu</i>	He drank nothing
<i>il ne l'aura pas</i>	He won't have it
<i>je n'ai vu ni l'un</i>	I didn't see neither
<i>ni l'autre</i>	one nor the other

OPINION PHRASES

Don't just say *j'aime* or *je déteste*!

<i>je pense que</i>	I think that
<i>je crois que</i>	I believe that
<i>à mon avis</i>	in my opinion
<i>selon moi</i>	according to me
<i>je trouve que</i>	I find that
<i>je préfère</i>	I prefer
<i>je dirais que</i>	I would say that
<i>je sais que</i>	I know that
<i>j'estime que</i>	I reckon that
<i>il me semble que</i>	it seems to me that
<i>il me paraît que</i>	it appears to me that
<i>en ce qui</i>	as far as X is
<i>concerne X</i>	concerned

Don't forget – you should always justify your opinion using *parce que* or *car*!

COMPARATIVE & SUPERLATIVE

Replace “...” with any adjective

<i>plus ... que</i>	more ... than
<i>moins ... que</i>	less ... than
<i>aussi ... que</i>	as ... as
<i>mieux</i>	better
<i>pire</i>	worse
<i>le/la plus ...</i>	the most ...
<i>le/la moins ...</i>	the least ...
<i>le/la mieux</i>	the best (thing)
<i>le/la pire</i>	the worst (thing)

EXAMPLES

<i>plus grand que</i>	more tall/taller than
<i>moins grand que</i>	less tall/shorter than
<i>aussi grand que</i>	as tall as
<i>le plus grand</i>	the most tall/tallest
<i>la moins grande</i>	the least tall/shortest

USING PROF3C

to ace the writing and speaking exams!

<u>P</u>ast tense	Hier j'ai joué au foot
<u>R</u>easons (&)	(J'adore le foot
<u>O</u>pinions	parce que c'est top)
<u>F</u>uture tense	Demain j'étudierai
	avec mes copains
<u>3</u>rd person	Mes amis adorent
	le français
<u>C</u>onditional	Je voudrais habiter
	en France à l'avenir

Use PROF3C to help you answer:

- 40/90 word essay (F)
- 90/150 word essay (H)*
- General conversation (F/H*)

* To have access to the highest marks for these questions, you should also try to add a subjunctive phrase, pronouns etc. too (everything from these two pages)

BEFORE, DURING, AFTER

Saying when something happens

<i>avant de (+infinitive)</i>
before ___ing
<i>avant de faire mes devoirs</i>
(before <u>doing</u> my homework)
<i>après avoir (+past participle)</i>
after having _____
<i>après avoir fait mes devoirs</i>
(after having <u>done</u> my homework)

<i>être en train de (+infinitive)</i>
to be in the midst of ___ing
<i>je suis en train de faire mes devoirs</i>
I'm in the midst of <u>doing</u> my homework

EXAMPLE

Avant de sortir, ma mère m'avait demandé de ranger ma chambre *après avoir fait* mes devoirs, mais j'étais *en train de parler* sur mon portable

TOPIC 7: Global issues

L'environnement est menacé	The environment is threatened
par les émissions de dioxyde de carbone	by the emission of carbon dioxide
Les températures seront augmentées	Temperatures will rise
et il y aura un manque d' <i>eau potable</i>	and there will be a lack of <i>drinking water</i>
si on ne protège pas l'environnement	if we don't protect the environment
Il faut réduire , <i>réutiliser</i> et <u>recycler</u>	It is necessary to reduce , <i>reuse</i> and <u>recycle</u>
Je recycle le papier/carton/plastique/verre	I recycle paper/cardboard/plastic/glass
Je prends une douche <i>au lieu d'un bain</i>	I take a shower <i>instead of</i> a bath
J'éteins la lumière <i>quand je sors</i>	I turn off the light <i>when I go out</i>
Il faut aussi baisser le chauffage	It is also necessary to turn down the heating
avant de quitter la maison	before leaving the house
Ma mère achète toujours les produits bio	My mum <i>always</i> buys organic products
et mon père fait du covoiturage	and my dad does carsharing
Il va acheter une voiture électrique	He is going to buy an electric car
Je supporte le commerce équitable	I support fair trade
Je ne veux pas que les ouvriers soient <i>exploités</i>	I don't want the workers to be <i>exploited</i>
Récemment j'ai participé à <i>une manifestation</i>	Recently I took part in <i>a protest</i>
Je me suis inscrite à l'association WWF	I subscribed to the charity WWF
J'ai ramassé <i>les déchets</i> dans le parc	I cleared up <i>the rubbish</i> in the park
J'ai nettoyé le lac <i>près de chez moi</i>	I cleaned the lake <i>near to my house</i>
Au collège on va trier les déchets	At school we're going to sort the rubbish
On va organiser une journée verte	We're going to organise a 'green' day
On va planter plus de fleurs et d'arbres	We're going to plant more flowers and trees
J'ai la main verte	I have green fingers
Je vais consommer moins de <i>viande</i>	I'm going to consume less <i>meat</i>

TOPIC 8: Travel and tourism

D'habitude je reste en Angleterre <i>en été</i>	Normally I stay in England <i>during summer</i>
Il y a beaucoup à faire et <i>à visiter</i>	There is a lot to do and <i>to visit</i>
C'est ma destination favorite/préférée	It's my favourite destination
Je préfère voyager en voiture	I prefer to travel by car
parce que j'ai toujours le mal de mer	because I always get <i>seasick</i>
et j'ai vraiment peur de voler	and I'm really scared of flying
Quand j'étais petite <i>j'allais</i> en France	When I was little <i>I used to go</i> to France
Nous visitons Disneyland Paris	We <u>used to</u> visit Disneyland Paris
On faisait la queue depuis des heures	We used to queue for hours
pour voir les manèges et les princesses	to see the rides and the princesses
Je ne m'ennuyais jamais	I was never bored
Mes dernières vacances étaient terribles!	My last holiday was terrible!
On est allés en Californie pendant un mois	We went to California for a month
car mon père a toujours voulu y aller	because my dad has always wanted to go <i>there</i>
Mes frères se sont chamaillés tout le trajet	My brothers bickered the whole journey
La réceptionniste à l'hôtel était impolie	The hotel receptionist was impolite
et la chambre était très sale	and the room was very dirty
Le pire était de <i>perdre</i> mon passeport	The worst thing was <i>losing</i> my passport
Quel désastre!	What a disaster!
Si je gagnais la loterie	If I won the lottery
je voyagerais autour du monde	I would travel around the world
Je nagerais dans l'Océan Pacifique	I would swim in the Pacific Ocean
Je ferais de la plongée	I would go scuba diving
pour voir les poissons tropicaux	in order to see the tropical fish
Ce serait le pied!	It would be awesome!

TOPIC 9-10: My studies/Life at school or college

Mon collègue s'appelle ...	My school is called ...
C'est un collège mixte	It's a mixed/co-educational school
Pour les jeunes de onze à dix-huit ans	For young people from 11 to 18 years old
Je trouve les profs sympa mais <i>un peu</i> strictes	I find the teachers nice but <i>a little</i> strict
Le collège est grand et <i>assez</i> moderne	The school is large and <i>quite</i> modern
Il y a environ treize cent <i>étudiants</i>	There are approximately 1300 <i>students</i>
Je porte <u>une</u> chemise <u>blanche</u> ,	I wear a white shirt
<u>une</u> veste <u>noire</u> et un pantalon noir	a black blazer and black trousers
Je n'aime pas du tout mon uniforme scolaire	I don't like my school uniform at all
c'est inconfortable et <i>moche</i>	it's uncomfortable and <i>ugly</i>
Les cours commencent à neuf heures	Lessons commence at 9am
et finissent à trois heures de l'après-midi	and finish at three in the afternoon
Au collège de mes rêves	In the school of my dreams
il n'y aurait pas d' uniforme scolaire	there wouldn't be a school uniform
et le collège finirait à midi	and school would finish at noon
pour que je puisse bavarder l'après-midi	so that I could chat in the afternoon
J'étudie l'anglais , <i>les maths</i> et <u>l'EPS</u>	I study English , <i>Maths</i> and <u>PE</u>
mais ma matière préférée , c'est le français	but my favourite subject is French
parce que c'est très amusant	because it's very amusing
et le prof est vraiment sympa	and the teacher is really nice
Par contre je déteste les sciences	On the other hand I hate science
car c'est trop difficile et ennuyeux	because it's too difficult and boring
Bien que j'aie choisi la géographie	Although I've chosen Geography
je ne suis pas douée en ça	I'm not gifted at it
mais je le trouve <i>très</i> intéressant	but I find it <i>very</i> interesting

TOPIC 11-12: Education post-16/Job choices and career ambitions

Je ne vais pas aller au lycée	I am not going to go to college
Je vais étudier le français et l'allemand	I'm going to study French and German
Je pense que les langues sont importantes	I think that languages are important
pour trouver un bon emploi	to find a good job
Pour mon stage j'ai travaillé dans un bureau	For work experience I worked in an office
Ce n'était pas mal mais <i>c'était</i> ennuyeux	It wasn't bad but <i>it was</i> boring
Je crois que je voudrais <i>travailler</i> dehors	I believe that I'd like <i>to work</i> outside
parce que j'aime être <i>en plein air</i>	because I like to be <i>in the open air</i>
Je voudrais devenir vétérinaire	I would like to become a vet
D'abord je dois aller à l'université	First I have to go to university
parce qu' il faut avoir un diplôme	because you have to have a degree
Je sais que je dois travailler <i>dur</i>	I know that I must work <i>hard</i>
mais je vais réussir dans la vie	but I'm going to succeed in life
et je serai fier/fière de moi	and I will be proud of myself
Ma mère est institutrice	My mum is a primary school teacher
et mon père travaille dans un magasin	and my dad works in a shop
Ma mère trouve ça enrichissant	My mum finds it rewarding
et mon père adore aider les clients	and my dad loves to help the customers
En ce moment j'ai un petit boulot	At the moment I have a part-time job
Je fais du baby-sitting le soir	I do babysitting in the evenings
Ce n'est pas bien payé	It's not well paid
mais je veux gagner mon <i>propre</i> argent	but I want to earn my <i>own</i> money
Un jour je voudrais travailler <i>avec les enfants</i>	One day I'd like to work <i>with children</i>
après avoir travaillé <i>comme vétérinaire</i>	after having worked <i>as a vet</i>
mais je ne sais pas quand. <i>On verra.</i>	but I don't know when. <i>We will see.</i>

SPANISH

Use the information that follows to either test yourself on key words/phrases for each topic (using the look/cover/check technique) or create flashcards with the Spanish on one side and the English translation on the other. Either test yourself or get someone else to test you. When you feel confident, write a short paragraph about each topic using the vocabulary you have revised.



Módulo 1 – ¡Desconéctate!

Learn the phrases below using LOOK, COVER, WRITE, CHECK!

Durante el verano hago artes marciales.	During the summer I do martial arts.
(No) me gusta tomar el sol .	I (don't) like sunbathing.
(A ella) le mola ver películas.	She likes watching films.
Tengo seis semanas de vacaciones en verano	I have six weeks holiday in summer
Prefiero ir a España .	I prefer to go to Spain .
Mi padre prefiere alojarse en un hotel.	My dad prefers to stay in a hotel.
Fui de vacaciones a Francia	I went on holiday to France .
El invierno pasado fuimos de vacaciones a Alemania .	Last winter we went on holiday to Germany .
Fui con mi familia	I went with my family
Viajé en avión .	I travelled by plane .
Me alojé en un camping .	I stayed on a campsite .
El primer día saqué muchas fotos.	On the first day I took a lot of photos.
Lo mejor fue cuando visité la Sagrada Familia	The best thing was when I visited the Sagrada Familia.
Lo peor fue cuando perdí mi móvil.	The worst thing was when I lost my phone.
Lo pasé fenomenal	It was amazing!
Fue horroroso porque vomité en una montaña rusa.	It was horrific because I vomited on a rollercoaster.
Quiero hablar con el director porque el aire acondicionado no funciona .	I want to talk to the manager because the air conditioning does not work .
La habitación está sucia	The room is dirty

Adapting the phrases for your own work:

<u>Underlined</u>	This is additional information that can be changed for what you want to say.
Bold	These are verbs which can be changed for different people or tenses.
<i>Italic</i>	These words must be changed if you are talking about a different person.

Challenge:

When learning the vocabulary, practise using other tenses, changing details, and talking about other people.

Módulo 1 – ¡Desconéctate!

Learn the verbs below using LOOK, COVER, WRITE, CHECK!

Yo Form	PRESENT	PRETERITE	IMPERFECT	NEAR FUTURE
HACER (to do)	hago	hice	hacía	voy a hacer
IR (to go)	voy	fui	iba	voy a ir
ALOJARSE (to stay)	me alojo	me alojé	me alojaba	voy a alojarme
VIAJAR (to travel)	viajo	viajé	viajaba	voy a viajar
VISITAR (to visit)	visito	visité	visitaba	voy a visitar
TENER (to have)	tengo	tuve	tenía	voy a tener
SACAR (to take)	saco	saqué	sacaba	voy a sacar

My Progress with this topic:

Date	F Score	H Score	Date	F Score	H Score

Expand and adapt your vocabulary:

My independent vocabulary:

Módulo 2 – Mi vida en el insti

Learn the phrases below using LOOK, COVER, WRITE, CHECK!

<i>Estudio</i> <u>inglés y español</u> .	<i>I study</i> <u>English and Spanish</u> .
(No) <i>me interesa</i> <u>la tecnología</u> .	<i>I am</i> (not) <i>interested</i> in <u>technology</u> .
(No) <i>le interesan</i> <u>las matemáticas</u> .	<i>He/she is</i> (not) <i>interested</i> in <u>maths</u> .
<i>Prefiero</i> <u>la música</u> porque <i>es</i> menos <u>aburrida</u> que <u>el dibujo</u> .	<i>I prefer</i> <u>music</u> because <i>it is</i> less <u>boring</u> than <u>art</u> .
<i>Odio</i> <u>las ciencias</u> porque <i>son</i> más <u>difíciles</u> que <u>la geografía</u> .	<i>I hate</i> <u>science</u> because <i>it is</i> <u>harder</u> than <u>geography</u> .
<i>Mi profe crea</i> un buen ambiente.	My teacher creates a nice atmosphere.
<i>Aprendo</i> mucho porque <i>mi profe explica</i> bien.	<i>I learn</i> a lot because <i>my teacher explains</i> well.
<i>Tenemos</i> que llevar un uniforme.	<i>We have</i> to wear a uniform.
<i>Llevo</i> <u>una chaqueta negra</u> y <u>una corbata azul</u> .	<i>I wear</i> a <u>black blazer</u> and a <u>blue tie</u> .
El uniforme mejora la disciplina.	The uniform improves discipline.
<i>Me gusta</i> porque las diferencias económicas no son tan obvias.	<i>I like</i> it because financial differences are not as obvious.
En <i>mi</i> insti hay <u>una piscina grande y nueva</u> .	In <i>my</i> school there is <u>a big, new pool</u> .
En <i>mi</i> escuela primaria no había <u>una biblioteca</u> .	In <i>my</i> primary school there was no <u>library</u> .
Lo bueno es que hay <u>un gimnasio bien equipado</u> .	The good thing is that there is <u>a well-equipped gym</u> .
Lo peor es que no se debe <u>llevar piercings</u> .	The bad thing is you must not <u>wear piercings</u> .
Tampoco se permiten <u>los móviles</u> en clase.	<u>Mobile phones</u> are not allowed in class either.
Vamos a participar en un intercambio a <u>Zaragoza</u> .	<i>We are going to participate</i> in an exchange to <u>Zaragoza</u> .
Soy miembro del club de <u>judo</u> desde hace <u>tres años</u> .	<i>I have been</i> a member of <u>judo</u> club for <u>3</u> years.

Adapting the phrases for your own work:

<u>Underlined</u>	This is additional information that can be changed for what you want to say.
Bold	These are verbs which can be changed for different people or tenses.
<i>Italic</i>	These words must be changed if you are talking about a different person.

Challenge:

When learning the vocabulary, practise using other tenses, changing details, and talking about other people.

Módulo 2 – Mi vida en el insti

Learn the verbs below using LOOK, COVER, WRITE, CHECK!

Yo Form	PRESENT	PRETERITE	IMPERFECT	NEAR FUTURE
ESTUDIAR (to study)	estudio	estudié	estudiaba	voy a estudiar
LLEVAR (to wear)	llevo	llevé	llevaba	voy a llevar
INTERESAR (to be interested in)	me interesa(n)	me interesó/ interesaron	me interesaba(n)	me va(n) a interesar
Useful verbs for describing school				
THERE IS/ARE	hay	hubo	había	habrá
IT IS/ARE	es/son	fue/fueron	era/eran	será/serán
IT HAS	tiene	tuvo	tenía	tendrá

My Progress with this topic:

Date	F Score	H Score	Date	F Score	H Score

Expand and adapt your vocabulary:

My independent vocabulary:

Módulo 4 – Intereses e influencias

Learn the phrases below using LOOK, COVER, WRITE, CHECK!

Después del insti <u>juego</u> al fútbolín con <u>mis</u> amigos.	After school I <u>play</u> table football with <u>my</u> friends.
Los fines de semana <u>vamos</u> a la pista de hielo.	At the weekend <u>we go</u> to the ice rink.
Normalmente <u>gasto</u> <u>mi</u> paga en <u>libros</u> .	Normally I <u>spend</u> my pocket money on <u>books</u> .
La semana pasada <u>jugué</u> al baloncesto.	Last weekend I <u>played</u> basketball.
<u>Mi hermana</u> <u>hizo</u> equitación.	<u>My sister</u> <u>went</u> horse riding.
<u>Me molan</u> programas de deportes.	I <u>like</u> sports programmes.
Sin embargo <u>mi madre</u> le <u>encantan</u> documentales.	However <u>my mum</u> <u>loves</u> documentaries.
No <u>soy</u> teledicto porque <u>no veo</u> más de dos horas al día.	I <u>am</u> not addicted to TV because I <u>don't watch</u> more than two hours a day.
En mi tiempo libre <u>suelo</u> hacer deporte.	In my free time I <u>usually do</u> sports.
<u>Solemos</u> ir al cine y <u>dar</u> un paseo.	<u>We usually go</u> to the cinema and <u>go for</u> a walk.
Cuando <u>era</u> más joven <u>jugaba</u> al tenis de vez en cuando	When I was younger I <u>played</u> tennis from time to time.
<u>Mi hermana</u> <u>solía</u> jugar al voleibol pero ahora <u>hace</u> natación.	<u>My sister</u> used to <u>play</u> volleyball but now <u>she swims</u>
Esta semana <u>he</u> visto dos películas.	This week I <u>have</u> watched two films.
<u>Prefiero</u> ir al cine porque <u>el ambiente</u> es mejor.	I <u>prefer</u> to go to the cinema because <u>the atmosphere</u> is better.
<u>Rafa Nadal</u> es <u>mi</u> modelo a seguir porque <u>tiene</u> mucho éxito.	<u>Rafa Nadal</u> is <u>my</u> role model because <u>he is</u> very successful.
<u>Taylor Swift</u> es <u>mi</u> modelo a seguir porque <u>usa</u> su fama para ayudar a otros.	<u>Taylor Swift</u> is <u>my</u> role model because <u>she uses</u> her fame to help others.

Adapting the phrases for your own work:

<u>Underlined</u>	This is additional information that can be changed for what you want to say.
Bold	These are verbs which can be changed for different people or tenses.
<i>Italic</i>	These words must be changed if you are talking about a different person.

Challenge:

When learning the vocabulary, practise using other tenses, changing details, and talking about other people.

Módulo 4 – Intereses e influencias

Learn the verbs below using LOOK, COVER, WRITE, CHECK!

Yo Form	PRESENT	IMPERFECT	PERFECT	FUTURE
JUGAR (to play)	juego	jugaba	he jugado	voy a jugar
HACER (to do)	hago	hacía	he hecho	voy a hacer
VER (to watch)	veo	veía	he visto	voy a ver
SOLER (to tend to)	suelo	solía		
PREFERIR (to prefer)	prefiero	prefería		
GASTAR (to spend money)	gasto	gastaba	he gastado	voy a gastar
SER (to be)	soy	era	he sido	voy a ser

My Progress with this topic:

Date	F Score	H Score	Date	F Score	H Score

Expand and adapt your vocabulary:

My independent vocabulary:

Módulo 5 – Ciudades

Learn the phrases below using LOOK, COVER, WRITE, CHECK!

Vivo en <u>Londres</u> . Está en <u>el sur de Inglaterra</u> .	<i>I live</i> in <u>London</u> . It is in <u>the south of England</u> .
Es una ciudad muy <u>grande y moderna</u> .	It is a <u>very big and modern</u> city.
En <i>mi</i> ciudad hay <u>unos museos y muchas tiendas</u> .	In <i>my</i> town there are <u>some museums and lots of shops</u> .
Hace <u>dos años</u> no había ni <u>mercado</u> ni <u>bolera</u> .	<u>Two years</u> ago there was no <u>market</u> or <u>bowling alley</u> .
Me encanta dónde vivo porque <u>siempre hay mucho que hacer</u> .	<i>I love</i> where <i>I live</i> because <u>there is always lots to do</u> .
En <u>la panadería</u> se puede comprar <u>pan</u> .	In the <u>bakery</u> you can buy <u>bread</u> .
<u>El banco abre</u> a las nueve por la mañana y <u>cierra</u> a las cinco por la tarde.	<u>The bank opens</u> at 9 in the morning and <u>closes</u> at 5 in the afternoon.
Para ir a la plaza mayor sigue todo recto, pasa el <u>puente</u> y toma la tercera calle a la izquierda.	To get to the main square, go straight ahead, pass the <u>bridge</u> , and take the third street on the left.
¿Me puede ayudar? ¿Cuánto <u>cuesta el llavero</u> ?	Can you help me? How much does <u>the keyring cost</u> ?
<i>Mi</i> pueblo está situado <u>al lado del río</u> .	<i>My</i> town is situated <u>next to the river</u> .
El clima es frío y llueve mucho.	The climate is cold and it rains a lot.
Mañana visitaré <u>la catedral</u> en el centro de la ciudad.	Tomorrow I will visit <u>the cathedral</u> in the centre of the city.
<i>Mi hermano</i> nadará en el mar.	<i>My brother</i> will swim in the sea.
Si hace buen tiempo, iremos a la playa.	If the weather is nice, we will go to the beach.
Si hace mal tiempo, no harán una excursión.	If the weather is bad, they will not do a trip.
Lo mejor de <i>mi</i> ciudad es que <u>el transporte público es muy bueno</u> .	The best thing about <i>my</i> city is that <u>the public transport is very good</u> .
Lo peor es que <u>hay pocos espacios verdes</u> .	The worst thing is that <u>there are few green spaces</u> .

Adapting the phrases for your own work:

<u>Underlined</u>	This is additional information that can be changed for what you want to say.
Bold	These are verbs which can be changed for different people or tenses.
<i>Italic</i>	These words must be changed if you are talking about a different person.

Challenge:

When learning the vocabulary, practise using other tenses, changing details, and talking about other people.

Módulo 5 - Ciudades

Learn the verbs below using LOOK, COVER, WRITE, CHECK!

Yo Form	PRESENT	PRETERITE	IMPERFECT	FUTURE
VIVIR (to live)	vivo	viví	vivía	viviré
VISITAR (to visit)	visito	visité	visitaba	visitaré
IR (to go)	voy	fui	iba	iré
HACER (to do)	hago	hice	hacía	haré
THERE IS/ARE	hay	hubo	había	habrá
IT IS THEY ARE	es son	fue fueron	era eran	será serán
IT HAS THEY HAVE	tiene tienen	tuvo tuvieron	tenía tenían	tendrá tendrán

My Progress with this topic:

Date	F Score	H Score	Date	F Score	H Score

Expand and adapt your vocabulary:

My independent vocabulary:

Módulo 6 – De Costumbre.

Learn the phrases below using LOOK, COVER, WRITE, CHECK!

<i>Desayuno</i> a las <u>ocho</u> .	<i>I have breakfast</i> at <u>8</u> o'clock.
Cuando <i>era</i> más pequeño <i>desayunaba</i> <u>cereales</u> <u>todos los días</u> .	When <i>I</i> was younger <i>I used to eat</i> <u>cereal</u> for breakfast <u>every day</u> .
<i>Cenamos</i> muy tarde por la noche.	<i>We eat</i> dinner very late at night.
A las <u>seis</u> <i>me levanto</i> y <i>me ducho</i> .	At <u>6</u> o'clock <i>I get up</i> and <i>I shower</i> .
A las <u>siete</u> <i>salgo</i> de casa.	At <u>7</u> o'clock <i>I leave</i> the house.
No <i>me encuentro</i> bien. <i>Me duele</i> <u>la garganta</u> .	<i>I don't feel</i> well. <i>My throat hurts</i> .
<i>Estoy</i> enfermo <u>hoy</u> . <i>Tengo</i> <u>un resfriado</u> .	<i>I am</i> unwell <u>today</u> . <i>I have</i> <u>a cold</u> .
Normalmente <u>los españoles comen</u> <u>mucha fruta</u> .	Normally <u>the Spanish eat</u> <u>lots of fruit</u> .
<i>Mi plato favorito es</i> <u>la paella</u> porque <i>me encanta</i> <u>arroz</u> .	<i>My favourite dish is</i> <u>paella</u> because <i>I love</i> <u>rice</u> .
<i>Me gustaría</i> probar <u>tortilla española</u> .	<i>I would love</i> to try <u>Spanish omelette</u> .
Ayer <i>celebramos</i> <u>el cumpleaños de mi padre</u> .	Yesterday <i>we celebrated</i> <u>my dad's birthday</u> .
<i>Comimos</i> en un restaurante <u>caro</u> y <i>abrió</i> <u>sus regalos</u> .	<i>We ate</i> in an <u>expensive</u> restaurant and <i>he opened</i> his presents.
<i>Soy</i> vegetariano/a. No <i>como</i> <u>carne</u> ni <u>pescado</u> .	<i>I am</i> a vegetarian. <i>I don't eat</i> <u>meat</u> or <u>fish</u> .
<i>Soy</i> alérgico al <u>gluten</u> .	<i>I am</i> allergic to <u>gluten</u> .
<i>Vamos</i> a celebrar <u>un día especial</u> con toda la familia.	<i>We are going to celebrate</i> <u>a special day</u> with the whole family.
<i>Mi cantante favorito es</i> <u>Ed Sheeran</u> .	<i>My favourite singer is</i> <u>Ed Sheeran</u> .
El año que viene <i>voy a ir</i> a un concierto de Ed Sheeran.	Next year <i>I am going to go</i> to an Ed Sheeran concert.
<i>¡Cantaremos y bailaremos!</i>	<i>We will sing and dance</i> .

Adapting the phrases for your own work:

<u>Underlined</u>	This is additional information that can be changed for what you want to say.
Bold	These are verbs which can be changed for different people or tenses.
<i>Italic</i>	These words must be changed if you are talking about a different person.

Challenge:

When learning the vocabulary, practise using other tenses, changing details, and talking about other people.

Módulo 6 – De Costumbre.

Learn the verbs below using LOOK, COVER, WRITE, CHECK!

Yo Form	PRESENT	PRETERITE	IMPERFECT	NEAR FUTURE
Desayunar (To eat breakfast)	desayuno	desayuné	desayunaba	voy a desayunar
Comer (To eat (lunch))	como	comí	comía	voy a comer
Cenar (To eat dinner)	ceno	cené	cenaba	voy a cenar
Doler (to hurt)	me duele	me dolió	me dolía	me va a doler
Beber (to drink)	bebo	bebí	bebía	voy a beber
Celebrar (to celebrate)	celebro	celebré	celebraba	voy a celebrar
Bailar (to dance)	bailo	bailé	bailaba	voy a bailar

My Progress with this topic:

Date	F Score	H Score	Date	F Score	H Score

Expand and adapt your vocabulary:

My independent vocabulary:

Módulo 7 – ¡A Currar!

Learn the phrases below using LOOK, COVER, WRITE, CHECK!

<i>Soy</i> <u>cocinero</u> y trabajo en <u>un restaurante</u> .	<i>I am</i> <u>a chef</u> and I work <u>in a restaurant</u>
Trabajo como <u>enfermero</u> en un <u>hospital</u> .	<i>I work</i> as a <u>nurse</u> in <u>a hospital</u>
<i>Soy</i> una persona muy <u>creativa</u>	<i>I am</i> a very <u>creative</u> person
Es un trabajo <u>exigente</u> .	It is a <u>demanding</u> job
<i>Me encanta</i> <i>mi</i> trabajo porque es muy <u>variado</u> .	<i>I love</i> <i>my</i> job because it is very <u>varied</u>
Para ganar dinero reparto <u>periódicos</u> .	To earn money, <i>I deliver</i> <u>newspapers</u>
No tengo un trabajo a tiempo parcial pero en casa <u>paso</u> la aspiradora	<i>I don't have</i> a part-time job but at home <i>I vacuum</i> .
<i>Gano</i> <u>cinco euros</u> a la hora	<i>I earn</i> <u>five euros</u> an hour
<i>Suelo</i> <u>cortar el césped</u>	<i>I usually</i> <u>cut the grass</u>
<i>Hice</i> <i>mis</i> practicas laborales en <u>la empresa de mi madre</u> .	<i>I did</i> <i>my</i> work experience <u>in my mum's company</u>
<i>Aprendí</i> <u>muchas habilidades nuevas</u> .	<i>I learnt</i> <u>a lot of new skills</u>
<i>Domino</i> <u>el inglés</u> y <i>hablo</i> un poco de <u>español</u> .	<i>I am fluent</i> in <u>English</u> and <i>I speak</i> a bit of <u>Spanish</u>
Aprender un idioma <u>te abre la mente</u> .	Learning a language <u>opens your mind</u>
<i>He</i> trabajado <u>en una oficina</u> y <i>he</i> estudiado <u>español</u> .	<i>I have</i> worked <u>in an office</u> and <i>I have</i> studied <u>Spanish</u>
En el futuro quiero <u>vivir en Colombia</u> .	In the future <i>I want</i> <u>to live in Colombia</u>
Tengo la intención de <u>casarme</u> y tener hijos.	<i>I plan</i> to get <u>married</u> and have children
<i>Me</i> gustaría <u>viajar por el mundo</u>	<i>I would</i> like <u>to travel the world</u>
<i>Espero</i> <u>ser feliz</u> .	<i>I hope</i> <u>to be happy</u>

Adapting the phrases for your own work:

<u>Underlined</u>	This is additional information that can be changed for what you want to say.
Bold	These are verbs which can be changed for different people or tenses.
<i>Italic</i>	These words must be changed if you are talking about a different person.

Challenge:

When learning the vocabulary, practise using other tenses, changing details, and talking about other people.

Módulo 1 – ¡A Currar!

Learn the verbs below using LOOK, COVER, WRITE, CHECK!

Yo Form	PRESENT	PRETERITE	IMPERFECT	NEAR FUTURE
SER to be	soy	fui	era	voy a ser
TRABAJAR to work	trabajo	trabajé	trabajaba	voy a trabajar
HACER to do	hago	hice	hacía	voy a hacer
HABLAR to speak	hablo	hablé	hablaba	voy a hablar
DOMINAR to speak fluently	domino	dominé	dominaba	voy a dominar
GANAR to earn	gano	gané	ganaba	voy a ganar
SOLER to use to	suelo		solía	

My Progress with this topic:

Date	F Score	H Score	Date	F Score	H Score

Expand and adapt your vocabulary:

My independent vocabulary:

Módulo 8 – Hacia un mundo mejor.

Learn the phrases below using LOOK, COVER, WRITE, CHECK!

<i>Vivo</i> en <u>una casa moderna</u> .	I <i>live</i> in <u>a modern house</u> .
<i>Le gustaría vivir</i> en <u>un piso cómodo</u> .	<i>He/She would like to live</i> in <u>a comfortable flat</u>
<i>Nuestro piso está</i> en <u>la tercera planta</u> .	<i>Our flat is</i> on the <u>third</u> floor.
Para cuidar el medio ambiente <i>vamos</i> en <u>bibi</u> .	To protect the environment <i>we travel</i> by <u>bike</u> .
También <i>separamos</i> la basura.	We also <i>separate</i> the rubbish.
En el futuro <i>reciclaremos</i> todo lo posible.	In the future <i>we will recycle</i> everything possible.
Creo que <i>llevo</i> una dieta <u>sana</u> .	I think I <i>lead</i> a <u>healthy</u> diet.
No <i>como</i> muchos dulces.	I <i>don't eat</i> a lot of sweets.
<i>Debería</i> comer <u>más verduras</u> porque contienen mucha <u>fibra</u> .	I <i>should eat</i> <u>more vegetables</u> because they contain a <u>lot of fibre</u> .
Para <i>mí</i> el problema más serio es <u>la drogadicción</u> .	For <i>me</i> the most serious problem is <u>drug addition</u> .
<i>Me preocupa</i> <u>el desempleo</u> porque <i>hay</i> muchas <u>personas sin hogar</u> .	<u>Unemployment</u> <i>worries me</i> because <u>there are</u> lots of <u>people without a home</u> .
<u>La destrucción de los bosques</u> es muy preocupante.	<u>The destruction of forests</u> is very worrying.
Se debería <u>plantar más árboles</u> .	One should <u>plant more trees</u> .
Hay que <u>ahorrar agua</u> .	You must <u>save water</u> .
No <i>tomo</i> drogas porque es <u>peligroso</u> .	I <i>don't take</i> drugs because it is <u>dangerous</u> .
<i>Mis amigos</i> <u>beben</u> alcohol porque <i>les relaja</i>	My friends <i>drink</i> alcohol because it <i>relaxes</i> them.
Los Juegos Olímpicos <u>elevan</u> el orgullo nacional.	The Olympic Games <u>raise</u> national pride.
<i>Me encanta</i> <u>la Copa Mundial de Fútbol</u> porque <u>une</u> <u>comunidades</u> .	I <i>love</i> <u>the Football World Cup</u> because it <u>unites</u> <u>communities</u> .

Adapting the phrases for your own work:

<u>Underlined</u>	This is additional information that can be changed for what you want to say.
Bold	These are verbs which can be changed for different people or tenses.
<i>Italic</i>	These words must be changed if you are talking about a different person.

Challenge:

When learning the vocabulary, practise using other tenses, changing details, and talking about other people.

Módulo 8 – Hacia un mundo mejor.

Learn the verbs below using LOOK, COVER, WRITE, CHECK!

Yo Form	PRESENT	PRETERITE	IMPERFECT	NEAR FUTURE
Vivir (To live)	vivo	viví	vivía	voy a vivir
Reciclar (To recycle)	reciclo	reciclé	reciclaba	voy a reciclar
Llevar (To lead)	llevo	llevé	llevaba	voy a llevar
Comer (to eat)	como	comí	comía	voy a comer
Tomar (to take)	tomo	tomé	tomaba	voy a tomar
Beber (to drink)	bebo	bebí	bebía	voy a beber
preocupar (to worry)	me preocupa	me preocupó	me preocupaba	va(n) a preocuparme

My Progress with this topic:

Date	F Score	H Score	Date	F Score	H Score

Expand and adapt your vocabulary:

My independent vocabulary:

DRAMA

Use the information that follows to either test yourself on key words/phrases for each topic (using the look/cover/check technique) or create a mind map for each topic that contains key facts and images. Once you have created a mind-map you should put it away and try to recreate it from memory, then look at your original mind-map and add what you have missed.



A: Know your Drama course

Component 1 Understand Drama	Component 2 Devising Drama	Component 3 Texts In Practice
What is assessed? Knowledge and understanding of drama and theatre. Study of a set text Blood Brother.	What is assessed? Process of creating devised drama. Performance of devised drama (as performer or designer.)	What is assessed? Performance of two extracts from one play. Free choice of play but it must contrast with Blood Brothers.
Analysis and evaluation of the work of live theatre makers.	Analysis and evaluation of own work (devising log)	Can be a monologue.
How it's assessed	How it's assessed	How it's assessed
Written exam 1hr 45mins Open book (clean text) 80 marks 40% of GCSE Marked by AQA	Devising log (60 marks) Devised performance (20 marks) 80 marks in total	Performance of extract 2 (20 marks) Performance of extract 2 (20 marks) 40 marks in total
Section A: Theatre Roles and terminology (4) Section B: Study of Blood Brothers. 4 questions on given extract from the play (44) Section C: Live theatre production: one question on the work of theatre makers in a single live theatre production.	40% of the GCSE Marked by teachers and moderated by AQA	20% of the GCSE Marked by a visiting examiner.

B: Features of a play

Performance Style:	the way in which something is performed. A realistic performance has a believable or 'life-like' performance style, or a comedy might feature multi-role or physical comedy as its performance style.
Character:	a person or other being (such as a talking animal) in a play, novel or film.
Character list:	a list of the characters that appear in the play. Some lists include a short description of the characters, such as their age or occupation.
Genre:	a category of drama such as historical drama or musical.
Stage directions:	descriptions of aspects of the play not conveyed by the actors' speeches. These may include a description of what the set or characters look like, their actions and how certain lines are spoken. It may also note pauses, silences or beats to indicate when characters are not speaking.
Monologue:	a long speech spoken by one character.
Plot:	the main events of the play presented in a particular sequence by the playwright.
Dramatic climax:	the moment of greatest dramatic tension in a play.
Resolution:	the end of the plot when the problems of the play are resolved
Dialogue:	what the characters say.

C: Terminology and areas of the stage

Realistic	A performance style that is life like or naturalistic.
Multi role	When an actor plays more than one character in a performance.
Physical comedy	The use of (over-exaggerated) body movement, gesture and facial expression to create comedy.
Pause, silence, beat	A stop in the script. Often used for the dramatic effect of creating tension or to mark an important moment in the performance.
Plot	The main events of the play.
Tension	A sense of anticipation or anxiety.
Playwright	The person responsible for writing a play.
Act	A play is divided into Acts
Scene	An Act is divided into scenes

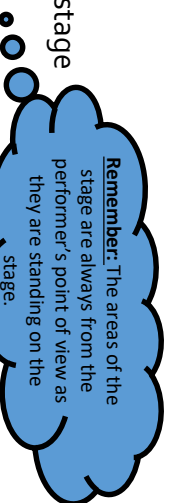
D: Vocal and Physical Skills

Accent	A way of pronouncing a language (country, area or social class)
Volume	How loud or quietly someone speaks
Pitch	How high or low someone speaks
Tone	How something is said – sarcastic tone, happy tone, sad tone
Timing	Use of pause or silence. The rhythm of the way you speak
Pace	How fast or slow someone speaks
Intonation	The rise and fall of the voice
Phrasing	How something is said for dramatic effect (pause, emphasise words)
Emotional range	Happy, sad, scared, shy, nervous (linked with tone)
Delivery of lines	Working with other actors (linked with timing) action - reaction

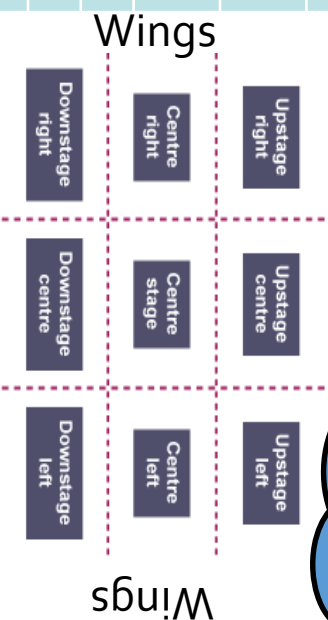
VOCAL SKILLS



Backstage



Remember: The areas of the stage are always from the performer's point of view as they are standing on the stage.



Audience



PHYSICAL SKILLS

Posture	How someone stands and/or sits (slouched, upright)
Gesture	How someone uses their hands and arms when they are speaking
Facial expression	How the face is used to communicate feeling. (EG – open mouthed, scrunched eyes, pouted lips.)
Movement	How someone moves around the stage space. This also includes physical theatre movement (dance, unison movement.)
Gait	How someone walks (stride, leap, shuffle.)

E: Theatre Roles and responsibilities

THEATRE MAKER:

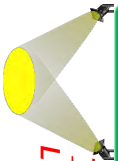
PLAYWRIGHT

WHAT THEY DO:

Writing the script of the play including the **dialogue and stage directions.**



Theatre Maker:
Lighting designer



What they do:

Design the lighting states and effects that will be used in a performance. Understanding the technical capabilities of the theatre and creating a lighting plot.

Theatre Maker:
Understudy

What they do:

Learn a part including lines and movements, so they are able to take over from someone when needed.

THEATRE MAKER:

SOUND DESIGNER

WHAT THEY DO:

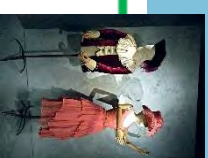
Designing the sound required for the performance, which may include music and sound effects. Considering if **microphones** are needed and creating a sound plot.



THEATRE MAKER:
Costume Designer

WHAT THEY DO:

Design what the actors wear on stage. Making sure that costumes are appropriate for the style and period of the piece.



Theatre Maker:
Technician

What they do:

Operating the technical equipment (lighting and sound boards) during a performance.

THEATRE MAKER:
Stage Manager

WHAT THEY DO:

Running the **backstage** elements of the play and supervising backstage crew. Organises the rehearsal schedule and keeps a list of **props** and other **technical** needs. Creating a **prompt book** and calling the **cues** for the performance.

THEATRE MAKER:
PERFORMER

WHAT THEY DO:

Appearing in a production, for example by acting, singing, dancing or singing. Creating a performance or assuming a role on stage in front of an audience.



THEATRE MAKER:
Theatre Manager

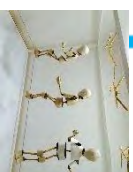
WHAT THEY DO:

Running the theatre building, including overseeing the Front of House staff and the box office staff who sell tickets.

THEATRE MAKER:
Puppet Designer

WHAT THEY DO:

Designing the puppets for a production, taking into account the style of puppets and how they will be operated.



Theatre Maker:
Director



What they do:

Overseeing the creative aspects of the production. Developing an idea for the production. Liaising with designers, rehearses the actors and ensures all technical elements are ready. Giving notes to the actors to help them improve their performance and agreeing the blocking of the actors.

Theatre Maker:
Set Designer

What they do:

Designing the set of the play. Providing sketches and other design materials before overseeing the creation of the set.

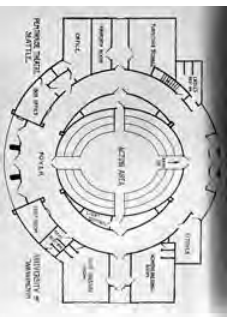


Section F: Staging Configurations

Theatre In The Round

- ADVANTAGES:**
- ❑ Directors and actors often find this a very **dynamic**, interesting space because the audience is close to the stage.
 - ❑ The actors enter and exit through the audience, which can make the audience feel more engaged.
 - ❑ Unlike spaces such as proscenium arch theatre, there is no easily achieved **'fourth wall'** separating the audience from the acting area.

- DISADVANTAGES:**
- ❖ Designers cannot use **backdrops** or flats, as this would block the audience's view.
 - ❖ Stage furniture has to be chosen very carefully so that **sightlines** are not blocked.
 - ❖ Actors have to be carefully blocked so that no section of the audience misses important pieces of action or facial expressions for too long.



A staging configuration where the audience are seated around all sides of the stage.

Sightline: the view of the audience.

Backdrop: a large painted cloth hung as part of the scenery.

Thrust Stage

- DISADVANTAGES:**
- Sightlines for audience on the extreme sides can be obstructed.
 - The audience on the left and right sides of the auditorium have each other in their view.
 - **Box sets** cannot be used.

Fourth Wall: an imaginary wall between the audience and the actors giving the impression that the actors are unaware they are being watched.



This is a common form of theatre for larger theatres or opera houses. The proscenium refers to the arch around the stage which emphasises that the audience is seeing the same stage picture. The area in front of the arch is called an apron.

- ADVANTAGES:**
- Stage pictures are easy to create as the audience look at the stage from roughly the same angle.
 - Backdrops and large scenery can be used without blocking sightlines.
 - There may be **fly space** and **wing space** for storing scenery.
 - The frame around the stage adds to the effect of a fourth wall, giving the effect of a self contained world on the stage.



A thrust stage protrudes into the auditorium with the audience on three sides. This is one of the oldest theatre types of stage.

- ADVANTAGES:**
- ✓ Combine some of the advantages of proscenium arch and theatre in the round stages.
 - ✓ As there is no audience on one side of the stage, backdrops, flats and large scenery can be used.
 - ✓ The audience may feel closer to the stage.

- DISADVANTAGES:**
- Some audience members may feel distant from the stage.
 - The auditorium could feel very formal and rigid.
 - Audience interaction may be more difficult.

Auditorium: the part of the theatre where the audience sits.

Section F: Staging Configurations

- ADVANTAGES:**
- The audience feel very close to the stage as there are two long front rows.
 - They can see the reactions of the other side of the audience facing them, which can work well for audience interaction.
 - Sometimes, extreme ends of the stage can be used to create extra acting areas.

Traverse Stage

On a traverse stage, the acting area is a long, central space with the audience seated on either side facing each other.

Audience

STAGE

Audience

End on staging is similar to a proscenium arch stage, as the audience is seated along one end of the stage directly facing it. However, it does not have the large proscenium frame.

End on Staging

- ADVANTAGES:**
- ✓ The audience all have a similar view.
 - ✓ Stage pictures are easy to create.
 - ✓ Large backdrops or projections may be used.



Fly Space: area above the stage where scenery may be stored and lowered to the stage.

DISADVANTAGES:

- ❖ Big pieces of set, scenery or backdrops can block sightlines.
- ❖ The acting area is long and thin, which can make some blocking challenging.
- ❖ Actors must be aware of making themselves visible to both sides of the audience.
- ❖ Lighting for traverse stages needs to be arranged carefully to avoid shining light in to the audience's eyes or light spilling on to them unnecessarily.

Promenade

To promenade means 'to walk' and promenade theatre is when the audience stand or follow the actors through the performance. This may occur in a conventional theatre space or it may be designed for a **site specific** show when an unconventional space is used for the production.

ADVANTAGES:

- ✓ This is an interactive and exciting type of theatre where the audience feel very involved.

DISADVANTAGES:

- Audience members on the back rows may feel very distant from the stage.
- It doesn't have the frame of the proscenium arch theatre, which can enhance some types of theatre.
- It may not have the wing and fly areas typical of proscenium arch theatre.

DISADVANTAGES:

- ❖ The audience may find moving about the space difficult or get tired standing.
- ❖ Actors and crew need to be skilled at moving the audience along and controlling their focus.
- ❖ There can be health and safety risks.

Wing Space: areas to the side of the stage. This is where actors wait, unseen by the audience, to enter the stage. Where props are stored.

fear or sadness and they get it out, creating an emotional release.
Catharsis – when the events of a play make the audience feel strong emotions like

Section G: Form and Genre

FORM – is the **type of drama** (decided by the playwright).

GENRE – refers to **what sort of story a performance tells**.

EXAMPLES OF FORM:

FORM	CONVENTIONS
PLAY	Dialogue (either scripted or improvised) between several characters.
MUSICAL	Some dialogue between characters but also some singing and dancing.
MIME	The performer(s) should remain silent and convey meaning through movement and facial expression.
MONOLOGUE	One performer who talks directly to the audience.

Sub-genres of comedy:

FARCE – improbable situations and physical humour entertain the audience.

PARODY – makes fun of an existing piece of work (eg – another play) by imitating it.

SATIRE – mocks something serious (eg- politics) by highlighting how ridiculous it is.

GENRE

CHARACTERISTICS OF THAT GENRE

<p>TRAGEDY</p> <p><i>Sophocles Shakespeare</i></p>	<ul style="list-style-type: none"> - Developed by Ancient Greeks - Serious plot - Sad ending – death of one or more main characters - Aim to produce 'catharsis' for the audience - Most modern tragedies have characters from more normal backgrounds, making it easier for the audience to relate to them. <p>-TRAGICOMEDY contains both comedy and humour.</p>
<p>DOCUMENTARY THEATRE (DOCUDRAMA)</p> <p><i>Recorded Delivery theatre company</i></p>	<ul style="list-style-type: none"> - Takes stories from real life and brings them to the stage - Modern genre of theatre - Plot, character and script taken from factual sources like newspapers, letters and interviews. - Real life events portrayed in an authentic way. - Performers can repeat source material word for word. This is known as VERBATIM THEATRE. A popular way to deliver strong message about topical issues.
<p>MELODRAMA</p> <p><i>Pantomime</i></p>	<ul style="list-style-type: none"> - Unbelievable plots - Extreme emotions and exaggerated acting - Stories about love with a happy ending - Music features heavily in Melodrama but doesn't contribute to the plot. Incidental music is played in the background to add to the overall mood.
<p>COMEDY</p> <p><i>Shakespeare</i></p>	<ul style="list-style-type: none"> - Also date back to Ancient Greece - Light hearted plot, witty dialogue - Happy ending for the main characters - Shakespeare used techniques such as wordplay and mistaken identity to create comedy - Visual comedy – characters' appearance, actions and use of props create humour as well as their words.

FOOD PREPARATION AND NUTRITION

Use the information that follows to either test yourself on key words/phrases for each topic (using the look/cover/check technique) or create a mind map for each topic that contains key facts and images. Once you have created a mind-map you should put it away and try to recreate it from memory, then look at your original mind-map and add what you have missed.



Eatwell Guide



Eight tips for healthy eating

- The Department of Health has produced the following practical tips to help you make healthier choices. They are:
- 1) Base your meals on starchy foods
 - 2) Eat lots of fruit and veg
 - 3) Eat more fish
 - 4) Cut down on saturated fat and sugar
 - 5) Eat less salt
 - 6) Get active and be a healthy weight
 - 7) Don't get thirsty
 - 8) Don't skip breakfast

change
4 Life
Eat well Move more Live longer

5 A DAY
YOUR WAY

2. PROTEIN

- is a **macronutrient**
- is formed from **chains of amino acids**.
- **8 amino acids** need to be provided by the diet and are called **essential amino acids**. **Children require 2 more**.
- Protein is used for specific functions in the body: **growth, repair, maintenance** and is a **secondary energy source**.

BIOLOGICAL VALUE

The biological value of protein means the amount of essential amino acids present.

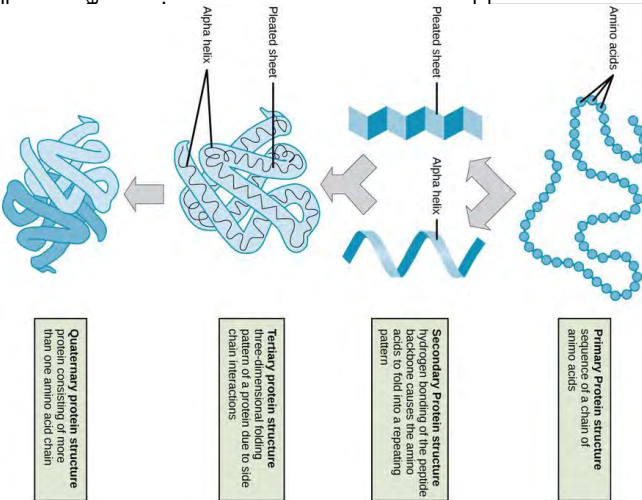
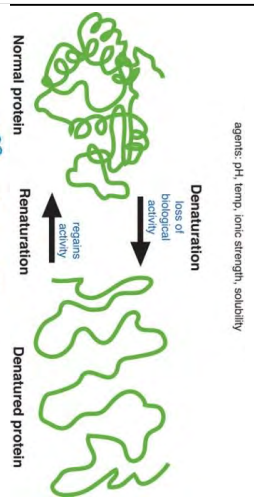
Animal protein sources contain **all the essential amino acids** - required by the body **HBV high biological value**.

Mycoprotein (Quorn) and texturised vegetable protein (TVP) are of HBV too.

Proteins from plant sources are **of low biological value** and lack some essential amino acids. The exception is soya, which is a plant protein of HBV.

PROTEIN EXCESS AND DEFICIENCIES

third source of energy - In developing countries KWASHIORKOR occurs.
more protein required in - babies and children for growth - adolescents for growth spurts - pregnant women (baby) - nursing mothers (lactation).



3. FAT

- is a **macronutrient**
- Made up of fatty acids and glycerol.
- structure of fatty acids influences their effect on health and cooking choice.
- fat soluble vitamins A, D, E and K.
- Provides protection for the bodies major organs
- Fat is a component of hormones.

Saturated Fat

meat, butter, dairy products, solid at room temperature

increase levels of "bad" cholesterol (low-density lipoprotein)

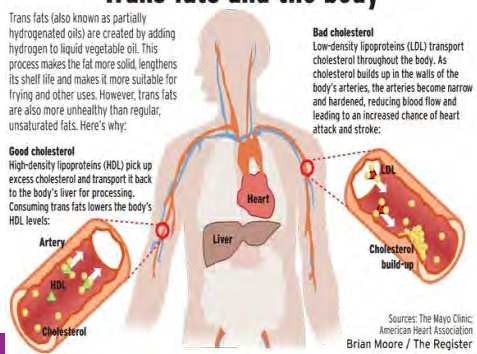
Unsaturated Fat

vegetable oils, liquid at room temperature

increase levels of "good" cholesterol (high-density lipoprotein)

of HDL, "good" LDL, and escorts it to the liver where LDL is broken down and eventually removed from the body

Trans fats and the body



4. CARBOHYDRATE

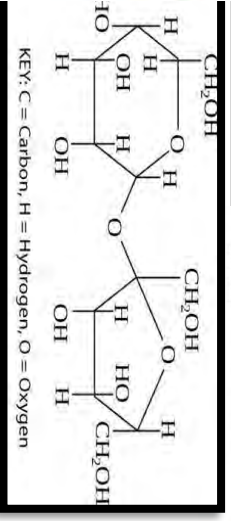
- is a **macronutrient**
- Body needs a constant supply of glucose, for energy.
- **Dietary fibre** is a form of carbohydrate.
- are produced during photosynthesis.
- mono, di, poly saccharides

Fast release of Energy

Simple carbohydrates

Simple carbohydrates are found in milk, fruit, milk, and vegetables

Cake, candy and other refined sugar products are simple sugars which also contain fat, but lack vitamins, minerals, and fiber



Types of Fiber

- Soluble fiber**
- Gelatinous texture (gums)
 - It is produced from pectin (gasitric, heartburn)
 - It helps to **soften constipation** and to **regulate cholesterol**
 - It is explained in fruits, vegetables, legumes, seaweed
- Insoluble Fiber**
- Dry Texture (wheat bran)
 - It satisfies the appetite and has **laxative effect** (obesity)
 - It reduces cholesterol.
 - It is contained in whole grains, nuts and seeds



5 micronutrients

Slow release of Energy

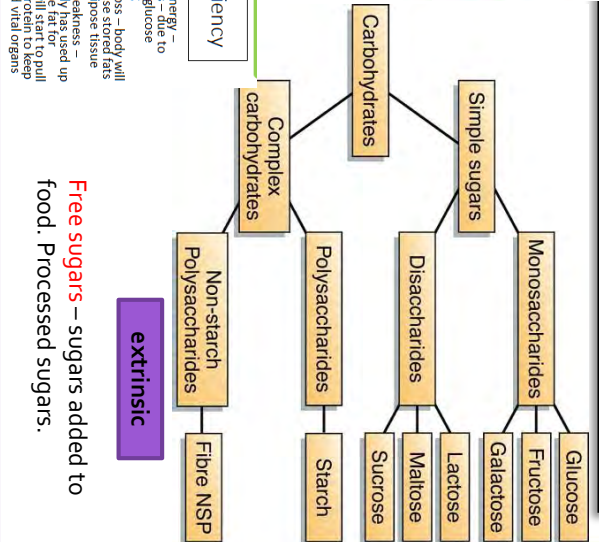
Complex carbohydrates

Complex carbohydrates are found in rice, pasta, and starchy vegetable

Complex carbohydrates are found in fruits, vegetables, and fiber

- **intrinsic**
- Intrinsic – fruit and veg – easier for body to absorb

- Too much sucrose**
- Obesity and tooth decay.
 - Tooth decay = plaque+
 - acid – holes in teeth
 - Hypoactivity (see next slide)
- Excess**
- Obesity
 - Hypoactivity
 - Poor health
 - Dental caries
 - Diabets
 - caused by the sugar has on the pancreas
- Deficiency**
- Lack of energy – to
 - Hypoactivity
 - levels of glucose dropping
 - Weight loss – body will start to use stored fats in the adipose tissue
 - Severe weakness – if energy is used up in the process of pulling it from protein to keep brain and vital organs



Free sugars – sugars added to food. Processed sugars.

extrinsic

PROTEIN COMPLEMENTATION

Protein of LBV can be eaten together to provide all the essential amino acids. Called protein complementation.

This is important for vegetarians and vegans.

Vitamin	Major Function	Dietary Sources
Fat Soluble		
A	Maintenance of skin, bone, teeth, growth, and vision	Carrots, broccoli, spinach, eggs, cheese, and milk
D	Maintenance and growth of bones	Milk, egg yolk, tuna, and salmon
E	Antioxidant	Vegetable oils, whole grains, green leafy vegetables
K	Blood clotting	Green leafy vegetables, cabbage, and milk
Water Soluble		
B ₁ (thiamin)	Energy production	Breads, pasta, pork, oysters
B ₂ (riboflavin)	Energy production	Milk, meat, cereals, pasta, dark green vegetables
B ₃ (niacin)	Energy production	Poultry, meat, tuna, cereal, pasta, bread, nuts, legumes
B ₆ (pyridoxine)	Protein and fat metabolism	Avocados, green beans, spinach, cereals, bread
B ₁₂ (cobalamin)	Red blood cell formation	Meat, fish, milk, eggs
Folic acid	DNA synthesis, red blood cell formation	Dark green leafy vegetables, fortified cereals, wheat germ, oranges, bananas
Pantothenic acid	Macronutrient metabolism, hormone synthesis	Cereals, bread, nuts, eggs, dark green vegetables
Biotin	Fatty acid synthesis, energy production	Egg yolk, green leafy vegetables
C (ascorbic acid)	Antioxidant, maintenance of bones, teeth, collagen	Citrus fruits, melons, strawberries, tomatoes, green peppers, potatoes
Mineral	Major Function	Dietary Sources
Major Minerals		
Calcium	Growth, bone and teeth formation, nerve impulses	Dairy, dark green vegetables, sardines, clams
Sodium	Body water and acid-base balance, nerve function	Abundant in most foods
Potassium	Body water and acid-base balance, nerve function	Meat, milk, fruits, vegetables, cereals, legumes
Chloride	Acid-base balance	Table salt, seafood, meats, eggs, milk
Phosphorous	Bone and teeth formation, acid-base balance	Dairy, meat, fish, poultry, nuts, grains
Trace Minerals		
Iron	Component of hemoglobin and enzymes	Meats, eggs, legumes, grains, dark green vegetables
Chromium	Glucose and energy metabolism	Fats, meats, cereals
Zinc	Component of enzymes	Milk, shellfish, wheat bran

Key Words:

1. **Kosher:** refers to food that is allowed to be eaten because it is considered clean in Judaism.
2. **Halal:** meat which has been slaughtered in a specific way.
3. **Lacto vegetarian:** are vegetarians who eat no fish, meat, meat products, or eggs, but eat dairy foods.
4. **Lacto-ovo vegetarian:** are vegetarians who eat no fish, meat, meat products, but eat eggs and dairy products.
5. **Vegan:** are vegetarians who eat no fish, no meat, meat products, eggs or dairy foods. Only plant foods are eaten.
6. **Ethical:** relating to moral principles or the branch of knowledge dealing with these.
7. **Diabetes:** is a condition caused because the pancreas doesn't produce any, or enough, insulin to control the amount of sugar in the blood.
8. **Coeliac:** is a person suffering from coeliac disease.
9. **Gluten:** is a general name for the proteins found in flour.
10. **Lactose intolerance:** means you cannot digest lactose.
11. **Allergy:** also known as allergic diseases, are a number of conditions caused by hypersensitivity of the immune system to something in the environment that usually causes little or no problem in most people. These diseases include hay fever, food allergies, atopic dermatitis, allergic asthma, and anaphylaxis.

Year 10/ 11 Knowledge Organiser WJEC Food Preparation & Nutrition: Unit 2 – Food Choice

13. **Regional:** relating to the regions of a country.
14. **Multicultural:** relating to or containing several cultural or ethnic groups within a society.
15. **Cuisine:** is a style of food characteristics to a particular country or region.
16. **Food intolerance:** is a sensitivity to some foods.
17. **Lactose:** is the sugar naturally found in milk.
18. **Coeliac disease:** is a bowel disease; a sensitivity to gluten.
19. **Seasonal:** refers to foods that are only available at certain times of the year.
20. **Physical Activity Level (PAL):** is the amount of physical activity you do each day, for example sitting, standing, running and exercise.
21. **Disposable income:** is what money is left over for saving or spending after taxes are subtracted from income.
22. **Food miles:** are the distance that food is transported as it travels from producer to consumer.
23. **Carbon footprint:** is the amount of greenhouse gases produced in the production and transportation of foods.
24. **Anaphylaxis:** Anaphylaxis is a severe and potentially life-threatening reaction to a trigger such as an allergy. It's also known as **anaphylactic shock**.

How nutritional needs vary depending on age

1. As we age our nutritional needs change due to a number of reasons.
2. **YOUNG CHILDREN** – growth spurt – require more protein, calcium and vitamin D. Teething – calcium, fluoride and VitD, developing immune system, fewer sugary sweets and drinks to prevent overweight and tooth decay.
3. **TEENAGERS** – Calcium and vitamin D for growth spurts and bones, iron to prevent anaemia, eat regularly for energy, fewer sweets and sugary drinks to prevent obesity.
4. **ADULTS AND THE ELDERLY** – more dietary fibre to prevent obesity, diabetes and cancers, more vitamin D and calcium for bones, fewer sugars snacks and drinks, elderly need less energy and energy dense foods, more iron to prevent anaemia and maintain healthy red blood cells, less salt and more water to reduce hypertension.

Portion size and costing when planning a meal.

1. Eating the correct portion size ensures that individuals nutritional and energy needs are met. Must stay within the family budget.

Diet, Nutrition and Health:

1. **Hypertension** – condition in which blood pressure is too high. Due to obesity, smoking ..
2. **Iron deficiency anaemia** – condition caused by a lack of iron in the diet.
3. **Obesity** – Condition in which fat is stored by the body in large amounts.
4. **Coronary heart disease** – condition in which blood vessels in the heart are narrowed by cholesterol plaque build –up.
5. **Type 2 diabetes** – chronic condition in which blood sugar levels are abnormally high.
6. **Skeletal disorders** – group of diseases of the skeletal system caused by a deficiency of micronutrients.
7. **Energy –is the number of calories you need to consumer every day to maintain function and body mass.**
8. **Energy needs – depend on sex, age, height, weight, occupation, lifestyle, body composition.**
9. **BMR** – basal metabolic rate.
10. **PAL** – physical activity level
11. **BMR x PAL = total energy expenditure (TEE)**
12. **BMI** – body mass index.

Religion

1. **Rastafarians** – eat i-tal (clean, natural and pure), coconut oil, herbal tea, fruit and veg. Don't eat pork, salt, milk coffee, alcohol.
2. **Buddhists** – eat a vegetarian diet, don't eat meat and alcohol.
3. **Muslims** –eat halal food only, don't eat pork, alcohol, fish and shellfish, without scales.
4. **Jews** – eat kosher food, don't eat shellfish, pork, meat with dairy.
5. **Hindus** –eat milk, main vegetarian, don't eat beef and alcohol.
6. **Sikhs** – eat a vegetarian diet,, don't eat alcohol, kosher, halal, beef.
7. **Christians** –eat generally everything, don't eat

Ethical beliefs

1. May be based on – animals suffering, how food is made or how food production affects the environment.
 2. **Fair-trade** – global movement focused on ensuring fair working conditions, prices and wages to farmers and workers in developing countries.
 3. **Animal welfare** – Movement focused on ensuring the well-being of animals and humane conditions for rearing animals.
 4. **Organic foods** - Plants and animals are grown and reared in the most natural way possible.
 5. **GM foods** – Plants or animals in which DNA has been altered.
 6. **Local produce** – local food fresher, tastier, cheaper, fewer food miles and lower carbon emissions.
 7. **Food miles** – Distance from a farm to the plate.
 8. **Carbon footprint** – amount of carbon dioxide and other greenhouse gases emitted during the production of the food.
 9. **Greenhouse gases** - carbon dioxide, water vapour, nitrous oxide, ozone .
- ### Medical Conditions
1. **Food intolerances** – reaction of the digestive tract to a food ingredient.
 2. **Most common intolerances** – lactose, gluten (in wheat, barley, rye and oats)
 3. **Symptoms and diet** – cause bloating, stomach cramps or diarrhoea.
 4. **Food allergy** – reaction of the immune system to a food ingredient.
 5. **Most common allergens** – nuts, eggs, milk, wheat, fish and shellfish.
 6. **Symptoms and diet** – can cause a severe, life threatening reaction.
 7. **Anaphylactic shock** – must avoid the food.

Factors influencing food choices:

1. **Physical activity level** – amount of energy needed to perform daily tasks.
2. **Healthy eating** – a balanced and varied diet.
3. **Lifestyle** – the way people live.
4. **Food availability** – the amount and variety of food available.
5. **Seasonality** – availability of foods.
6. **Cost of food** – the price of food products.
7. **Income** – disposable income is the amount of money a family can spend on rent and food.
8. **Preferences** – some prefer sweet or savoury.
9. **Enjoyment** – eat certain foods for enjoyment.
10. **Time available to prepare food** – busy
11. **Time of day** – breakfast, lunch and dinner.
12. **Celebration** – plays an important part for special occasions.

British Cuisine:

1. **England** – Cornish pasty, Yorkshire pudding, fish and chips, English breakfast, sandwiches, roast dinner, beer and cider.
 2. **Wales** – Cawl meaty broth, welsh rarebit, Glamorgan sausage, welsh cakes, bara brith, laver bread.
 3. **Northern Ireland** – colcannon, soda bread, black pudding, Irish stew, oatmeal, Irish cream, whiskey and beer.
 4. **Scotland** – porridge, scotch broth, Dunlop cheese, kippers, haggis, scotch pie, oat cakes
- ### International Cuisine:
1. **Mediterranean cuisine** – olives and olive oil, grapes, wine, fish, seafood, tomatoes, aubergines, courgettes.
 2. **Chinese** – noodle, rice, pork, duck, chicken, Chinese cabbage, water chestnuts, bamboo shoots, mushrooms, bean sprouts, soy sauce
 3. **Japanese** – rice, soya, fish, seafood, noodles, seaweed, eggs, seasonal foods, green tea, wasabi.
 4. **India** – rice, lentils, chickpeas, beans, coconut milk, ghee butter, paneer cheese.

Year 10/ 11 Knowledge Organiser

WJEC Food Preparation & Nutrition: Unit 3 –

Food Science

Why do we cook food?

1. **Making it safe** – heat kills bacteria, inactivates harmful enzymes and toxins.
2. **To develop flavours** – water evaporation, adding sugar – caramelisation and other reactions add flavour.
3. **To improve texture** – makes food easier to eat.
4. **To improve shelf life** – cooking kills microorganisms which could spoil the food.
5. **To increase variety** – one product may be cooked in many different ways.

Heat transfer

1. **CONDUCTION**- direct heat from the saucepan to the food inside.
HOB → PAN → FOOD
E.G. boiling water
2. **CONVECTION** – indirect transfer of the heat through water or air.
OVEN → AIR → FOOD
E.G. steaming vegetables, baking muffins.
3. **RADIATION** – indirect transfer of heat through heat waves.
• **Microwaves send electromagnetic waves** – heating up the food.
• Used in grills and barbecues.
HEAT → WAVES → FOOD
E.G. grilling meat, toasting bread, microwaving soup

Sensory evaluation

1. **Smell** – Olfactory system responds to aroma stimuli and sends information to the brain.
2. **Touch** – helpful in judging the texture, consistency and mouthfeel of the food.
3. **Eyesight** – important when presenting food, more appetising, colourful, neat and decorated.
4. **Hearing** – crunchiness and crispiness indicates its freshness.
5. **Taste** – taste buds located on the tongue. 5 tastes – sweet, sour, salty, bitter and umami.

How does cooking affect food?

1. **Appearance** – meats shrink, cakes rise, eggs become solid, sauces thicken, rice and pasta increase in size.
2. **Colour** - Foods become golden or brown, red and green vegetable may lose colour.
3. **Flavour** – ay become sweeter, more pronounced, rich.
4. **Texture** – eggs set, vegetables and meats soften, chips become crunchy, bread becomes crispy, custard becomes creamy, sauces thicken.
5. **Smell** – is more pronounced because essential oils fill the air and are more easily detected by the olfactory system.
6. **Maillard reaction** – high temperatures, sugar and protein react with each other producing brown compounds what affect the colour, taste and smell of food. E.g.. Browning of onions.

Cooking methods – oil based methods

1. **Deep fat frying** – foods become golden and crunchy, but their nutritional value is poor. (loss of vitamins, high fat content)
2. **Shallow frying** – seals the surface of food and helps to obtain crunchiness top and juicy interior.
3. **Stir frying** – low fat. Helps to preserve nutritional value of food.

Cooking methods – water based methods

1. **Steaming** – Helps preserve nutritional value of food. Low in fat.
2. **Boiling** – May cause vitamin loss. Low in fat.
3. **Simmering**- long time required. Causes vitamin loss.
4. **Blanching** – prevents enzymic browning and oxidation, preserves nutritional value.
5. **Poaching** – ideal for preparing delicate ingredients.
6. **braising** – long time required. Causes vitamin loss.

Cooking methods – dry methods

1. **Baking** - long time required. Causes vitamin loss. Palatability is improved (cakes and other baked goods become sponge like and often have crispy top).
2. **Roasting** - Helps to reduce amount of fat in food. Long time required. Decreases vitamin content. Helps to obtain a crispy skin or surface.
3. **Grilling** – may create harmful substances. Usually low in fat.
4. **Dry-frying** – Reduces amount of fat n food. Nutritional value is preserved.



Functional and chemical properties of food

Protein

Macromolecules built of thousands of amino acids bonded together into long chains.

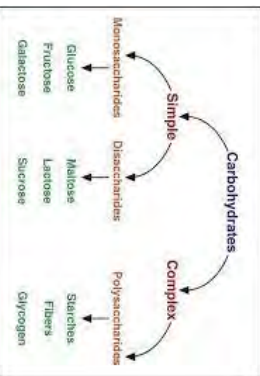
AMINO ACID-PEPTIDES-POLYPEPTIDES (PROTEINS)

QUATERNARY

Functional and chemical properties

- Denaturation** – damage of the protein's structure caused by:
 - Heat** – during cooking, proteins vibrate resulting in hydrogen bonds being broken.
 - Acid** – hydrogen atoms from the acid bind with nitrogen from the protein, preventing it from forming hydrogen bonds within protein molecules, and so it cannot form a 3D structure.
 - Mechanical action** – during whisking, protein uncoils and exposes hydrophobic areas, which stick together and form a foam.
 - Coagulation** – aggregation (heating) of protein particles into larger lumps, causing it to set. Eg setting of egg.
 - Syneresis** – leakage of water from overcooked (over-coagulated) proteins. Usually associated with eggs.
 - Gluten formation** – complex, net-like protein built of glutenin and gliadin. Proteins from wheat, rye, barley and oats. Net traps and hold air bubbles during proving and baking.
- Glutenin+gliadin+water= gluten net, soft springy texture.**
- Foam formation** – air bubbles trapped in a liquid (e.g. egg white). Whisking makes proteins unravel and denature.

Carbohydrate

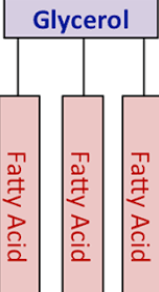


Macromolecules which include mono-, di- and polysaccharides (built of thousands of monosaccharides bonded together).

Functional and chemical properties

- Gelatinisation** – happens when starch granules absorb water, swell and break during heating, causing mixture to thicken and form a gel when cooled.
 - Starch+water+heat= gelatinisation**
 - Dextrinisation** – happens when starch chains break down into shorter chains of dextrin's, during the process, molecules of water evaporate and carbon is left to give brown colour, occurs during baking and tasting bread and other baked goods.
 - Starch+heat=dextrinisation**
 - Caramelisation** – happens when sugar is heated to a very high temp, causing it to liquify and form a thick, brown syrup, during the process, water evaporates and carbon is left to create a brown or black colour, occurs during roasting of vegetables, making caramel and fudge etc.
- Sugar+heat=caramelisation**
- ENZYMIC BROWNING** – discolouration of fruits and vegetables as a result of oxygen reacting with enzymes and plant cell substances.
 - Slow down – lower temp, adding heat and acid, removing the oxygen.**
 - Oxidation** – substances react with oxygen changing the appearance, smell and nutritional value of food.

Fats and oils



- Macromolecules built of a glycerol head and fatty acid tail.
- Fat particles are **immiscible** - they are repelled by water molecules and separate from it, forming little droplets of oil in the mixture, and eventually creating a coat on top of it.

Functional and chemical properties

- Shortening** – when fat particles surround starch to produce a waterproof layer. Prevents gluten formation.
 - Aeration** – trapping air bubbles in a fat mixture, e.g. cream or butter, to improve its texture.
 - Plasticity** – ability of fat to be easily spreadable and melt at various temperatures. Depends on the length of the fatty acid chain.
 - Melting point** - temp when fat turns to oil.
 - Emulsion** – stable mixture of oil and water.
- Water-in-oil emulsion – butter**
- Oil-in-water emulsion – milk**
 - Emulsifiers**- used bind together molecules into a stable emulsion. E.g. lecithin from egg yolk used to make mayonnaise.
- ## Raising agents
- MECHANICAL** – methods of trapping air bubbles to mixtures or between layers. Whisking, beating, folding, rubbing-in, sieving, creaming.
 - BIOLOGICAL** – yeast is a single-celled fungus used in the production of baked goods, cheese, wine and beer.
 - YEAST+SUGAR+WARMTH+LIQUID- CARBON DIOXIDE+ALCOHOL/ACID.**
 - CHEMICAL** – bicarbonate of soda and baking powder. CO2 bubbles form and cause the batter to rise, while proteins set and structure becomes stable.

Food spoilage and contamination

1. Food spoilage may be caused by many various microorganisms – bacteria, yeast and moulds – as well as by enzymes naturally present in the food products.

Microorganisms

1. Tiny organisms visible only under a microscope e.g. bacteria, yeast and mould.
2. Warmth – ideally a temperature between 5°C and 63°C.
3. Water – microorganisms grown better in moist conditions.
4. Good – ideally protein, but sometimes also sugar.
5. Time – the longer the time, the more time microorganisms have to multiply.
6. DANGER ZONE – 5°C – 63°C. Bacteria growth above and below these temperatures is slower.
7. Growth controlled – by storing food in proper conditions, freezing and refrigerating food, cooking food before eating, not refreezing food once it has been defrosted.

Enzymes

1. Enzymes - Biologically active protein-based molecules.
2. Catalysts – speed up the rate of chemical reactions.
3. Enzymes are necessary for fruit to ripen.
4. Enzymic browning – darkening of fruit and vegetables caused by enzymes and should be avoided to preserve nutritional value of food.
5. Browning can be stopped by:-
Blanching – food put into boiling water then immediately plunged into cold water or ice.
6. Use of acids – use of lemon juice or vinegar. Acid denatures and deactivates enzymes, because they are built of protein.

Year 10/ 11 Knowledge Organiser

WJEC Food Preparation & Nutrition: Unit 4 –

Food Safety

Key terms

1. **Shelf life** – period of time during which food can be safely stored and eaten.
2. **Food poisoning** – illness caused by eating contaminated food or drinking contaminated water.
3. **First in, first out** – Rule which says that the oldest foods should be eaten first.
4. **Vacuum packing** – Packaging food in airtight foil bags to remove oxygen and prevent spoilage.
5. **Food covering** – prevents from light, air, oxygen and dust, protects from pests and rodents, tainting.
6. **Perishable foods** – have a fairly short shelf life and need to be stored in the fridge. Raw and cooked meat, especially minced, raw and cooked poultry, raw and cooked fish and shellfish, milk and dairy, eggs, vegetables and fruit.
7. **Insulated cold bag** – used to transport high-risk foods and maintain their low temperature.
8. **Best before** – applied to food quality (look, flavour and colour) and it's relatively safe to eat the food after that date: it is used on dry, frozen or tinned foods and eggs.
9. **Use by** – applies to food safety so it might be harmful to eat a food after that date: used on fresh foods such as milk and dairy.
10. **Ambient storage** – storing at room temperature usually around 20°C.
11. British Lion Scheme – food safety mark which guarantees that eggs are produced in the UK and that all the hens have been vaccinated against salmonella.

Cross-contamination

1. Cross-contamination – is when bacteria, toxins or food particles are transferred to a food product.
Caused by:-
 - Waste food and rubbish
 - Pests and rodents
 - The cooks hand
 - Work surfaces and equipment
 - Other contaminated foods, including high-risk foods.
2. Anaphylactic shock – is a life-threatening reaction of the immune system to an allergen
Most common allergens – nuts, fish and seafood, milk and eggs.

Food poisoning

1. Food poisoning – is a disease caused by eating spoiled or contaminated food. Such food may contain certain microorganisms, toxins or enzymes.
2. Pathogenic bacteria – microorganisms which cause disease.
3. Carrier – a person who carries a pathogen but shows no symptoms of a disease.
4. Symptoms – stomach pains and cramps, nausea and vomiting, diarrhoea, fever, shivering
5. Campylobacter – raw poultry and unpasteurised milk.
6. E. Coli – undercooked beef, unwashed vegetables, dirty hands.
7. Salmonella – raw eggs, meat and poultry, unpasteurised milk.
8. Listeria – ready-to-eat foods, unpasteurised milk, dirty hands.
9. Staphylococcus aureus – salads, ham, eggs, tuna, poultry, cream, hands of an infected person.

Use in food production and signs of food spoilage

BACTERIA

- FOOD SPOILAGE** – Clostridium botulinum produces a toxin which causes meat bulge. Most bacteria do not cause visible signs of spoilage.
- USE IN FOOD MANUFACTURING** – cheese used a starter culture LACTOBACILLUS to give a balanced aroma taste and texture. Yoghurts – starter culture, probiotics – health benefits.
- WHY DOES THIS WORK?** Bacteria ferment lactose from milk into lactic acid, giving food a sour taste and coagulates the protein. Causes yoghurt to become thicker.

YEAST

- FOOD SPOILAGE** ferments sugar in juices and beverages, making them sour, fizzy and foamy.
- USE IN FOOD MANUFACTURING** Bread, doughnuts and other baked goods use yeast to help them rise.
- WHY DOES THIS WORK?** Yeast ferments sugar in foods and produces carbon dioxide to help it rise. It also crates fizz in some alcoholic drinks.

MOULD

- FOOD SPOILAGE** Creates a green, white or black coating on food products such as bread, grapes, tomatoes and jams.
- USE IN FOOD MANUFACTURING** Blue cheeses, such as Stilton, have a mould called Penicillium added to give them a distinctive texture, taste and aroma.
- WHY DOES THIS WORK?** Mould breaks down polysaccharides into shorter chains, which changes the taste of the food.

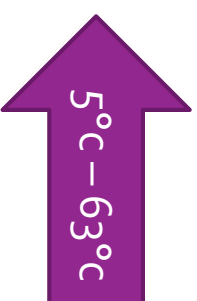
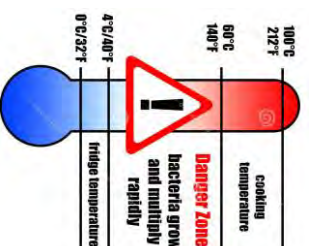
ENZYMES

- FOOD SPOILAGE** Turn bananas, apples, potatoes and other foods brown.
- USE IN FOOD MANUFACTURING** Rennet is an enzyme used in cheese production to coagulate milk.
- WHY DOES THIS WORK?** Enzymes react with oxygen and turn yellow pigments in food into brown melanin.

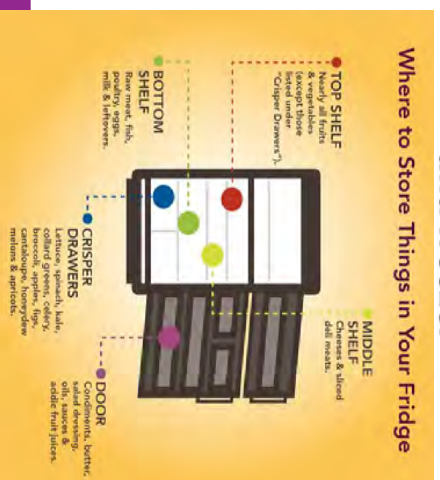
Temperature Control

- Tainting – means that the m=smell of one food contaminates other food. Always cover.
- Freezer burn – involves the dehydration and oxidation of food caused by improper freezing. E.g. inadequate packaging.

Freezing	-18°C
Chilling	0°C – 5°C
Cooking	Above 75°C
reheating	Above 75°C.



Correct use of a domestic fridge and freezer



Food safety principles when cooking and preparing food

- PERSONAL HYGIENE**
 - Always wash hands before and after cooking and dry with disposable paper towels.
 - Avoid touching your face or hair
 - Tie your hair back and cover with a hairnet.
 - Avoid cooking when you're ill.
 - Change clothes and use an apron.
 - Cover any wounds with a waterproof plaster.
 - Do not wear rings or other jewellery when cooking.
- SEPARATE FOODS**
 - Separate raw and cooked foods both when preparing and storing food.
 - Cover prepared food and store in closed containers.
 - Use dedicated, colour-coded utensils.
 - Wash dishes straightaway in hot water to avoid pests and cross-contamination.
- WORK SURFACES**
 - Clean thoroughly after dealing with high-risk foods.
 - Use soapy hot water or antibacterial spray to clean any spills.
 - Use a clean kitchen towel or disposable paper towels.
- TEMPERATURE CONTROL**
 - Make sure the temperature inside food reaches 75°C both when cooking and reheating.
 - Make sure the temperature of served food is above 63°C.
 - Do not put hot food straight into the fridge – let it cool for 90 minutes.
 - Ensure correct cooking time to avoid cold spots.
 - Defrost thoroughly to avoid cold spots.

Supporting health

1. Healthy eating – what we eat has a huge impact on our health. Too little may lead to a nutrient deficiency. High level of processing could lead to a lack of nutrients.

2. **Governments and producers** – strive to make food safe and healthy for consumers by adding substances which are beneficial for health.

3. **Cholesterol-lowering spreads** – fat spreads enriched with plant sterols and plant stanols. Substances proven to effective lower blood cholesterol level an prevent atherosclerosis.

4. **Cholesterol** – fatty substance necessary for correctly transporting fats around the body.

LDL – Bad as increases cholesterol amount in blood. Can block up the blood vessels.

HDL – good as it transports cholesterol to the liver, which can remove its excess from the body.

5. Health outcomes of increased cholesterol and excessive fat consumption – excess. Cholesterol deposited in the blood vessels and create atherosclerotic plaque. Risk of hypertension, CHD, heart failure and stroke.

Food fortification

1. **Food fortification** – during processing many food products lose their nutritional value. The main function of food fortification is to:-

- Restore the nutritional value of foods
- Improve the nutritional value of foods
- Make food more suitable for certain groups of consumers
- Prevent diseases caused by malnutrition.

2. **Fortification required by law:-**
Wheat flour and bread – Thiamine – prevent beri beri, help release energy from food. Niacin to prevent pellagra, calcium to prevent rickets and osteoporosis, iron to prevent iron deficiency and anaemia.

Vegetable fat spreads. Vit A – prevent growth and eyesight issues eg. Night blindness, Vit D – prevent rickets and osteoporosis.

Skimmed and skimmed milk. Vit A – prevent growth and eyesight issues e.g. night blindness.

Year 10/ 11 Knowledge Organiser

WJEC Food Preparation & Nutrition: Unit 5 –

Food Provenance

Food additives

	advantages	disadvantages
Colouring	<ul style="list-style-type: none"> • Improve the look of food • Make appetising 	<ul style="list-style-type: none"> • Hides poor quality food • hyperactivity in children.
Emulsifiers and stabilisers	<ul style="list-style-type: none"> • Prevents ingredients from separating • Maintain the texture 	<ul style="list-style-type: none"> • Flatulence and bloating. • Hides poor quality ingredients.
Flavourings	<ul style="list-style-type: none"> • Improve taste and smell • More appetising. 	<ul style="list-style-type: none"> • Hides poor quality ingredients • Increase appetite.
preservatives	<ul style="list-style-type: none"> • Increased shelf life • Prevent oxidation and spoilage. 	<ul style="list-style-type: none"> • May cause allergic and anaphylactic shock. • Cause cancer

Genetic modifications

1. **Plant cell** – cells contain DNA. DNA built of tiny genes which encode all information about an organism.
2. **Cell- nucleus- chromosome-DNA- gene**
Modern technologies – allow people to manipulate the DNA code.
 - cut out unwanted genes to avoid disease.
 - Modify the sequence of genes.
 - Paste new genes to add new features
3. **Genetically modified** – when the DNA has been changed.

advantages	disadvantages
Resistant to weather condition, pests	GM seeds contaminate fields.
Need fewer nutrients to grow	No proof that they are safe
Less need for fertilisers and herbicides	May increase risk to allergies and cancer. And obesity.
Animals produce more muscle tissue and milk	The use of bacteria and viruses in production cause new diseases.
Produce high-yield crops, high nutrition.	Resistance to antibiotics. Pests develop resistance.

Food production – primary sources of food.

1. **Primary source** – foods in their natural, raw state e.g. milk, what grains, apples.
2. **Primary processing of food** – doesn't significantly affect the natural values of food products. **Sorting, trimming, discarding, washing, wrapping, draining, trussing, cutting, heat treatment, milling, deboning, skinning, deseeding.**
3. **Making of flour** – harvesting and transport to mill, separating from dirt etc, washing and drying; milling; sieving
4. **Bran – the outer layer of a grain.**
5. **Heat treatment of milk.**
Pasteurisation – 72c for 15 sec to kill pathogenic bacteria.
Ultra-heat-treatment – heated 135c for 1-2 seconds, kill bacteria.
Microfiltration – milk pushed through very fine membranes.
Sterilisation – heated to 110° c for 30 mins. Nutrients + flavour affected.
Drying – condensed, then dried, fall in B vitamin levels.

Food production – secondary sources of food.

1. **Secondary source** – goods that have been changed e.g. yoghurt, flour, jam
2. **Secondary processing of food** – affects natural features to obtain new food products. Smoking, irradiation, adding additives, fermentation, cooking/heating, drying and freeze-drying.
3. **The making of pasta** – harvesting, milling, mixing, kneading, adding flavourings and colourings, rolling, pasteurisation, cut into shapes, drying, packaging
Jam – harvesting, washing, crushing, adding water and sugar, simmering, pouring into jars.
Pectin – natural gelling agent present in fruit.
Acid – can be naturally occurring. May be added to the mixture to help release the pectin.
7. **The making of yoghurt** – milk cows, transporting of milk, pasteurisation and homogenisation, warming to 42°c, adding starter culture, fermentation (ripening), cooling, adding flavourings, packaging.
8. **Starter cultures** – probiotic bacteria begins the fermentation process.
9. **Fermentation** – changing lactose into lactic acid by adding bacteria. Change in PH leads to coagulation and thickens mix.
10. **Making of cheese** – milking, transportation, pasteurisation, homogenisation, adding starter culture, fermentation, added rennet, cutting curd, pressing, add salt, pressing, ageing.
11. **Rennet** – enzyme which coagulates milk and increases curdling.
12. **Why:** liquid by-product of cheese production.

Food and the environment, and

sustainability of food.

- Danger of carbon dioxide** – production creates carbon dioxide. This creates a layer around the earth which reflects warmth back onto the earth. Average temp rises.
 - Carbon footprint** – amount of CO₂ and greenhouse gases emitted into the environment. By input, processing and output.
 - Global warming** – rise in average temperature on earth due to extravagant release of greenhouse gases.
- CO₂ layer – heat cannot escape – rise in temp – glaciers melt- fierce hurricanes, rainfall- crop failure – food shortage.**
- Greenhouse gases** – vapour, CO₂, nitrous oxide, methane, ozone, CFC's, absorb infrared radiation and trap heat.
 - Food miles** – distance from the field to the plate.
 - Food production** – direct and indirect effect on the environment by creating various pollutants and by causing deforestation.
 - Packaging** – using fossil fuels to produce, tonnes thrown away, unrecycled creates pollution, animals, birds and fish swallow debris and die, some **never** decompose.
 - Fairtrade** – foundation and ethical movement focused on supporting farmers and sustainability of food. Fair wages and prices, improved working condition, empowers local communities, education for all.
 - Food availability** – climate change affects food availability. Droughts, flood causes crop failure. Therefore no plants to eat and no food for animals.
 - Food security** – when all people, at any time, have access to nutritious, healthy food in sufficient amount.
 - Seasonal foods – foods which are characteristic of a given season when they ripen and are harvested.
 - Spring – sprouts, kale, lettuce, spring onion, radish
Summer – peas, berries, courgettes, cucumbers, apricots, cherries
Autumn – apples, pears, plums, aubergine, pumpkin, celery
Winter – potatoes, carrots, parsnips, beetroots, Brussel sprouts, onion.
- Advantages – reduce food miles and carbon footprint, cheaper, higher in nutrients and tastier.
- Food waste – due to buying or cooking too much, not eating before it goes off. Effect – waste of money, pollution, carbon footprint increased. Prevention – planning, only cook what's needed, store leftovers, prevent spoilage, make compost from left overs.

Increased food availability

Use of GM seeds and organisms
Use modern technologies
store longer
Transportation of food.

Decrease food availability

Climate change
Insufficient land
Growing world population
Overexploitation of soil and fisheries, limited resource
e.g. water and fossil fuels.

Food sources

- Food sources** – where and how food is made depends on climate, soil quality, availability of water, resources, availability of land, size of population. Religion, ethical beliefs.
- Grown** – orchards, fields, polytunnels.
- Reared** – sheds, barns, fish farms
- Gathered** – in forests, near the roads,
- Caught** – open spaces and forests oceans and seas.

Sustainable fishing

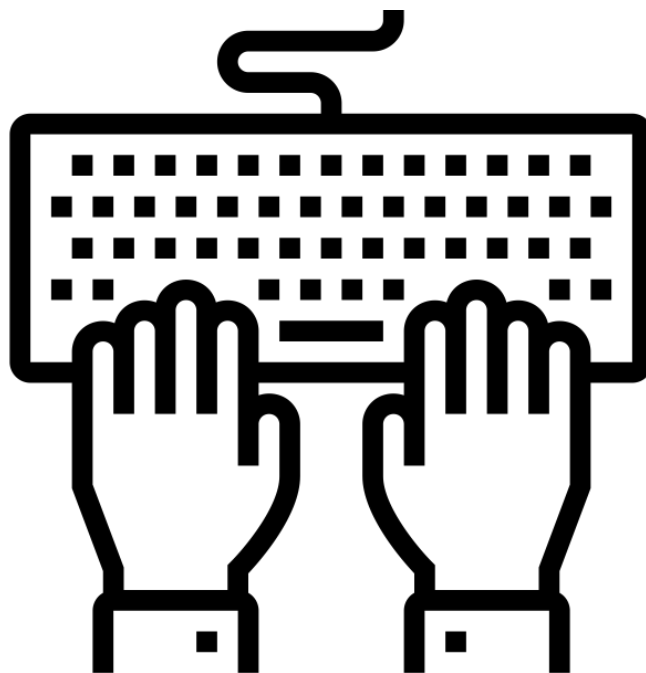
- Sustainable fishing** – fishing in natural fisheries limited to certain period of time. Giving the shoal time to reproduce and restore itself. Policy set by the Marine Stewardship Council.
 - Advantages of fish farms** – protect the natural ecosystems, prevent overexploitation of fisheries, keep animal welfare standards, protect wild species diversity. Prevent by catch.
 - By catch** – accidental catch of a sea organism which wasn't the primary goal of the fishing.
 - Disadvantages of fish farms** – fish tanks often overcrowded, fed low-quality feed affecting their flavour and nutritional value, might be fed antibiotics, increasing risk of antibiotic resistance.
 - Methods of fishing
- Purse seining** – use large nets to trap fish.
Longlining – use longline, fish attach to a hook on the line
Bottom trawling – pulling a large net along the sea bottom.

Farming:

- Organic farming** –
 - No chemicals
 - Little or no use of pesticides
 - No artificial fertilisers
 - No herbicides
 - No GM feed or seeds
 - Antibiotics are only used when necessary
 - Crop rotation may be applied to preserve soil quality
 - Animal welfare standards are kept.
 - Intensive farming** –
 - Chemicals such as pesticides, herbicides and artificial fertilisers are used to prevent crop failure.
 - Antibiotics are used to prevent diseases in livestock, not to cure them.
 - GM feed and seeds are used to obtain high-yield crops.
 - Animal welfare standards are often violated.
- Local and seasonal foods**
- Characteristic of countries or regions, as well as certain seasons of the year.
 - Fresher
 - More nutritious
 - Tastier
 - Empowers local farmers
 - Support local communities
 - May be cheaper than imported foods
 - Supports biodiversity of species
 - Limited offer/ small variety of foods offered
 - Limited availability/ short time for purchase
 - Depends on weather conditions and local climate
 - May be more expensive than imported foods
- Genetically modified foods:**
- Come from GM animals or plants, or GM microorganisms are used during production. Resistance to pests and unfavourable weather conditions.
 - More nutrients, e.g. beta-carotene in golden rice.
 - Fewer pesticides and herbicides are used.

COMPUTER SCIENCE

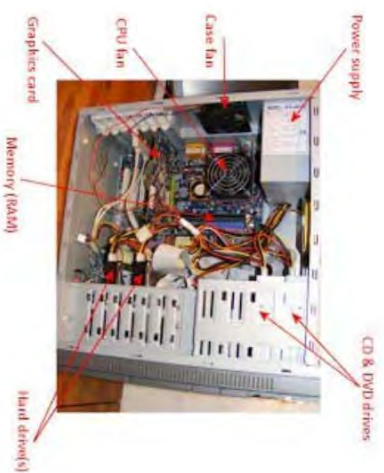
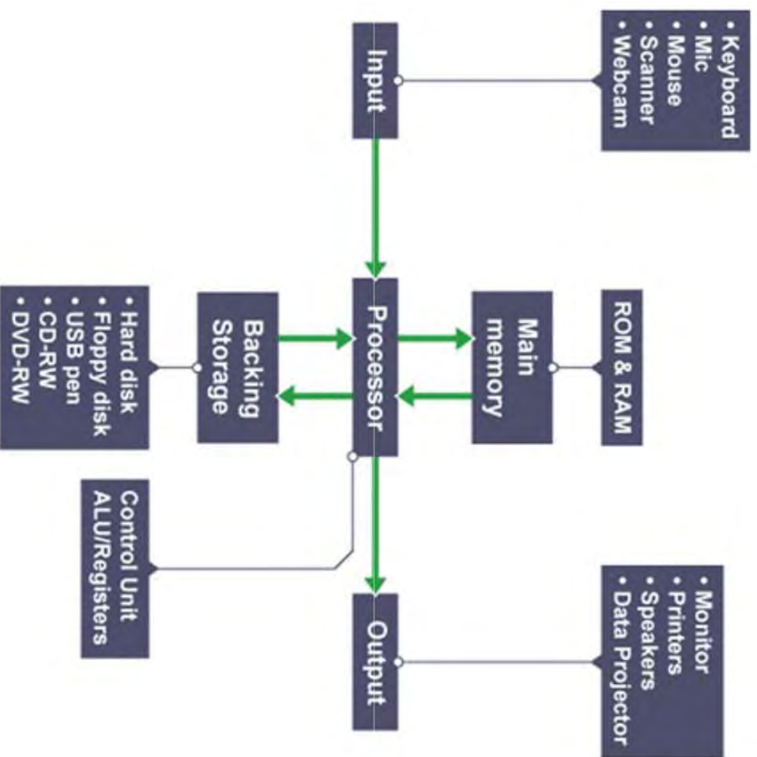
Use the information that follows to either test yourself on key words/phrases for each topic (using the look/cover/check technique) or create a mind map for each topic that contains key facts and images. Once you have created a mind-map you should put it away and try to recreate it from memory, then look at your original mind-map and add what you have missed.



Computer Science

Unit 0 Hardware

Key vocab	
Hardware	Computer hardware is the physical parts or components of a computer
Peripheral	A peripheral device is any auxiliary device such as a computer mouse or keyboard that connects to and works with the computer in some way.
Input peripheral	A device that may be connected to a computer system. They are used to bring data from the physical world into the computer system. EG Mouse, touchscreen.
Output peripheral	A device that may be connected to a computer system. They are used to bring data from the computer into the physical world. EG A monitor or speakers.
Storage peripheral	A device which is used to store data & files on. EG CD, Memory stick.



Hardware	
BIOS	Basic Input Output System. A small program is stored on this ROM chip to load the operating system correctly.
CMOS Battery	Small battery used to keep track of the time when a computer is switched off.
CPU	Central Processing Unit. The device used to control and execute commands within the computer. The performance is measured in GHz, which is the number of processes which can be executed in 1 second.
GPU	Graphics Processing Unit. Used for processing of graphics, particularly used by gamers and graphic designers.
Hard drive	Area of storage used to retain documents and programs. A form of long term memory. Alternatives may include SSD or hybrid drives.
Motherboard	The motherboard connects all components to each other, which allows them to communicate.
PCI	An expansion port that allows a computers capabilities to be upgraded. Components that may be upgraded include GPU, sound cards and NICs.
PSU	Power Supply Unit. Converts mains AC to low-voltage DC power to power all components of a computer. Random Access Memory, a place where data and instructions that are currently in use by the CPU or have recently been used are stored.
RAM	



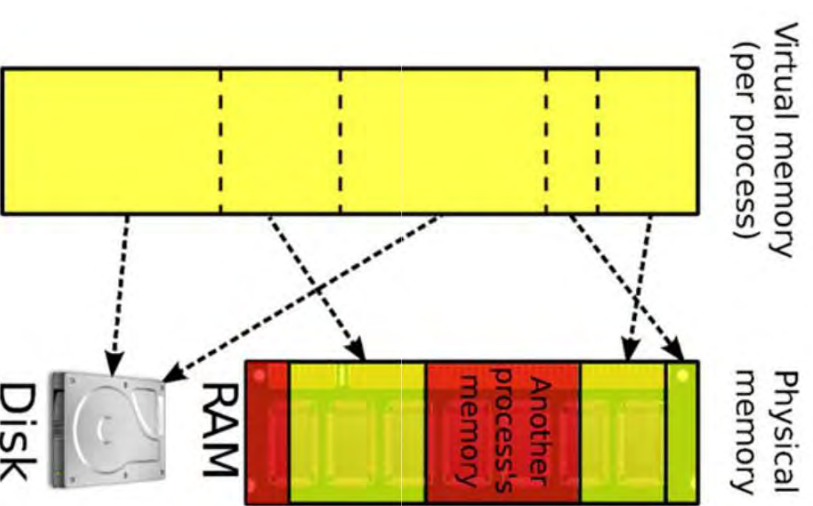
GCSE Computer Science 1.2 Memory

Key vocabulary	
Primary Memory	Memory used to store data and instructions that are required by the CPU.
RAM	Random Access Memory is volatile memory used to store data and instructions which are needed by the CPU. Also referred to as main memory.
Dynamic RAM	Contains 1 transistor and capacitor that hold charge briefly. This needs to be refreshed every few milliseconds.
Static RAM	Uses 5 transistors which are wired together to represent each bit. No need to be refreshed. More wiring per bit.
ROM	Read only memory. Used to store the boot sequence as this should never be changed. This memory is non-volatile.
Bootstrap loader	A small program that loads the operating system. Once the operating system is loaded it takes care of the rest.
Flash Memory	Electrons are forced into a layer between two barriers which hold the charge by using a high electric current.
Virtual Memory	When RAM is full, a section of the hard drive can be used to store programs and instructions.
Volatile	Storage which needs to have power to store data. If power is lost, data is lost.
Non-Volatile	Storage which does not lose its contents when the power is lost.



The CPU will first search for data in the Cache memory and then move further away until it finds what it is looking for. The further away from the CPU, the longer data will take to transfer.

RAM vs ROM	
RAM	ROM
Volatile memory	Non-volatile memory
Stores the user data / programs / part of the operating system that is currently in use.	Used to store the BIOS / bootstrap loader.
Memory can be written to or read from.	Memory can only be read from and not written to.



Key vocabulary	
Secondary Storage	A non-volatile storage medium which stores files and programs. Examples include the hard drive (HDD) and solid state drives (SSD).
Magnetic devices	Magnetic disks are read and written to with a moving head inside the disk drive. They often contain moving parts and are susceptible to damage. Magnetic devices can be either internal or portable.
Solid State devices	SSD has no moving parts. It retains an electronic charge using logic gates. Examples include SD cards and USB memory sticks. Also referred to as flash storage.
Optical devices	Optical media includes CD, DVD and Blu-Ray disks. Lasers are used to read and write data to a disk. Data is stored on tracks around the disk as a series of pits which represent binary code.
Cloud storage	Cloud storage refers to saving data in an off-site location maintained by another party. Examples include Dropbox, Google and Microsoft. This relies on having an internet connection to be able to upload and download files from a cloud server.

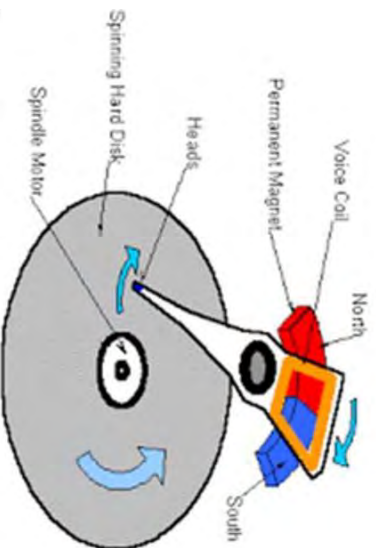


Figure 1 - Magnetic storage

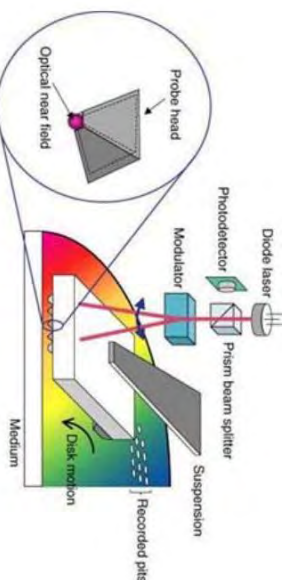


Figure 2 - Optical storage

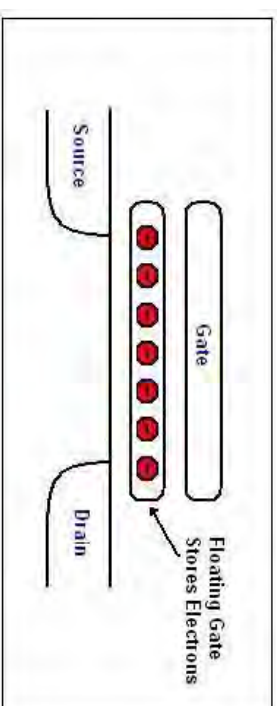


Figure 3 - Solid State storage

Comparing secondary storage	
Capacity	The amount of space that is available to store files. Generally measured in GB.
Speed	How quickly a computer can read and write data from a storage device.
Portability	How easy a device is to be transported. Some devices may be permanent hardware, others may be easier to transport.
Durability	Will the device withstand a certain amount of damage without corrupting files?
Reliability	The length of time that a device is expected to last for, how long will it retain functionality?
Cost	The cost of a device is compared in terms of cost per GB.

1.4 Wired and wireless Networks

NIC	Network Interface Controller. The component that allows a device to connect to a network, typical examples are WiFi and Ethernet.
WAP	Wireless Access Point. The point to which a wireless-enabled device connects to a network. It normally connects to or is built into a router.
Hub	The role of a hub is to allow communication between multiple devices in a network. They are used in LAN networks. Hubs will send a copy of the packets received to all devices on a network. When the devices receive packets they will either accept or reject them, they use the destination IP address to do this.
Switch	The role of a switch is to allow communication between multiple devices in a network. They are used in LAN networks. A switch will behave like a hub when it is switched on, however it will learn which devices are connected to which ports, and then send packets directly to the correct computer, saving bandwidth.
Router	A router is designed to route packets across wide area networks such as the internet. It will pass packets between other routers until the final destination is reached. Modern routers have built in WAP and switches.
UTP	Unshielded Twisted Pair. A cable used for providing fast data transmission and minimal interference. Relatively easy to install.
Coaxial Cable	Bulkier than UTP and less convenient to install.
Fibre Optic	A cable which transmits light at the speed of light to send binary code. Not subject to interference from neighbouring cables.
Wireless	A commonly used connection as it gives portability to devices and required minimal alteration to buildings. Easy to add new devices to the network.

Network	A collection of computer systems that are linked together and can share data.
Node	A device connected to a network via a link.
Links	The interface on which multiple devices can communicate. Such as a cable or wireless.
Client	A client is a piece of computer hardware or software that accesses a service made available by a server.
Server	A server is an instance of a computer program that accepts and responds to requests made by another program, known as a client.

LAN	A Local Area Network. All devices are connected on one site. The network may be in a single building or campus or group of buildings in a small area. Management and maintenance is usually completed by a group of network engineers.
WAN	A Wide Area Network. Typically covers a large geographical area, talking in many cities or worldwide. The connections are typically provided by a telecoms company such as BT. The largest example of a WAN is the internet. A WAN connects multiple LAN networks.
PAN	Personal Area Network. Personal devices are often connected to each other in a home or a car.
WLAN	Wireless LAN
MAN	Metropolitan Area Network. Devices are connected in a city. Not commonly used as many devices now use the internet.
SAN	Storage Area Network where multiple servers provide a large-scale storage facility.
VPN	Virtual Private Network. A part of the internet that is sealed off from public use and reserved for an organisation. It is not a physical network but behaves as one.

1.6 System Security Forms of Attack, Threats to Networks, Identifying Vulnerabilities

Cyber Security Risks	
Blagging	Knowingly or recklessly obtaining or disclosing personal data or information without the consent of the controller (Owner of data). EG Employees sharing passwords.
Hacking	Attempting to gain access to a system through cracking passwords.
Human Error	People are often the weakest part of security systems and criminals take advantage of human error and gullibility.
Malware	Software that can harm devices, which is installed on someone's device without their knowledge or consent. May be spread by email, messaging services or downloading infected files.
Phishing	Emails designed to appear as a reputable organisation to gain trust of users and harvest personal information.
Poor Network policy	Network policies are not always designed to provide maximum security. For example, a strong policy should recommend changing passwords regularly and ensure that the passwords used are strong.
Spyware	Secretly monitors user actions (eg. key presses) and sends info to a hacker.
SQL Injection	Exploiting a technique that exploits security weaknesses in websites. Achieved by inserting malicious code into a database field on a website such as a password field.
Trojan	Trojans are malware disguised as legitimate software. Unlike viruses and worms, Trojans do not replicate themselves – users install them not realising they have a hidden purpose.
Virus	Viruses attach (by copying themselves) to certain files. Users spread them by copying infected files and activate them by opening those files.
Worm	Worms are like viruses but they self-replicate without any user help, meaning they can spread very quickly.

Types of Hacking	
Brute Force Attack	An attack that runs through a list of different passwords or letters until access to an account is gained.
Denial-of-service	Where a hacker tries to stop users from accessing a part of a network or website, mostly by flooding the network with useless requests, making the network very slow or completely inaccessible.
Data Interception and Theft	Shouldering is attempting to look over someone's shoulder when using an ATM. Measures to reduce this risk include destroying paper documents when no longer needed, logging off or locking computers when not in use and locking rooms containing computers.
Forms of Network Attack	
Passive	Where someone monitors data travelling on a network and intercepts any sensitive information they find.
Active	When someone attacks a network, for example with malware.
Insider	When someone within an organisation exploits their network access to steal information.
Brute force	A type of active attack used to gain information by cracking passwords through 'trial and error'. Uses likely password combinations to gain access to user accounts.
Identifying and preventing vulnerabilities	
Network Forensics	Use of software for capturing, storing and analysing network events. The outcome is finding out communication between whom, when, how and how often.
Penetration (Pen) Testing	A strategy to identify security weaknesses including: -Gathering information about the target of possible attacks -Identifying possible entry points to the network -Attempting to break in -Report findings and respond.
Internal Pen Testing	Puts the tester in the position of an employee with standard access rights to the network to determine how much damage they could do.
External Pen Testing	May target servers within a business to see how easy they are to break and how it can be achieved.
Acceptable Use Policies (AUP)	Procedures and precautions which are in place to make network users aware of threats and the steps they must take when using the network.

Computer Science

1.6 System Security Preventing Vulnerabilities

Key Vocab	
Antimalware	Software designed to protect a computer in one of 3 ways: preventing installation of harmful software, preventing important files from being changed, scanning for virus activity on the system and removing as appropriate. Antimalware protects against worms, Trojan Horses, spyware, adware and keyloggers.
Antivirus	Software designed to protect against viruses.
Update	New malware is released regularly and so anti-malware definitions must be up-to-date to protect from the latest viruses.
Firewall	Hardware or software designed to prevent unauthorised access to or from a private network or intranet. All messages entering or leaving the network will pass through the firewall to be examined.
Password Protection	In a networked environment such as a school or a company, multiple users use many of the computers. Passwords should be strong (Not easy to guess, lower and uppercase letters, numbers, symbols).
Access Levels	Part of an access control procedure for computer systems, which allows a system administrator to set up a hierarchy of users. Thus, the low-level users can access only a limited set of information.
Encryption	Changing data before transmission so someone can only decipher it with the appropriate key to unlock information. Interceptors would find the message unintelligible.
Key	A cryptographic key is a string of bits used by a cryptographic algorithm to transform plain text into cipher text or vice versa. This key remains private and ensures secure communication.
Symmetric Key encryption	A secret key algorithm (sometimes called a symmetric algorithm) is a cryptographic algorithm that uses the same key to encrypt and decrypt data.
Asymmetric key encryption	Asymmetric cryptography, also known as public key cryptography, uses public and private keys to encrypt and decrypt data. The keys are simply large numbers that have been paired together but are not identical (asymmetric).

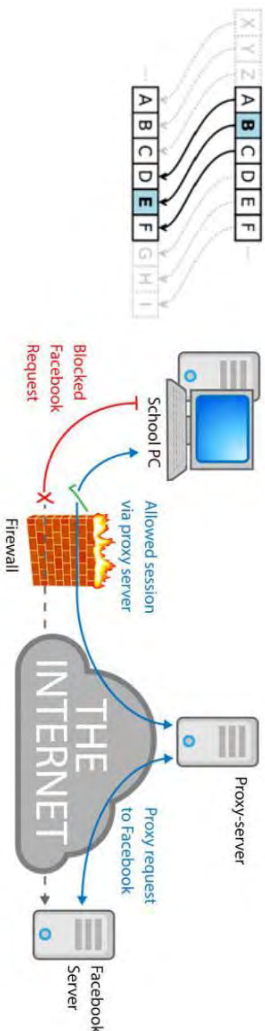


Figure 1 - A firewall sits on the edge of a network and chooses which traffic always be strong enough. *Symmetric encryption* to allow through using a set of rules: As shown above the rules may not *cipher* involve shifting letters along the alphabet.



Figure 2 - Keyword encryption involves using a keyword to begin filling up the alphabet, then the rest is filled with remaining letters.

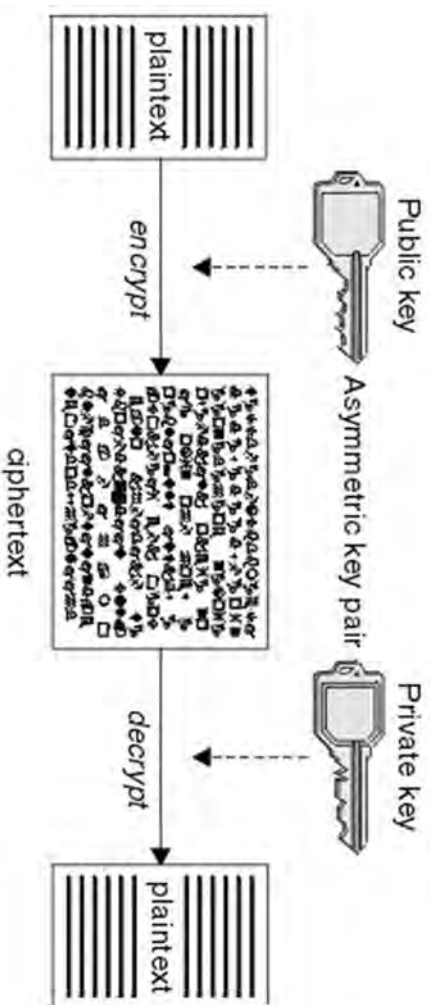


Figure 4 - Asymmetric key encryption uses public keys to encrypt data for somebody who then uses their private key to decrypt it.

Computer Science
2.1 Algorithms Pseudocode

Examples of pseudocode syntax and explanations	
x = 5	Declares a new variable called x and gives it a numerical value of 5
name = "Bob"	Creates a new variable called name and sets its value to "Bob"
str(x)	Casts the value in x to be a string value
int(x)	Casts the value in x to be an integer value
float(x)	Casts the value in x to be a float value
print(name)	Prints a variable to the screen
print("Hello")	Prints the given string in quotes to the screen.
name = input("Please enter your name")	An input from the user which asks them for their name and stores in a variable.
for i = 0 to 7 print("Hello") next i	A count controlled loop which will print "Hello" 8 times (0-7 inclusive).
while answer != "Computer" answer = input("What is the password?") endwhile	A condition controlled loop which asks a user for a password until they correctly guess with "Computer".
do answer = input("What is the password?") until answer == "Computer"	A condition controlled loop which asks a user for a password until they correctly guess with "Computer".
entry = input("Enter a selection") if entry == "a" then print("You selected a") elseif entry == "b" then print("You selected b") else print ("Unrecognised selection") endif	Selection can be carried out to identify certain situations within a program. The program here takes an input and prints different statements for the A and B selection.
function triple(number) return number * 3 endfunction	Creates a simple function to triple a number given as an input.
array names[3] names[0] = "Ahmad" names[1] = "Ben" names[2] = "Catherine"	Creates an array called names, the length is set to 3. Names are then added to the positions in the array.

2.2 Programming Techniques

<code>print('hello!')</code>	Prints a value on screen (in this case, hello!)
<code>input('')</code>	Inputs a value into the computer.
<code>x=input('')</code>	Inputs a value and stores it into the variable x.
<code>x=int(input(''))</code>	Inputs a value into x, whilst also making it into an integer.
<code>print(str(x))</code>	Prints the variable x, but converts it into a string first.
<code>if name == "Fred":</code>	Decides whether the variable 'name' has a value which is equal to 'Fred'.
<code>else:</code>	The other option if the conditions for an if statement are not met (eg. name = 'Bob' when it should be Fred)
<code>elif name == "Tim"</code>	elif (short for else if) is for when the first if condition is not met, but you want to specify another option.
<code>#</code>	# is used to make comments in code – any line which starts with a # will be ignored when the program runs.
<code>for i in range(0,10):</code>	Loops any code indented after this line a certain number of times, in this case, 10.
<code>while x < 10:</code>	Loops any code indented after this line until the condition is met, in this case x becoming equal to or greater than 10.
<code>list = ['', '']</code>	Creates a variable and makes it an array – a list which can store many values.

Python Programming	A programming language which is quite close to English! The process of writing computer programs.			
Code	The instructions that a program uses.			
Sequence	Parts of the code that run in order and the pathway of the program reads and runs very line in order.			
Selection	Selects a pathways through the code based on whether a condition is true			
Iteration	Code is repeated (looped), either while something is true or for a number of times			
Algorithm	A set of rules/instructions to be followed by a computer system			
Variable	A value that will change whilst the program is executed. (eg. temperature, speed)			
Function	A collection of code that works outside the main program. These are created to speed up programming. They can be called from a single line of code at any time.			
Comparative Operator	When comparing data, an operator is used to solve the equality such as <>, != or ==			
Syntax	The punctuation/way that code has to be written so that the computer can understand it. Each programming language has its own syntax.			
Data Type	This indicates how the data will be stored. The most common data types are integer, string, and float/real.			
String	A collection of letters, numbers or characters. (eg. Hello, WR10 1XA)			
Integer	A whole number. (eg. 1, 189)			
Float/Real	A decimal number, not a whole number. (eg. 3.14, -26.9)			
Boolean	1 of 2 values. (eg. True, False, Yes, No)			
Variable.write	File.write("VariableName")			
Open	Open a text file			
List	MyList = ["Apple", "Fruit", "Banana", "Parsnip"]			
a	append	w	write	r read

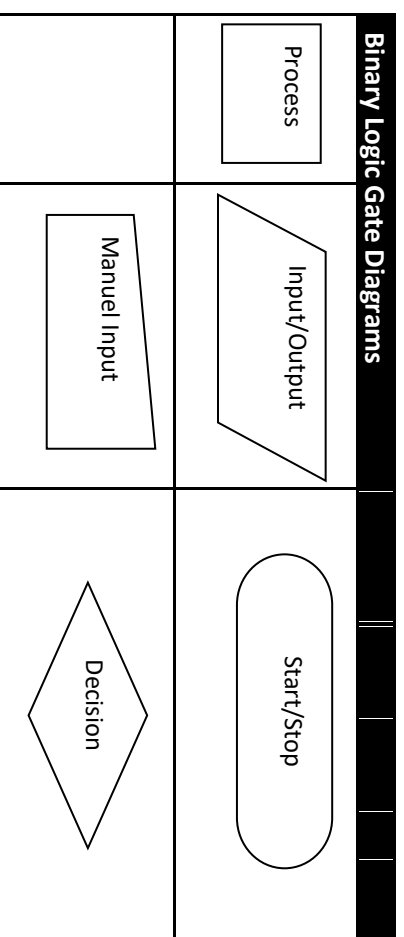
Computer Science

2.1 Algorithms Computational thinking skills

Key vocabal	
Algorithm	A set of instructions which is followed to solve a given problem. Can be represented using a flowchart or Pseudocode.
Abstraction	Removing any unnecessary detail from a problem in order to solve it. Identifies the information that can be removed from the problem without changing it.
Decomposition	Breaking a large problem down with no known solution into smaller steps and stages.
Algorithmic thinking	Algorithmic thinking is a way of getting to a solution through the clear definition of the steps needed – nothing happens by magic.
Searching algorithm	An algorithm for finding values within a set of data.
Linear search	When a list is unsorted and an item needs to be found the algorithm will start at the beginning and move through until it finds the required value.
Binary search	If a list is sorted, an efficient search can be undertaken. It works by repeatedly dividing the set in half and checking where the value is in relation to the current one. It continues until the list has been fully checked or the search term found.
Sorting Algorithm	An algorithm used to sort a set of data into a given order. Examples include bubble sort, insertion sort and merge sort.
Sequencing	Writing steps down in an order in which they must happen.
Selection	Being able to select between different options or scenarios.
Iteration	Iteration is the act of repeating a process, either to generate an unbounded sequence of outcomes, or with the aim of approaching a desired goal, target or result.
Variable	A value, which can change when a program is run. A variable is a memory location. It has a name that is associated with that location; the location stores some data.



Data types			
Integer	A whole number, such a 3, -45, 108		2 or 4 bytes
Real / Float	A number with a fractional part such as 43.69, -9.32.		4 or 8 bytes
Char / Character	A single character where a character can be any letter, digit, punctuation mark or symbol that can be typed.		1 byte
String	Zero or more characters. A string can be null (empty), just one, or several character.		1 byte per character
Boolean	A Boolean variable has the value of True or False.		1 byte



Computer Science
Theory 2.5 – Translators and programming tools

Key Vocab	
Opcode	The part of an instruction that tells the CPU the operation to be Executed.
Operand	The part of the instruction that tells the CPU that data or which to Apply the opcode.
Translator	A program that converts source code (High level) to m code (Low Level).
High level code	Programming languages that are most like human language. They make programming easier because the programmer can concentrate on the logic of the program and not worry about the Hardware.
Low level code	Binary code that a CPU can execute.
Assembly Language	A low-level symbolic code made of pneumatic words converted by An assembler.
Assembler	A translator for converting assembly language code to object code.
Instruction set	The complete set of instructions that a processor can handle.
Source code	The program written in a high-level language before conversion to Machine code.
Object code	The machine code produced by a computer.
Compiler	Compiles work through the source code, spot certain errors and Translate all code into a machine code file called object code. Object Code is stored in a file to be executed.
Linker	A program used with a compiler or assembler to provide links to the Libraries needed for an executable program.
Interpreter	Interpreters work through the source code and translate it one Command at a time then immediately execute it. When errors are Found the process of execution will stop. (Like in Python).
Execution	The process of running a program.
Editor	A software used to write source code in a simple way. No frills.
Integrated Development Environment	A software tool that provides many of the utilities required to develop a program in one place. Common features may include an editor for a particular language, debugging tools, systematic progression through a program and a linker.
Run time environment	All the necessary facilities to run a program on a different platform, rather than creation of a program.

Programming Standards
Code should follow agreed conventions (EG Lowercase for variable names, schemes to be followed).
Language code is written in.
Functions used to tidy up repeated code.
Comments explain the code clearly.
Correct use of indentation.
Useful identifiers (File names & Variable names)
Code should follow agreed conventions

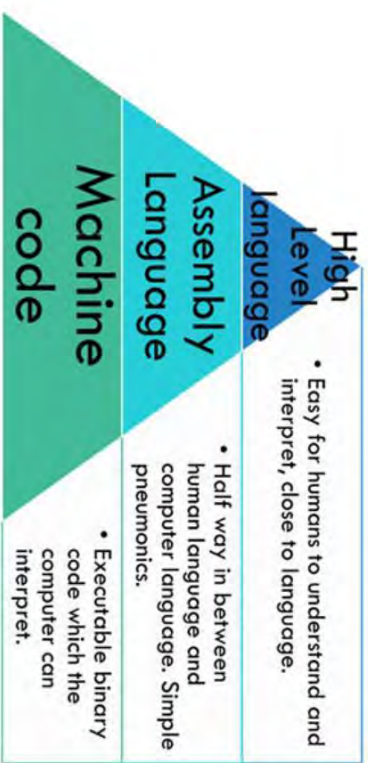


Figure 1 - How a compiler translates programs.

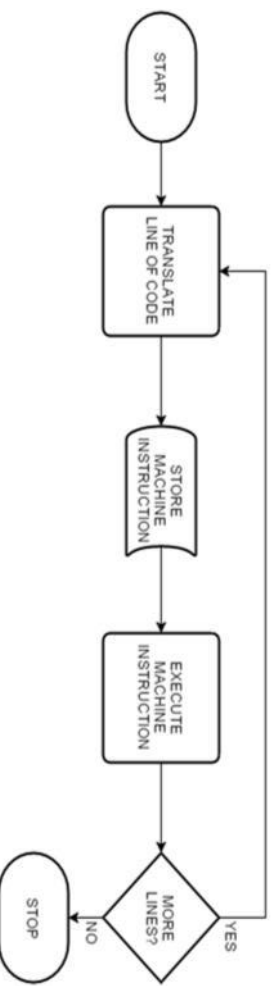
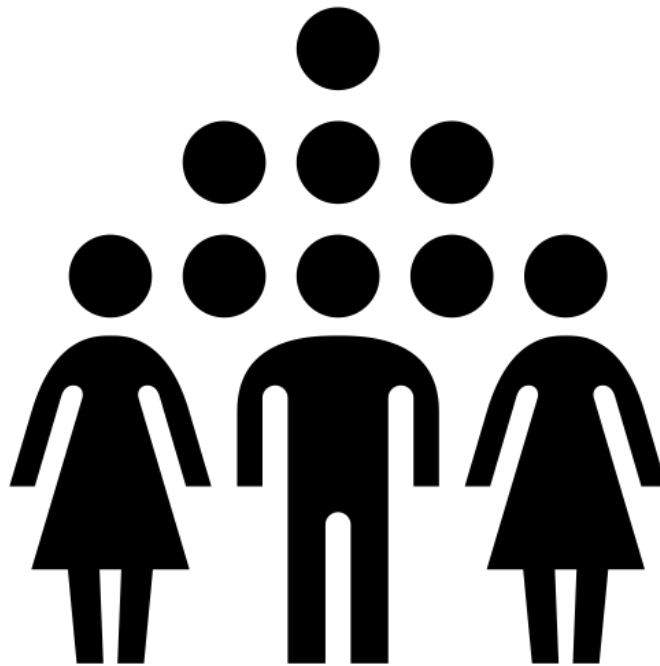


Figure 2 - How an interpreter translates programs.








SOCIOLOGY

Use the information that follows to either test yourself on key words/phrases for each topic (using the look/cover/check technique) or create a mind map for each topic that contains key facts and images. Once you have created a mind-map you should put it away and try to recreate it from memory, then look at your original mind-map and add what you have missed.








FAMILIES – KNOWLEDGE ORGANISER – FAMILY FORMS AND CONJUGAL ROLES





FAMILY FORMS

NUCLEAR FAMILY		A heterosexual couple and their children living together.
EXTENDED FAMILY		Relatives outside of the nuclear family (e.g. grandparents, aunts etc).
RECONSTITUTED FAMILY		A blended or step family that includes children from previous relationships.
LONE PARENT FAMILY		A family with one parent .
SAME SEX FAMILY		A family where a gay or lesbian couple live with their children.
EMPTY NEST FAMILY		A nuclear family where the children have left home .
BEANPOLE FAMILY		A multi-generational, extended family

THE RAPOPORTS'S 5 TYPES OF DIVERSITY IN UK FAMILIES

CULTURAL DIVERSITY		1. Families are different in their culture, values and beliefs .
LIFE COURSE DIVERSITY		2. Families are different in the stage that they are at (e.g. newly married compared to an empty nest family).
ORGANISATIONAL DIVERSITY		3. Families are different in the way they are organised (e.g. nuclear compared to reconstituted or lone parent).
GENERATION/ COHORT DIVERSITY		4. Families are different depending on the year they were born (e.g. couples married in the 1950s often expected marriage to last for life).
SOCIAL CLASS DIVERSITY		5. Families are different in their social classes and wealth .

CONJUGAL ROLE RELATIONSHIPS

CONJUGAL ROLES		Segregated conjugal roles are when there is a clear division of domestic labour and tasks are divided by gender. This was normal in the early 20 th century.
		Joint conjugal roles are when there is no rigid division of household tasks into male and female jobs. Some sociologists suggest that conjugal roles are becoming more joint .
		Symmetrical families are when spouses perform different tasks but men and women share household responsibilities equally. Some sociologists, such as Young and Willmott, argue that over time families in Britain are becoming more symmetrical .
THE FEMINIST PERSPECTIVE OF OAKLEY ON THE IDEA OF THE CONVENTIONAL FAMILY.		Oakley defines the conventional family as a nuclear family where the male and female parents are married and live with their children (aka cereal packet family) . She considered the conventional family to be a form of social control and that women often have a dual burden (meaning they go out to work but also do the majority of the housework and childcare). However, she noticed that other forms of family are becoming increasingly popular , such as lone parent or same sex families.

FAMILIES – KNOWLEDGE ORGANISER – CHANGING FAMILIES

CHANGING RELATIONSHIPS WITHIN FAMILIES

HOW RELATIONSHIPS WITHIN FAMILIES HAVE CHANGED OVER TIME.



1. Children’s **needs and rights** are more widely recognised.



2. People see their **extended family much less**.



3. The extended family are still important but that their role is more likely to take the form of **phone calls and financial help**.

THE PRINCIPLE OF STRATIFIED DIFFUSION.



Young and Willmott developed the theory of **stratified diffusion**. This is the idea that **changes in norms and values start amongst the wealthier people in society** and then over time others start to behave in the same way.

CHANGING PATTERNS IN UK MARRIAGE AND DIVORCE SINCE 1945

CHANGING PATTERNS IN MARRIAGE



1. There are **fewer marriages** and more people are **cohabiting**.



2. An **increasing number of babies** are born to couples who aren’t **married** and these births are no longer stigmatised.



3. **Civil partnerships** for same sex couples have been legal since 2005, while **same sex marriage** was introduced in 2014.



4. People are **putting off marriage until they are older**.

CHANGING PATTERNS IN DIVORCE



The number of **divorces per year has increased** since 1945 although there have been times when it decreased and the number peaked in 1993.

THE CONSEQUENCES OF DIVORCE



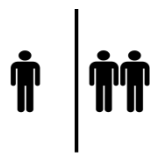
1. There has been an **increase in lone parent and reconstituted families**.



2. Some **children lose contact with parents** or extended family following a divorce.



3. Divorce can lead to **loss of income** for the former partners.



4. Divorced people, particularly men, may experience a **loss of emotional support** if their friends and social networks change.

FAMILIES 3 – KNOWLEDGE ORGANISER – PERSPECTIVES ON FAMILIES

FUNCTIONALIST PERSPECTIVES ON FAMILIES

THE FUNCTIONALIST PERSPECTIVE



Nuclear families are positive both for individuals and society because



1. They control **sexual activity**



2. They encourage **reproduction**

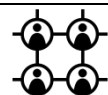


3. They ensure that children are **socialised**



4. They help to maintain the **economy** because the work is split between the husband and wife in **their conjugal roles**.

PARSONS (FUNCTIONALIST) ON THE TWO MAIN FUNCTIONS OF THE FAMILY



1. The nuclear family supports **primary socialisation**, ensuring the children learn the **culture** and **values** of their society.



2. The nuclear family also supports **personal stabilisation for the adults**. This means that the adults support each other emotionally if their lives are stressful (aka **'warm bath' theory**).

CRITICISMS OF FUNCTIONALIST PERSPECTIVES ON FAMILIES

UNREALISTIC IDEALISATION



Functionalists such as Parsons have an **unrealistic idea of 'perfect' families**. The reality is usually more complicated.

DYSFUNCTIONAL FAMILIES



Functionalists ignore **dysfunctional families and marital breakdown** where there might be **conflict, child abuse, stress and domestic violence**.

LOSS OF TRADITIONAL FUNCTIONS



Functionalist views are no longer relevant and are based on an **outdated, traditional view of families**. Families now are much more diverse.

LACK OF CONTACT WITH WIDER KINSHIP NETWORKS



In the past families used to maintain close contact with the extended family. Nowadays people move around more and so **often don't have much contact with the extended family**.

MARXIST PERSPECTIVES ON FAMILIES

THE MARXIST PERSPECTIVE







Marxists are usually **critical** of the nuclear family because



(1) **They keep society unequal** (e.g. the bourgeoisie send their children to private schools and pass their wealth and property on to them)













2) Through **primary socialisation working class children learn to accept their position** in an unfair, capitalist society.







ZARETSKY'S MARXIST PERSPECTIVE ON THE DEVELOPMENT OF FAMILIES		<p>The family was originally a unit of production (e.g. all members of the family worked together) but now there is a split between the 'private sphere' and work. This means that women are expected to work for free (e.g. cleaning and childcare) while men go to work to support the economy. Only socialism can end this artificial separation.</p>
FEMINIST PERSPECTIVES ON FAMILIES		
THE FEMINIST PERSPECTIVE		<p>Feminists are usually critical of the nuclear family because</p> <hr/> <p>Through primary socialisation families help to reproduce gender inequalities. The word canalisation describes how parents channel children towards gendered toys and activities e.g. girls get dolls, boys get action figures.</p>
DELPHY AND LEONARD'S FEMINIST CRITIQUE OF FAMILIES		<p>The family is patriarchal. Men benefit from the unpaid work of women even when women have jobs they still do most of the housework.</p>
		<p>The family is hierarchical. The husband usually has more power and makes most of the decision.</p>

















EDUCATION – KNOWLEDGE ORGANISER – TYPES OF EDUCATION AND PERSPECTIVES
















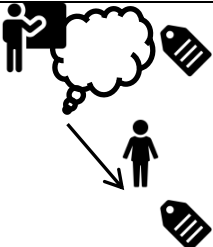

TYPES OF SCHOOL AND SCHOOLING

FORMAL EDUCATION		Takes place in educational establishments such as schools and universities.
INFORMAL EDUCATION		Takes place when people learn from their everyday life.
PRIMARY		Schools for children aged 5-11
SECONDARY		Schools for children aged 11-16. Includes comprehensive schools, free schools, special schools and academies.
INDEPENDENT SCHOOLS		Fee paying schools. These include private schools and public schools (older fee paying schools). Around 7% of English schoolchildren attend independent schools.
STATE SCHOOLS		State schools do not charge fees. Their intake is more socially mixed.
HOME SCHOOLING		Children are taught at home by parents or tutors.
DE-SCHOOLING		Illich argues that schools repress children and promote passive conformity. He argues that education should be abolished and that children should be able to decide what to learn based on their natural curiosity.
FORMAL CURRICULUM		The content of the planned lessons that learn at school.
HIDDEN CURRICULUM		The unintended lessons that children learn at school. These can be through the school rules, things that happen at break times etc.

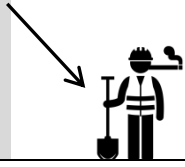
PERSPECTIVES ON EDUCATION

FUNCTIONALIST PERSPECTIVE		1. Education serves the needs of the economy. It gives people the knowledge and skills that people will need for work.
		2. Education facilitates social mobility. Gifted students from disadvantaged backgrounds can achieve qualifications and move up to a higher social class.
		3. Education fosters social cohesion. Schools help to reinforce the social bonds, norms and values that unite different people in society.
DURKHEIM'S FUNCTIONALIST PERSPECTIVE		The main function of education is socialisation ; teaching children the norms and values of their society. Through history, for example, children learn that they are part of a community. By following school rules, children learn the difference between right and wrong
PARSONS FUNCTIONALIST PERSPECTIVE		The education system helps society to be meritocratic . Children are successful because of their abilities and effort not their family background. Education acts like a sieve , grading students and allocating them to jobs based on their abilities (this is known as their achieved status).
MARXIST PERSPECTIVE		1. Education serves the interests of the ruling class. For example, it promotes the idea that capitalist society is fair and meritocratic.

		<p>2. Education reproduces the class structure. Children from privileged backgrounds are more likely to leave with better qualifications and get better jobs.</p>
		<p>3. Education is a form of negative secondary socialisation. Children learn to accept hierarchy and obey rules which prepare them to accept their role in a capitalist society.</p>
<p>BOWLES AND GINTIS'S MARXIST PERSPECTIVE</p>		<p>Bowles and Gintis use the term correspondence principle to describe the way that education (through the hidden curriculum) trains children for life in the capitalist system and prevents rebellion or revolution. School and work, for example, both involve uniforms, strict time-keeping, hierarchy, rewards, punishments, boring tasks etc.</p>
EDUCATION – KNOWLEDGE ORGANISER – ACHIEVEMENT		
SOCIAL CLASS AND EDUCATIONAL ACHIEVEMENT		
<p>SOCIAL CLASS</p>		<p>In general, middle class students achieve better exam results than working class students.</p>
<p>HALSEY'S STUDY ON EDUCATIONAL DESTINATIONS</p>	 	<p>Halsey, Heath and Ridge researched the educational destinations of school children. They conducted a large, fact to face study that divided people into three social classes based on their father's occupation; service class (e.g. professionals such as doctors), intermediate class (e.g. office workers) and working class (e.g. manual labourers). Children born into the service class did much better at school and were more likely to go to university than the intermediate class and both did better than the working class.</p>
<p>EXPLANATIONS FOR CLASS DIFFERENCE</p>	  	<p>1. Economic circumstances: Students from affluent backgrounds usually have the facilities to help them study (space, PC etc), parents often employ tutors and live in the catchment areas of good schools.</p> <p>2. Parental values: Parents from the upper and middle classes often value education and expect their children to do well. Parents from the working class might be less interested or have lower expectations.</p> <p>3. Cultural Capital: Middle class parents often have the knowledge and skills to be able to help their children with school work and revision.</p>
<p>BALL'S STUDY ON PARENTAL CHOICE</p>	 	<p>Ball, Bowe and Gewirtz argue that the publication of league tables has led increased competition between schools. However, middle class parents have an advantage in this competition because they can afford to move to good schools or to pay for their children to travel further to those schools.</p>
GENDER AND EDUCATIONAL ACHIEVEMENT		
<p>GENDER</p>	 	<p>In general, girls do better than boys in both GCSEs and A levels than boys.</p> <p>Girls are more likely to study subjects such as English and Art at A level, whereas boys are more likely to study physics and maths.</p>
<p>EXPLANATIONS FOR GENDER DIFFERENCES</p>	  	<p>1. Women's rights: Changes to the law have made gender discrimination in education illegal. Feminism has meant that girls now are expecting to get a job and be financially independent.</p> <p>2. Anti-school sub-culture amongst boys: Peer pressure may encourage boys to see school and educational success as 'uncool'.</p> <p>3. Gendered curriculum: The hidden curriculum encourages the perception that some subjects are masculine whilst others are feminine.</p>
ETHNICITY AND EDUCATIONAL ACHIEVEMENT		





















ETHNICITY		In general, students from some minority ethnic groups (e.g. Chinese) achieve better exam results than others (e.g. Black Caribbean).
EXPLANATIONS FOR ETHNICITY DIFFERENCES: HOME FACTORS		1. Economic circumstances: Students from some minority ethnic groups (e.g. Black Caribbean) are more likely to experience material deprivation than those from others.
		2. Parental values: Some ethnic minority parents (e.g. British Chinese) are more likely to value education and educational success.
		3. Cultural capital: White, middle class parents often have the knowledge and skills to be able to help their children with school work and revision.
EXPLANATIONS FOR ETHNICITY DIFFERENCES: SCHOOL FACTORS		1. Ethnocentric curriculum: The idea that the formal curriculum is biased towards white, European culture
		2. The hidden curriculum: The hidden curriculum emphasises white, mainstream norms and values (e.g. school uniform policy).
		3. Institutional racism: When the policies and procedures of an organisation result in discrimination. Some people argue that the high rate of fixed-term exclusions of Black Caribbean boys is evidence of institutional racism in schools.
EDUCATION – KNOWLEDGE ORGANISER – PROCESSES WITHIN SCHOOLS		
STREAMING		Students are allocated to a band based on their overall ability and are taught in this band for most of their subjects.
THE EFFECTS OF STREAMING		1. Promotes class differences in achievement: A disproportionately high number of lower stream students are drawn from the working class.
		2. Creates an anti-school sub-culture: In response to being labelled as failures, some lower stream students reject the school's values and rules.
SETTING		Students are allocated to a class based on their achievement in that subject. They will be taught in different classes for different subjects.
THE EFFECTS OF SETTING		Students are often set because of their behaviour rather than their achievement. Students are often not moved up or down a class for practical reasons (e.g. class size).
MIXED ABILITY TEACHING		Students are taught in mixed ability classes .
LABELLING AND THE SELF-FULFILLING PROPHECY		Negative labelling of students can lead to a self-fulfilling prophecy. For example, students who are told that they are low ability in maths come to believe that and give up more easily in maths lessons.
THE INTERACTIONIST PERSPECTIVE		Interactionism focuses on small-scale interactions between teachers and students. Research suggests that teachers label students based on factors such as their appearance, gender, ethnicity and how well they conform to the school's rules, norms and values.
BALL ON TEACHER EXPECTATIONS		Ball undertook a case study of streaming in a secondary school. Some students changed their behaviour over time as a result of teacher expectations. For example, teachers expected students in the 'top' band to be well-behaved and hard working and students in the 'bottom' band to be slow to complete work and poorly behaved. Over time, students' behaviour began to mirror these expectations.
THE KEY IDEAS OF WILLIS ON THE CREATION OF COUNTER SCHOOL CULTURES.		Willis carried out a study of 12 working class boys ('lads') in a single sex school. He used qualitative methods to explore their counter-school culture. They resisted the school and its rules and focussed on 'dossing' and 'having a laff.' They saw the more conformist boys as 'cissies.' They saw manual work as masculine and white collar work as effeminate. Willis followed the 'lads' into their jobs and argues that the anti-school culture

prepared them for working class jobs where they adopted similar attitudes.

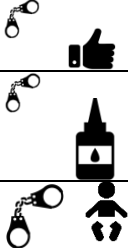


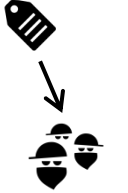




















CRIME AND DEVIANCE – KNOWLEDGE ORGANISER – KEY TERMS AND PUBLIC DEBATES









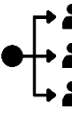








KEY TERMS

















CRIME		Actions that break the criminal law e.g. burglary, murder, identity theft etc.
DEVIANCE		Actions that do not conform to society's norms. Deviant behaviour is socially defined and varies between cultures and over time.
SOCIAL ORDER		The way in which various components of society work together to keep society as it is.
TWO PERSPECTIVES ON SOCIAL ORDER		Consensus perspectives such as functionalism argue that social order is maintained because most people agree with society's norms and rules.
		Conflict approaches such as Marxism argue that social order is maintained because one group (e.g. the bourgeoisie) have the power to influence the laws and maintain order through social control.
FORMAL SOCIAL CONTROL		The ways that the state controls people's behaviour based on laws and written rules .
INFORMAL SOCIAL CONTROL		The way that people's behaviour is controlled based on unwritten rules and sanctions such as public approval or disapproval. It is enforced via peer and social pressure .
AGENCIES OF SOCIAL CONTROL		Groups that help the state to control people's behaviour . These include families, schools, the police, courts, prison service, probation service etc.
ANOMIE		When a society's norms and values disintegrate or disappear .
LABELLING THEORY		The theory that people often behave in ways that reflect how others have labelled them .
INSTITUTIONAL RACISM		When an organisation discriminates against an ethnic group through its processes, attitudes and behaviour. The Macpherson report into the death of Stephen Lawrence concluded that the Police were institutionally racist.
SUBCULTURE		A group that has norms and values that are different to mainstream society and that often cause or influence illegal/deviant behaviour e.g. gangs.
WHITE COLLAR CRIME		Non-violent, financial crimes such as tax evasion, fraud, bribery etc. They are usually committed by businesses/governments and are underreported.
FOLK DEVIL		A media created villain or enemy of society .
MORAL PANIC		An over exaggerated public response to some social issue that relates to right and wrong.
PUBLIC DEBATES OVER CRIMINAL AND DEVIANT BEHAVIOUR		
MEDIA COVERAGE		The media decide what is 'newsworthy' and exaggerate certain types of crime (deviancy amplification) which in turn influences politicians.
VIOLENT CRIME		Violent crime (e.g. knife crime) gets a high profile in the media and therefore the public become concerned about it and politicians feel that they have to do something about it.
SENTENCING		Some people believe that prison sentences are too soft and that many prisoners get released too early. There is also the question of whether some crimes deserve a prison sentence at all.
TREATMENT OF YOUNG OFFENDERS		There has been large a rise in violence, sexual abuse, suicide and self harm in youth prisons (e.g. Feltham) and some people want them to be closed down.
FOLK DEVILS AND MORAL PANICS		The interactionist Cohen argues that the media often portray an oversimplified version of events that creates a folk devil (e.g. drill music). These oversimplified versions of events can lead to a moral panic .














CRIME AND DEVIANCE – KNOWLEDGE ORGANISER – PERSPECTIVES ON CRIME AND DEVIANCE

<p>FUNCTIONALIST PERSPECTIVE</p>		<p>1. A limited amount of crime is necessary for society to improve. All social change begins with some sort of deviance</p> <p>2. Crime has some positive functions, such as emphasising the boundaries of acceptable behaviour and binding communities together (e.g. when they condemn a horrific crime)</p> <p>3. Crime and deviance often occurs when children are inadequately socialised. If children don't learn the norms and values of society they are more likely to deviate from them.</p>
<p>MERTON'S STRAIN THEORY</p>		<p>The functionalist Merton argues that crime occurs when people can't achieve the goals that they have been socialised to strive for (e.g. wealth) through socially acceptable means. This leads to anomie and high rates of crime.</p>
<p>INTERACTIONIST PERSPECTIVE</p>		<p>Interactionists argue that crime and deviance are socially constructed and that people in power label certain people as deviant and they then are more likely to commit crime.</p>
<p>BECKER'S LABELLING THEORY</p>		<p>The interactionist Becker argues that what makes something deviant is not the act itself but how people label it. For example, killing someone is usually deviant but not during a war. Through informal social control labels stick and become part of someone's master status (the way they see themselves), leading to a deviant career and perhaps to someone becoming part of a deviant subculture.</p>
<p>MARXIST PERSPECTIVE</p>	 	<p>Marxists argue that capitalism is criminogenic (it causes crime). It encourages people to want and value material possessions but exploits the working class so that they can't afford them. It is inevitable that the working class will commit crime to try and get material possessions or express their frustration with the system.</p> <p>Agencies of social control act in the interests of the bourgeoisie and target certain types of crime that are more likely to be committed by the working class (e.g. knife crime rather than white collar crime). This is called selective law enforcement.</p>
<p>FEMINIST PERSPECTIVE</p>		<p>The feminist perspective examines the way that women are treated by society. Many crimes against women such as rape or domestic violence are under reported and have a low conviction rate.</p> <p>Some sociologists believe that women are sometime treated more leniently by male police officers, juries and judges. This is known as the chivalry thesis.</p> <p>When women commit certain crimes (e.g. crimes against children) the double deviance thesis suggests that they will receive a harsher punishment because they have broken gender norms as well as the law.</p>
<p>HEIDENSOHN ON FEMALE CONFORMITY</p>		<p>The feminist Heidensohn uses control theory to explain why women have lower rates of recorded crimes than men. She argues that women are controlled by men, leaving them with fewer opportunities to commit crime. For example, girls are controlled by their fathers and have to be home earlier than boys, women are often controlled by male managers or supervisors and many women do not go out at night because they are afraid of male violence.</p>

FACTORS AFFECTING CRIMINAL AND DEVIANT BEHAVIOUR		
SOCIAL CLASS		Official crime statistics indicate that working class people are more likely to commit crime than other classes and they are over represented in prisons.
GENDER		Official crime statistics indicate that females are less likely to offend than males.
ETHNICITY		Crime statistics shows that members of some ethnic groups (e.g. Black African/Caribbean) are more likely to offend than others.
AGE		Crime statistics indicate that young people (15-19) are more likely to commit crime than older people.
ALBERT COHEN ON STATUS FRUSTRATION & DELINQUENT SUBCULTURES		Cohen argues that working class boys often underachieve in school due to the middle class norms and values and so suffer from status frustration . They therefore join a subculture (e.g. a gang) where they can achieve status in other ways. In these subcultures they learn to be delinquent and commit crime.
CARLEN ON WOMEN, CRIME AND POVERTY		Carlen interviewed 39 women to investigate why women commit crime. She suggests that working class women often don't commit crime because they have made a ' class deal ' and a ' gender deal ' with society. The class deal is that they will be able to buy goods if they work hard. The gender deal is that they should do domestic labour in return for love and financial support from a male partner. Carlen argues that both of these deals are actually exploitative but give women the illusion of fairness. However, if working class women believe that these deals have been broken they are more likely to commit crime.
CRIME DATA		
OFFICIAL CRIME STATISTICS		Crimes that are recorded by the police and courts . Available on the internet but do not always provide an accurate picture of actual crimes committed as not all crimes are reported and recorded .
VICTIM SURVEYS		Victim surveys ask people about their experiences of crime (e.g. CSEW: Crime Survey for England and Wales). These provide data about crimes that are not recorded by the police but do not cover all crimes (e.g. murder).
SELF-REPORT STUDIES		Self report studies ask people about the crimes they have committed (e.g. OCJS: Offending, Crime and Justice Survey). These provide information on some crimes that are not recorded by the police (e.g. vandalism) but are unlikely to reveal much about more serious crimes as people are unlikely to self-report them.
PATTERNS AND TRENDS		The CSEW shows that UK crime has been falling steadily for the last 20 years . However, there has been an increase in online crimes and there is a growth in serious violence , particularly in urban areas like London and Manchester.
THE 'DARK FIGURE' OF CRIME		The dark figure of crime includes all of the crimes that are not recorded. This could be for a number of reasons (e.g. fear of reprisal, crime committed by family member, the victim is not aware that the act was a crime).
LABELLING THEORY		Behaviour becomes deviant when people such as police officers define it as deviant.
FEMINIST PERSPECTIVE		Many crime statistics, particularly police recorded crimes, under represent crimes against women such as domestic violence.
MARXIST PERSPECTIVE		Many crime statistics, particularly police recorded crimes, under represent white collar crimes such as tax evasion.

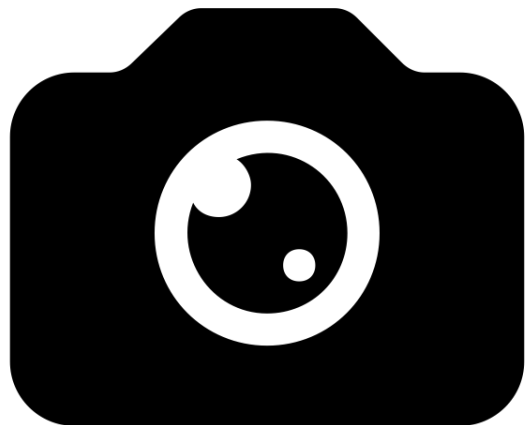
SOCIAL STRATIFICATION KNOWLEDGE ORGANISER		
KEY TERMS		
SOCIAL STRATIFICATION		The division of society into a hierarchy of unequal social groups
SLAVERY		A system of social stratification in which some people are owned by others
SOCIAL MOBILITY		Movement up or down the social hierarchy
CLOSED SOCIETY		A society in which no social mobility is possible
OPEN SOCIETY		A society in which social mobility is possible
MERITOCRACY		A society in which success and status depend on individual talents and effort
SOCIO-ECONOMIC CLASS		Social class is the main form of stratification in the UK today. It consists of broad groups of people (classes) who share a similar social and economic situation such as occupation and wealth.
COMMUNISM		A society without any hierarchy where the means of production (factories and shops) are owned by everyone
PERSPECTIVES ON SOCIAL STRATIFICATION AND SOCIO-ECONOMIC CLASS		
DAVIS AND MOORE: FUNCTIONALIST PERSPECTIVE		The functionalists Davis and Moore argued that social stratification is functionally necessary in every human society because it helps role allocation . They argue that some roles in society are more functionally important than others (e.g. surgeons and lawyers). Social stratification means that the most talented and motivated people will be attracted to the more functionally important roles because they have greater rewards.
FEMINIST PERSPECTIVE		Social stratification enables patriarchy. Nurses, for example, are just as important as doctors but they get paid less because they are mostly women.
MARXIST PERSPECTIVE		Marx argued that there are two main classes in capitalist society; the bourgeoisie and the proletariat. The bourgeoisie own the means of production (factories and shops) and exploit the proletariat. The proletariat don't realise that they are being exploited because of false class consciousness , which leads them to believe that capitalist society is fair. Marx believed there will be a revolution where the proletariat seize the means of production and establish a classless society (communism).
WEBER'S PERSPECTIVE		Weber agreed with Marx that property ownership and wealth are important features of social class. However, he argued that non-economic factors such as social status and power are also important and help determine a person's life chances. For example, an aristocrat may be poor but still have high social status
LIFE CHANCES IN THE UK		
LEGISLATION		There are several laws in this country that make it illegal to discriminate against people at work. For example the Equal Pay Act (1970) and the Equality Act (2010) .
SOCIAL CLASS		Working class people are far less likely to get into high paid jobs and professions than middle class and upper class people.
GENDER		Men are on average paid 20% more than women (known as the gender pay gap), some jobs are still dominated by men and women still do most of the domestic work and childcare. Some sociologists argue that women face a glass ceiling (invisible barrier to promotion) at work.
RACE AND ETHNICITY		Unemployment is higher amongst certain ethnic groups (i.e. Pakistani, Bangladeshi, Black Caribbean and Black African) than others and men from ethnic minority groups are more likely to be working in manual jobs. Sociologists sometimes call this the ethnic penalty .
SEXUALITY		There is little data on how sexuality affects life chances but some research show how gay people choose not to go into certain professions because they perceive them as homophobic .

AGE		Age discrimination is illegal in the UK but still occurs. Young people and old people often find it difficult to get a job, particularly in some professions.
DISABILITY		Disabled people in the UK earn on average half as much as non-disabled people and disabled people are far more likely to be unemployed.
RELIGION AND BELIEF		People from certain religions (e.g. Muslims) are far more likely to be unemployed than people from other faiths. This is particularly true for Muslim women who wear head scarfs and could be because of Islamophobia and stereotyping.
INTERSECTIONALITY		When factors that affect life chances combine. For example, black, working class women may experience more social disadvantages than a white, middle class man.
THE IDEA OF THE AFFLUENT WORKER		
EMBOURGEOISEMENT		The idea put forward by some sociologists that as working class families become more affluent, they adopt middle class norms and values such as consumerism and the privatised nuclear family (a nuclear family cut off from the extended family)
DEVINE AND THE IDEA OF THE AFFLUENT WORKER		Devine interviewed 62 working class men and women in Luton during the 1980s. She found little evidence to support the embourgeoisement thesis. Instead she found that working class families were still critical of capitalism and, although not as communal as in the past, still retained links with their extended family.
POVERTY AS A SOCIAL ISSUE		
ABSOLUTE POVERTY		When a household does not have sufficient income to buy the minimum needed for survival (food, shelter etc)
RELATIVE POVERTY	☆☆☆☆	When a household's income is significantly below the average for their society
MATERIAL DEPRIVATION		When a household is unable to afford the goods that most people in that society own
THE CULTURE OF POVERTY		This is the theory that poverty is the result of norms and values that are passed on from one generation to the next, resulting in a cycle of deprivation . This theory suggests that poor families often don't value things like education and saving money that could help them to escape from poverty.
THE WAY IN WHICH GOVERNMENTS HAVE ATTEMPTED TO ALLEVIATE POVERTY		Governments attempt to alleviate poverty through (1) Means tested welfare benefits (i.e. unemployment benefits, housing benefits etc) (2) Introduction of the national minimum wage (currently £8.21 per hour for workers aged over 25) (3) Reducing unemployment through programmes such as apprenticeships and (4) Providing free services such as education and healthcare
THE IMPACT OF GLOBALISATION ON POVERTY IN THE UK		Some sociologists suggest that globalisation has increased the inequality in the UK . For example, the global financial crisis of 2007-2008 led to a recession in the UK with increased unemployment.
FUNCTIONALIST PERSPECTIVE ON POVERTY		Poverty sometimes performs a positive function in society. For example, it means that there are people willing to do the difficult and dangerous jobs cheaply.
FEMINIST PERSPECTIVE ON POVERTY		Women (particularly lone parents) are at greater risk of living in poverty than men.
MARXIST PERSPECTIVE ON POVERTY		Poverty is an inevitable consequence of the unequal distribution of wealth in a capitalist society. Poverty helps the bourgeoisie because it makes it easier for them to exploit the proletariat.
TOWNSEND ON RELATIVE DEPRIVATION		Townsend developed a deprivation index to measure relative deprivation in the UK. This took the form of a questionnaire that asked questions such as how often a household ate fresh meat. Using this he found that 22% of the UK population was living in poverty, a much higher figure than official statistics.
MURRAY ON THE UNDERCLASS		New Right sociologist Murray argues that the introduction of welfare benefits encourages lone parent families, unemployment and crime and therefore leads to the creation of a welfare dependent underclass . Welfare benefits are meant to reduce poverty but, he argues, in fact they increase it.

POWER AND AUTHORITY		
AUTHORITY		When someone has power over someone else, usually because of their position in society. For example, police officers have power over other UK citizens.
COERCION		When someone has power over someone else because of fear, threats or punishments. For example, a kidnapper has coercive power over their victim.
TRADITIONAL AUTHORITY		Traditional authority comes from tradition or custom , for example the authority of the queen in the UK.
CHARISMATIC AUTHORITY		Charismatic authority is when someone has authority because of the strength of their personality , for example the authority of certain celebrities or MLK in the USA.
RATIONAL-LEGAL AUTHORITY		Rational-legal authority is when someone holds authority because of the legal position they occupy, for example the authority of the Prime Minister.
FORMAL SOURCES OF POWER		Formal power comes from a position that someone holds in society , for example the manager of a company or the captain of a sports team.
INFORMAL SOURCES OF POWER		Informal power comes from other ways that someone can influence people, for example because of their charisma or because they have access to information or resources that other's in the groups don't.
FUNCTIONALIST PERSPECTIVE		It is important for some individuals and groups to have power over others so that society can function properly. For example, it is important for the government to have the power to pass laws, for the police and the courts to have the power to arrest and imprison people, for teachers to have the power to set detentions.
FEMINIST PERSPECTIVE		Men have power over women in the home, the workplace and within politics. They often seek to maintain these unequal power relationships.
MARXIST PERSPECTIVE		The bourgeoisie have power over the proletariat because they own the means of production . They use this power to exploit the proletariat and maintain social inequality.
WEBER ON POWER AND AUTHORITY		Weber disagreed with Marx that the main source of power is economics and argued that charismatic, rational-legal and traditional sources of authority are equally important. Weber also argued that, in a capitalist society, the middle classes will increase while the working class will shrink.
WALBY ON PATRIARCHY		Walby identified six sources of patriarchal power and control (1) Paid work . There is a gender pay gap and a glass ceiling (2) House work . Women do most of the house work (3) Culture . There are different norms and values for men and women (4) Sexuality . There are different expectations for men and women when it comes to sexual behaviour (5) Violence . Men often use physical violence to control women (6) The State . Most politicians are men.
FACTORS AFFECTING POWER RELATIONSHIPS		
FACTORS AFFECTING POWER RELATIONSHIPS		Factors that can affect power relationships include social class, gender, sexuality, ethnicity, disability, age and religion

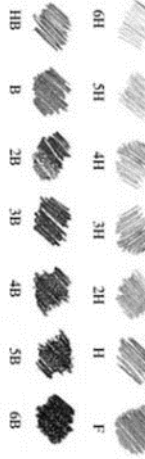
ART AND PHOTOGRAPHY

Use the information that follows to test yourself on key words/phrases for each topic (using the look/cover/check technique), to research the work of artists and photographers and to develop your own responses to practitioners as we have been doing in class.



Knowledge Organiser

Art GCSE Art and Design

	Assessment Objectives / Skills	Knowledge and Understanding	Key words
	Students will be required to demonstrate the ability to:	Students will learn: TRANSFERRABLE SKILLS	<p>REMEMBERING, UNDERSTANDING, ANALYSING, APPLYING, CREATING, EVALUATING</p> <p>1. Techniques & processes that may be covered</p> <p>Drawing from observation, Drawing from secondary sources, drawing using a grid, Shading, crosshatching, hatching, stippling, blending tones using a range of pencils, using pencil crayons, biro, pen and wash.</p> 
1	<p>AO3: RECORD IDEAS OBSERVATIONS & INSIGHTS</p> <p>relevant to the theme of the PORTFOLIO as it progresses.</p>	<p>-The ways in which meanings, ideas and intentions can be communicated through drawing</p> <p>Annotation: students will be expected to record a purposeful written annotation using suitable specialist vocabulary, demonstrating an understanding of the formal elements.</p>	<p>Observation, primary & secondary sources, composition, proportion, balance, perspective, depth, colour, line, form, tone, texture, annotation</p> <p>Painting (acrylic, watercolour) Collage, modelling, mixed media, digital editing, textile techniques (batik, tie-dye)</p> <p>Printing (mono printing, block printing, foam printing.)</p>
2	<p>AO1: DEVELOP IDEAS</p> <p>through investigations demonstrating critical understanding of artist's work.</p>	<p>-How sources inspire the development of ideas, through exploring the work and approaches of artists that link to the theme.</p>	<p>Respond, describe, explain, analyse, research, select, inspiration, explore, pastiche, realism, abstract</p> <p>2. Themes you may cover</p> <p>A portfolio of work based on a starting point. Starting points include Indulgence, Inside/Outside, Distorted, Derelict, Cultures, In the News</p>
3	<p>AO2: REFINE WORK</p> <p>by exploring ideas, selecting and experimenting with appropriate media, materials, techniques and processes</p>	<p>-Experimenting using different media, materials, techniques and processes. Looking at the ways in which they can be used in relation to students' own creative intentions.</p>	<p>Making connections, variety, explore, select, develop, reflect, experiment</p> <p>3. Artists for inspiration that may be covered</p> <p>Van Gogh- for his mark making technique. Ben Heines – for his use of tone. Mark Powell –for his use of biro on recycled paper. Artists chosen independently to develop your portfolio.</p>
4	<p>AO4: PRESENT a personal and meaningful response that realises intentions and demonstrates understanding of visual language.</p>	<p>-Ability to produce a final outcome that links all of the portfolio together. - Use of the visual language through application of the formal elements.</p>	<p>Meaningful, personal, final piece, formal elements, explain, evaluate.</p> <p>4. Presentation of the portfolio</p> <p>All work should be neatly presented in display folders with clear annotations.</p>

1 Mind Mapping – Ideas presented around the theme of the work

Central idea.
This is the starting point of your Mind Map and represents the topic you are going to explore. Your central idea should be in the centre of your page and should include an image that represents the Mind Map's topic.

Branches.
The main branches which flow from the central image are the key themes. You can explore each theme or main branch in greater depth by adding smaller branches.



Key words.
When you add a branch to your Mind Map, you will need to include a key idea. An important principle of Mind Mapping is using **one word per branch**. Keeping to one word sparks off a greater number of associations compared to using multiple words or phrases.

Colour coding.
This links the visual with the logical and helps your brain to create mental shortcuts. The code allows you to categorise, highlight and analyse information. Colours also make images more appealing and engaging.

Include images.
Images have the power to convey much more information than a word or sentence. They are processed instantly by the brain and act as visual stimuli to recall information.

3 Artist Research – showing your understanding of an artists work or style

Biographical information.
Birth, death, style, education, important works

Social, historical and economic influences.
What was happening at the time? Were they responding to anything that was happening around them?



Technical information.
How was their produced? What methods and materials did they use?

Artistic influences.
Who influenced their work? Did their work influence anyone else?

Collected images.
Select images that are relevant and that appeal to you, make comments about why you like them

Copied images.
Show your understanding by reproducing examples of their work

Presentation.
Must be A3 or 2 A4 sheet, include a clear title and relevant background

When analysing work, use the Content/Form/Process/Mood model

2 Moodboard – A collage of ideas using collected images

Consider your theme.
Do you want it quite narrow or are you happy to collect a wider range of ideas.

Use a range of sources.
Internet images, photographs, wallpaper/fabric samples, lettering.

Don't limit yourself.
Even if it doesn't directly link to your starting point it may relate to the theme. Consider colours and words to help you.



Apply your ideas.
Your moodboard will directly link to the development of your project. If there is empty space fill it with sketches or annotations.

Pick a style.
Pulling it all together with a colour theme or visual style will make your page work together as a whole.

4 Analysing Art Work

Content – Looking at the subject of the work.
What is it? What exactly can you see? What is happening? What does the work represent? What does the artist call the work? Does the title change the way we see the work? What is the theme of the work? Landscape, portrait, journey, moment, memory, event, surreal, fantasy, abstract, message.

Form – Looking at the formal elements.
What colours does the artist use? Why? How is the colour organised? What kind of shapes can you see? What kinds of lines and marks does the artist use? What is the surface like? What textures can you see? What patterns can you see? How big is the work? Light, delicate, layered, strong, rough, dark, peaceful, dripped, textured, scale, vivid, bright.

Process – How the work has been developed and made.
What materials and tools have been used? What is the evidence for how it has been made? Painted, drawn, woven, printed, cast, stitched, constructed, collaged.

Mood – Looking at the communication of moods and feelings.
How does the work make you feel? Why do you feel like this? Does the colour, texture, form or theme of the work affect your mood? Quiet, contemplative, thoughtful, hopeful, peaceful, elated, joyful, reflective.

Art and Design Knowledge Organiser

Assessment Objective 2: Creative Making – refine work by exploring ideas and experimenting with appropriate media, materials, techniques and processes

1





Media	The substance that an artist use to make art
Materials	The same as media but can also refer to the basis of the art work eg, canvas, paper, clay
Techniques	The method used to complete the art work, can be generic such as painting or more focus such as blending
Processes	The method used to create artwork that usually follows a range of steps rather than just one skill

3

Colour Theory	
Primary= RED, YELLOW, BLUE	Complimentary; Colours opposite on the colour wheel
Secondary= Primary+Primary	Harmonious; Colours next to each other on the wheel
Tertiary= Secondary+Primary	Monochromatic; shades, tones & tints of one colour
Shades – add black	Hue – the pigment
Tint – add white	Warm; RED, ORANGE YELLOW. Cold; BLUE, GREEN, PURPLE



2

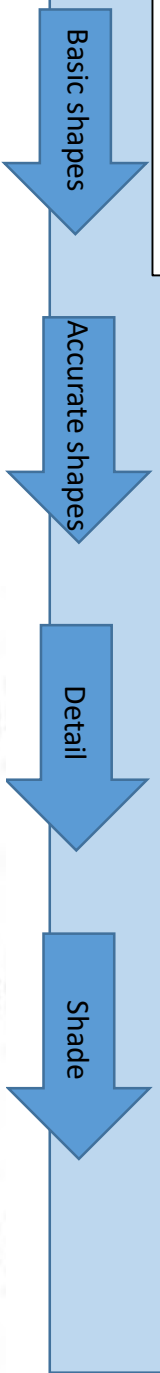
Pencil		The basic tool for drawing, can be used for linear work or for shading
Biro		Drawings can be completed in biro and shaded using hatching or cross hatching
Pastel (chalk/oil)		Oil and chalk pastels can be used to blend colours smoothly, chalk pastels give a lighter effect
Coloured pencil		Coloured pencil can be layered to blend colours, some are water soluble
Acrylic paint		A thick heavy paint that can be used smoothly or to create texture
Watercolour		A solid or liquid paint that is to be used watered down and layered
Gouache		A pure pigment paint that can be used like watercolours or more thickly for an opaque effect
Pressprint		A polystyrene sheet that can be drawn into to print white lines – can be used as more than 1 layer
Monoprint		Where ink is transferred onto paper by drawing over a prepared surface
Collagraph		A printing plate constructed of collaged materials
Card construction		Sculptures created by building up layers of card or fitting together
Wire		Thick or thin wire manipulated to create 2d or 3d forms
Clay		A soft substance used for sculpting, when fired can be glazed to create shiny colourful surfaces
Batik		A fabric technique using hot wax to resist coloured inks
Silk painting		Fabric inks painted onto silk, Gutta can be used as an outliner to prevent colours mixing

1

Methods of Recording

Observational drawing	Drawing from looking at images or objects
First hand observation	Drawing directly from looking at objects in front of you
Second hand observation	Drawing from looking at images of objects
Photographs	Using a camera or smartphone to record images will class as first hand observation
Sketches	Basic sketches and doodles can act as a starting point for development

Stages of Drawing



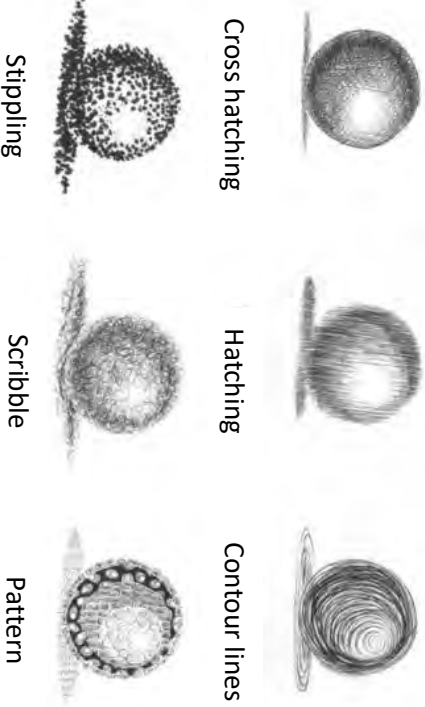
2



Tonal shade

Produce a range of tones by varying the pressure and layering – consider using softer pencils for darker shades

Alternative shade techniques



3

Annotation

Describes writing notes, using images and explaining your thoughts to show the development of your work.

Step 1- Describe

What is this an image of?
 What have you done here?
 What was this stage of the project for?

Step 2- Explain

How was this work made?
 How did you produce particular effects? How did you decide on the composition?

Step 3- Reflect

Why did you use these specific methods? Why do particular parts work better than others?
 Why might you do things differently next time?

Art and Design Knowledge Organiser

1 Formal Elements of Art

LINE	the path left by a moving point, e.g. a pencil or a brush dipped in paint. It can take many forms, e.g. horizontal, diagonal or curved.
-tone	means the lightness or darkness of something. This could be a <u>shade</u> or how <u>dark</u> or <u>light</u> a colour appears
Texture	the surface quality of something, the way something feels or looks like it feels. There are two types : <u>Actual</u> and <u>Visual</u>
SHAPE	an area enclosed by a <u>line</u> . It could be just an outline or it could be <u>shaded</u> in.
PATTERN	a design that is created by repeating <u>lines</u> , <u>shapes</u> , <u>tones</u> or <u>colours</u> . can be manmade, like a <u>design</u> on fabric, or natural, such as the markings on animal fur.
COLOUR	There are 2 types including Primary and Secondary . By mixing any two <u>Primary</u> together we get a <u>Secondary</u>

3

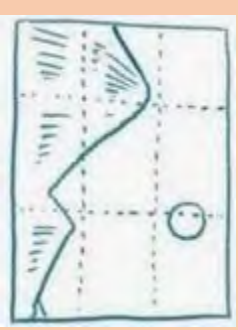
A Rough	A Visual/ Maquette	Final Piece
A basic sketch of a final idea	A small image or model created in selected materials	An image or sculpture pulling all preparatory work together

Assessment Objective 4: Personal Presentation: Present a personal and meaningful response that realises intentions and demonstrates understanding of visual language.

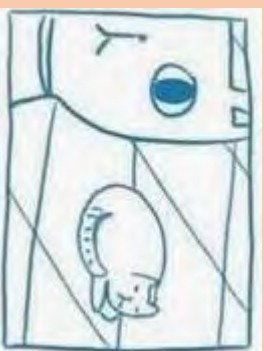
2

Composition Layouts

Rule of thirds – Place focal objects at 1/3 or 2/3 of the image horizontally or vertically. Not in the middle



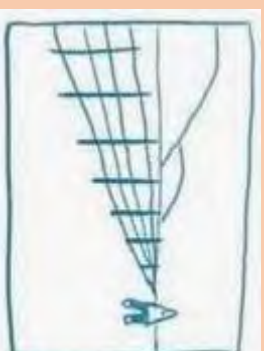
Balance elements. If there is an emphasis on one side balance it out with smaller objects on the other



Simplify and fill. Enlarge or crop the image to fill the space



Use lines. Lines will draw the viewer in, they don't have to be straight, consider S or C



Artists techniques to inspire your portfolio further.

Alfred Basha

WHERE: Born in Italy in.
WHEN: 1989- present day.

WHAT: A graphic designer/Artist who made drawings inspired by nature.

HOW: He would use fine black inked pen with attention to detail.

INSPIRED BY: Nature particularly the animal world. He was also influenced by surrealist art and would merge animals with the natural world.



225

SALVADOR DALI

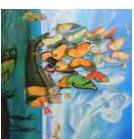
WHERE: born SPAIN

WHEN: 1904-1989

WHAT: Surrealist artist.

HOW: Painting (oil on canvas), drawing, photographer, sculptor

INSPIRED BY: His painting style was influenced by the Renaissance masters such as Raphael and Michelangelo



ROY LICHTENSTEIN

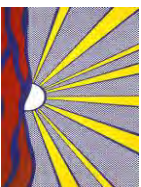
WHERE: America

WHEN: 1923-1997

WHAT: Pop artist

HOW: Made prints, paintings and sculptures

INSPIRED BY: comic strips, Lichtenstein produced precise compositions that often had 2 meanings. His work was influenced by popular advertising and the comic book style.



JONE BENGOA

WHERE: Born in Spain

WHEN: 1996- present

WHAT: Realistic and expressive eye portraits depicting different emotions

HOW: Watercolour paintings

INSPIRED BY: It is said that "the eyes are the windows to the soul" and she manages to express it in her realistic eye paintings.



BEN HEINES

WHERE: Born in Belgian

WHEN: 1983- Present day

WHAT: He is an accomplished illustrator and photographer. His name became famous in 2010 with the invention of a new art form titled "Pencil Vs Camera".

INSPIRED BY: He is an enthusiastic traveler, he is inspired by nature, animals, architecture, friendship. He loves discovering new cities and cultures.



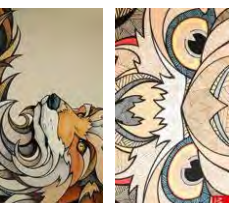
Andres Preis

WHERE: Born in Germany

WHEN: 1988- present day

WHAT: A graphic designer/illustrator who prefers tradition drawing techniques: to detail and digital art.

INSPIRED BY: He was inspired by advertising especially posters for his compositions.



Mark Powell

WHEN: Contemporary artist

WHERE: American born but London based

WHAT: Reuses old envelopes, maps & books as canvases to produce incredible drawings. His sketches are made using only a Biro pen, and they often incorporate original stamps and postage marks.

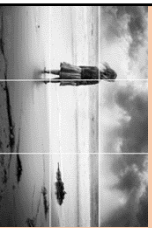
INSPIRED BY: Jean Michael Basquiat and Chuck Close



Photography Knowledge Organiser Autumn Term

Framing and Composition:

- 1. framing** is the presentation of visual elements in an image, especially the placement of the **subject** in relation to other objects. **Framing** can make an image more aesthetically pleasing and keep the viewer's focus on the framed object(s).
- 2. composition** is the placement or arrangement of visual elements or 'ingredients' in a work of art, as distinct from the subject. It can also be thought of as the organization of the elements of art according to the principles of art.



The **rule of thirds** is applied by aligning a subject with the guide lines and their intersection points, placing the horizon on the top or bottom line, or allowing linear features in the image to flow from section to section.



Leading The Eye. The primary use for **diagonal lines** is to lead the eye to a certain point in the **photo** and they are extremely effective at doing this. When you intersect a **diagonal line**, or point it in the direction of a particular object, the tension created draws the eye towards this point.



Symmetry means centred. Neatly **centred composition** is the best way to emphasise various kinds of symmetry, both horizontal or vertical.



6. Golden Ratio
The rule of thirds is a simple version of a more advanced mathematical equation known as the **golden ratio** (also known as the Fibonacci Sequence). The **golden ratio** is found in nature. 1,1,2,3,5,8,13,21,34. The 2 preceding numbers in the sequence are added together to get the next. They join in an anti clockwise helix.

7. Exposure and 8. Exposure Triangle

A photograph's exposure determines how light or dark an image will appear when it's been captured by your camera.
 Over exposure = too light.
 Under exposure = too dark.
 Exposure can be manipulated using 3 elements. Aperture, ISO, shutter speed.
 This is known as the **Exposure Triangle**.



9. Aperture
The size of the hole in the lens. This is measured as an f/stop. Small aperture = less light = big f/stop. Large aperture = more light = small f/stop.

10. Shutter Speed

The time taken for the shutter to close.
 Fast = less light = freezes motion.
 Slow = more light = motion blur

11. ISO

ISO is the sensitivity of the image sensor to light. Low ISO = the less sensitive your camera is to light and the finer the grain (reduced noise). Higher ISO are used in darker situations to get faster shutter speeds.





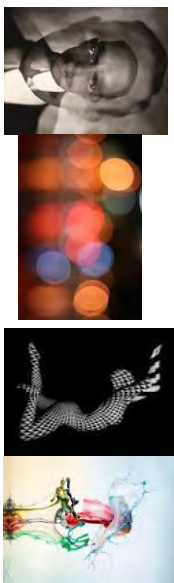

12. Front lighting
the least dramatic, front lighting illuminates the subject

13. Back Lighting
the sun or other light source emanates from behind the subject. Creates silhouettes.

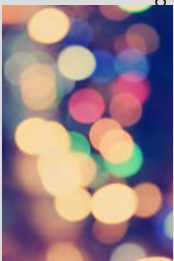
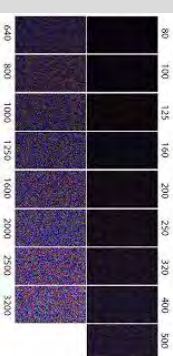
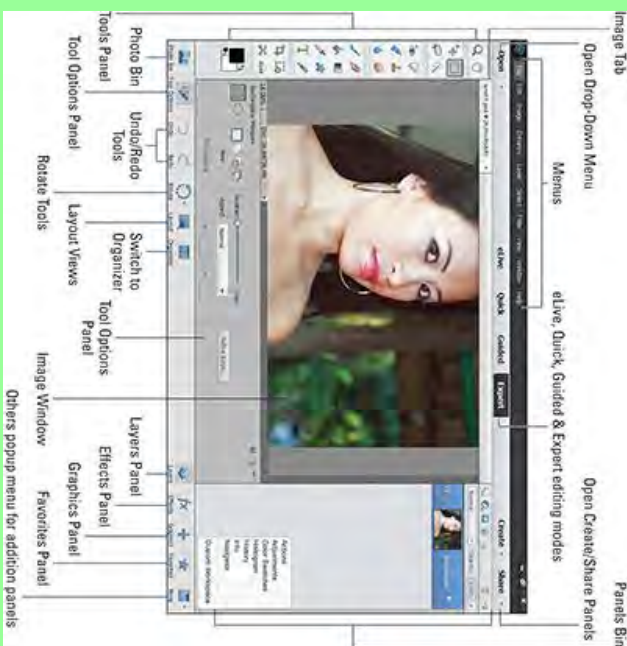
14. Side lighting
perfect for emphasizing texture, defining depth, and bringing out patterns. 45 angle is good for portraits.

15. Depth of Field
Shallow = part of the frame is in focus.
Deep = All the frame is in focus.

Photography Knowledge Organiser SpringTerm

<p>Genre</p> <p>Documentary photography</p> <p>usually refers to a popular form of photography used to chronicle events or environments both significant and relevant to history and historical events as well as everyday life.</p>		<p>Kitra Cahana Tim Hetherington Edward Burtnysky Corey Arnold Stephanie Sinclair</p> <p>Mike Brodie Thomas Gudzwaty Lynsey Addario John Decker Steve Mc Curry</p>
<p>Photo-journalism</p> <p>in which written copy is subordinate to pictorial usually photographic presentation of news stories or in which a high proportion of pictorial presentation is used; broadly : news photography.</p>		<p>Dorothea Lange Dayanita Singh Diane Arbus Bruce Davidson Don McCullen</p> <p>Mary Ellen Mark Alec Soth Peter Hugo Boris Mikhailov Chris Steele Perkins</p>
<p>Studio photography</p> <p>A photographic studio (also known as apophotography studio or photo studio) is a workspace to take, develop, print and duplicate photographs. ... The studio may have a darkroom, storage space, a studio proper where photographs are taken, a display room and space for other related work.</p>		<p>Joe McNally Annie Leibovitz Fernando Deciflitis Eric Almes</p> <p>Scott Kelby David Bailey Jaime Travezan</p>
<p>Location photography</p> <p>shooting is the shooting of a film or television production in a real-world setting rather than a sound stage or backlot. ... Second unit photograph is not generally considered a location shoot. Before filming, the locations are generally surveyed in pre-production, a process known as location scouting and recce.</p>		<p>Ansel Adams Annie Leibovitz Dorothea Lange Brassai Jay Mansel</p> <p>Henri Cartier Bresson Brian Duffy Yousef Karsh Robert Cape Jerry Ulesman</p>
<p>Experimental imagery</p> <p>Abstract photography, sometimes called non-objective, experimental, conceptual or concrete photography, is a means of depicting a visual image that does not have an immediate association with the object world and that has been created through the use of photographic equipment, processes or materials.</p>		<p>Aaron Siskind Alvin Langdon Gaston Bertin Brno del Zou</p> <p>Marco Brever Anna Atkins Josh Brash</p>
<p>Installation</p> <p>is an artistic genre of three-dimensional works that often are site-specific and designed to transform the perception of a space.</p>		<p>Joshua Citarella Martine Syms Kate Steciw Lucas Blacklock Timur Si Quin</p> <p>Sara Cwyrner Artie Vierkant Leigh Ledare Ryan Forester Marco Scozzaro</p>

Photography Knowledge Organiser Summer Term

<p>Camera Techniques</p> <p>1. Bokeh Bokeh is the orbs created when lights are out of focus in an image. It's a neat effect to have in the background of a photo, c</p> 	<p>2. Burst Mode You can take photos one at a time. Or, you can turn the burst mode on and the camera will continue snapping photos as long as you hold the button down, or until the buffer is full (which is a fancy way of saying the camera can't process any more). Burst speeds differ based on what camera you own, some are faster than others. Just how fast is written in "fps" or frames (pictures) per second.</p>	<p>3. Flash Sync You probably know that the flash is a burst of light—flash sync determines when the flash fires. Normally, the flash fires at the beginning of the photo, but changing the flash sync mode adjusts when that happens. The rear curtain flash sync mode, for example, fires the flash at the end of the photo instead of the beginning.</p>	<p>4. Histogram In photography, a <u>histogram</u> is a chart that depicts how many light and dark pixels are in an image. If the chart peaks towards the left, the image has a lot of dark hues. If the chart peaks to the right, the image has a lot of light hues. If those peaks are cut off at the edges, the image is underexposed (on the left edge) or overexposed (on the right edge).</p>	<p>5. Noise Noise is simply little flecks in an image, also sometimes called grain. Images taken at high ISOs have a lot of noise, so it's best to use the lowest ISO you can for the amount of light in the scene.</p> 
<p>6. RAW RAW is a file type that gives the photographer more control over photo editing. RAW is considered a digital negative, where the default JPEG file type has already been processed a bit. RAW requires special software to open, however, while JPEG is more universal.</p>	<p>7. Time Lapse A time lapse is a video created from stitching several photos together taken of the same thing at different times. Don't confuse a time lapse with a long exposure, which is a single image with a long shutter speed.</p>	<p>8. White Balance Your eyes automatically adjust to different light sources, but a camera can't do that—that's why sometimes you take an image and it looks very blue or very yellow. Using the right white balance setting will make what's white in real life actually appear white in the photo. There's an auto white balance setting, but like any automatic setting, it's not always accurate. You can use a preset based on what light you are shooting in like sun or tungsten light bulbs, or you can take a picture of a white object and manually set the white balance.</p>	<p>9. Photoshop Elements 14</p> 	
<p>10. Editing Sites https://www.fotor.com/app.html#/editor http://photogramio.com/ https://www.befunky.com/</p>	<p>https://www.picmonkey.com/photo-editor https://photoeditor.polarr.co/ https://iopicv.com/ https://www.dafont.com/</p>			

SPORT

Use the information that follows to either test yourself on key words/phrases for each topic (using the look/cover/check technique) or create a mind map for each topic that contains key facts and images. Once you have created a mind-map you should put it away and try to recreate it from memory, then look at your original mind-map and add what you have missed.



Aerobic Endurance

The ability of the cardiorespiratory system to work efficiently, supplying nutrients to the working muscles. This is needed for long distance events.

What is the cardiorespiratory system?

- ✓ Uptakes oxygen from air
- ✓ breathed in
- ✓ Transports oxygen around body to working muscles
- ✓ Removes waste products such as carbon dioxide

AEROBIC- in the presence of oxygen
(long distance events)
ANAEROBIC- without oxygen
(short distance or power events)

Muscular Endurance

The ability of muscles to work repeatedly against a light to moderate load without getting tired.



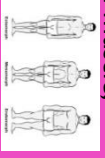
Physical Fitness

Muscular Strength

The maximum force that can be generated by a muscle or group of muscles. Weights will be heavy and therefore repetitions are low.

Body Composition

This is the combination of muscle, fat and bone.
Ectomorph- Tall and Thin
Endomorph- Short and Dummy
Mesomorph- Muscular



Speed

Accelerative speed: This is the speed generated in order for a performer to be at their top speed. Eg- long jump run up

Pure speed: This is needed for events that are won by achieving the quickest time. Eg- 100m sprint

Speed endurance: This is an athlete's ability to sustain speed over a long period of time with short recovery periods. Eg- a footballer

$$\text{SPEED (m/s)} = \frac{\text{DISTANCE TRAVELLED}}{\text{TIME TAKEN}}$$

Flexibility

The ability to move a joint fluidly through a complete range of movement.

Some sports require all round flexibility whereas some sports require flexibility at specific joints.



Coordination

The ability to use body parts together accurately. This is needed in most sports.

HAND-EYE coordination

FOOT-EYE coordination

HAND-HAND coordination



Unit 1

Learning Aim A- Components of Fitness

Components of physical fitness	Components of skill related fitness
Aerobic endurance	Agility
Muscular endurance	Balance
Flexibility	Coordination
Speed	Power
Muscular strength	Reaction time
Body composition	

Skill Related Fitness

$$\text{POWER} = \text{STRENGTH} \times \text{SPEED}$$

Power

The ability to use strength at speed. Therefore the faster or stronger a motion, the more powerful it will be.



Agility

The ability to change direction quickly. Eg- rugby players



Balance

The ability to maintain the centre of mass over a base of support.

STATIC BALANCE- maintaining a balance whilst stationary. Eg- handstand

DYNAMIC BALANCE- maintaining a balance whilst in motion. Eg- cartwheel



Reaction time

The time taken for a performer to respond to a stimulus. Eg- sprinter



Heart Rate (HR)

The number of times your heart beats per minute (bpm)

Resting Heart Rate (HR)

Your heart rate at rest

Maximum Heart Rate (HRmax)

The maximum number of times the heart should beat before it becomes unsafe.

HR max = 220 - age

Target Heart Rate

This is the recommended maximum heart rate for a training zone and is used to measure exercise intensity.

BORG scale
The BORG rating of perceived exertion (RPE) scale is used to measure how hard a performer thinks they are working.

RPE Scale	Description
6	Very, Very Light
7	Very, Very Light
8	Very Light
9	Very Light
10	Fairly Light
11	Fairly Light
12	Fairly Light
13	Somewhat Hard
14	Somewhat Hard
15	Hard
16	Hard
17	Very Hard
18	Very Hard
19	Very, Very Hard
20	Very, Very Hard

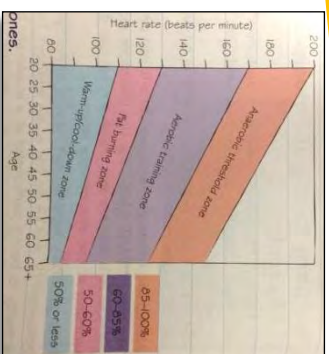


The BORG scale can be used to predict heart rate:
RPE x 10 = approximate HR (bpm)

Training zones

The target zone you train in depends on the type of benefits you are hoping to achieve.

You must work out your HR max before you can calculate your target heart rate zones!



Basic principles of training

Frequency How often you train. This should be gradually increased.

Intensity How hard you train. This should be gradually increased.

Time How long you train for. This should be gradually increased.

Type The training method used. This should be specific to the component of fitness the performer aims to develop.

Remember FITT!

Overload

Training must be demanding enough to cause the body to adapt. For the body to make fitness gains, it must get more demanding over time- this is called **progressive overload**. Overload can be achieved by gradually increasing FITT

Unit 1

Learning Aim A- Principles of Training

This means that the training is relevant to the individual's sport, activity or fitness related goals.



Specificity

Reversibility

Fitness can be lost if training is stopped or if the intensity of training is not sufficient enough.



This is when your body adapts to cope with increased training. This usually happens during rest times.

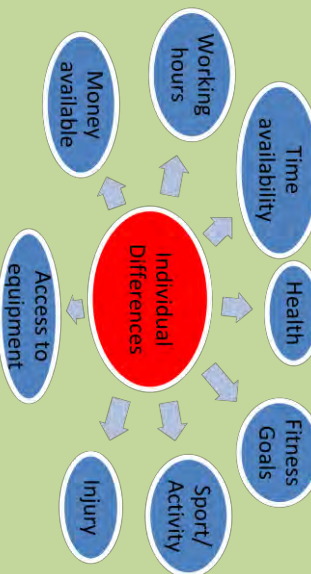
Adaptation



HYPERTROPHY - When a muscle grows in size.
MUSCLE ATROPHY - When a muscle loses size

Individual differences & lifestyle factors

Fitness programmes should be designed specifically to the individual.



Variation

A variety of training routines should be used to avoid boredom. It will also help to reduce the risk of injury caused by repetition of the same training methods.

Rest and Recovery

Rest is very important as it allows training adaptations to occur and the body to recover from any damage. Rest time also allows energy stores to be replenished.

Circuit training

This is a series of different activities that can be either sport-specific or tailored to improve certain aspects of fitness.

Intensity can be easily increased by increasing time on stations and decreasing rest time.

Circuit training is great for variation!



Continuous training

This is a steady pace, low-moderate intensity training method used for developing aerobic endurance.

Continuous training includes working for long periods of time/over long distances without stopping.



Fartlek training

Fartlek training involves running at different speeds or over different terrains. Walk periods might be included for recovery but there are no rest periods.



Unit 1

Methods of Training

Flexibility training

This is used to stretch the muscles and increase flexibility. There are 3 types of flexibility training:

1- Static stretching

-Active: This is performed independently where the performer applies their own force to stretch the muscle.



-Passive: This is known as assisted stretching wherein the performer requires the help of another person or object to stretch the muscle.



2- Ballistic stretching

This is when fast, jerky movements are used through the complete range of motion. This is usually in the form of bobbing or bouncing.



3- Proprioceptive neuromuscular facilitation (PNF)

This is when a muscle is stretched to its limit and then held for 6-10 seconds. The muscle is then relaxed before being stretched again- this time further.



Plyometric training

This method of training is used to develop explosive power and strength. It works by making muscles exert maximal force when contracting and then relaxing rapidly. Plyometric training can include bounding, jumping and press ups with claps.



Speed training

Speed training is specific to the type of speed a performer wants to develop.

1- Acceleration sprints: used to work on acceleration such as for long jump run up.

2- Hollow sprints: used to develop speed endurance. Sprinting periods are followed by periods of walking to allow for recovery.

3- Interval training: this is used to develop speed over a set distance.

Interval training

Interval training is where periods of high intensity work are followed by periods of rest. A performer works for a maximum of 5 minutes before resting in preparation to work again. This form of training is specifically useful for power or speed athletes.



Weight training

This is used to improve strength or endurance.

Strength endurance: 50-60% of 1RM & 20 reps.

Elastic strength: 75% of 1RM & 12 reps.

Maximum strength: 90% of 1RM and 6 reps.

1RM- the maximum weight a person can lift in one contraction.

Rep- how many times a lift is done. These make up a set.



Body Mass Index (BMI)

Used to measure fat and determine if a person is overweight.

$$BMI = \frac{\text{weight (kg)}}{\text{height}^2 (\text{m}^2)}$$

Bioelectrical Impedance Analysis (BIA)

Used to predict the percentage of body fat in a person.

Participants must not exercise for 12 hours prior to the test, or eat or drink within 4 hours of the test.

Participant data should be entered into machine before BIA

Electrodes are connected to each wrist and foot, sending electrical impulses through the body.



Skinfold Testing

Skinfold calipers are used to measure fat at various locations on the body.

Males: Chest, Abdominal, Thigh.

Females: Stomach, Triceps, Thigh.



Pre-Test procedures

Informed consent must be given by all participants. A PAR-Q form may be used to provide medical information.

Reliability- Using the same methods for each test- are results consistent?

Validity- Accuracy of results- do they measure what you need?

Practicality- How easy it is to carry out tests- are expenses and equipment required?



Unit 1 @LWarnerPE

Learning Aim C: Fitness Testing

Why are fitness tests important?

- Provide information on current fitness levels
- Can be used to plan training programme
- Can be used to measure progress

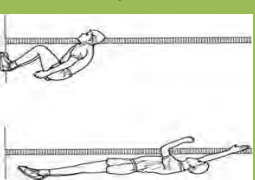
Anaerobic Power Test- Vertical Jump Test

Stand with dominant side against board and reach up to record standing reach height.

One dip is allowed then the participant must jump and touch the board as high as they can.

Advantages: Quick to do. Minimal equipment needed.

Disadvantages: Only measures power in legs.



Aerobic Endurance Tests-

1. Step Up Test

Step up and down bench in time with metronome. Do this for 5 minutes before taking pulse reading.

Advantages: Easy and quick. **Disadvantages:** Requires correct reading of pulse in order to be reliable.

2. Multi-Stage Fitness Test

20m shuttle runs in time with beeps that gradually increase pace.

Advantages: Large numbers can be tested at once. Cheap to do. **Disadvantages:** Not suitable for all (eg- elderly and asthma sufferers). Requires high levels of motivation.



Flexibility Test- Sit & Reach Test

Reach slowly forwards on sit and reach box, keeping legs flat on the floor.

Advantages: Easy and quick.

Disadvantages: Does not measure entire body flexibility.



Speed Test- 35 Metre Sprint Test

Sprint as fast as possible over 35m whilst a peer times using a stopwatch.

Advantages: Easy and quick.

Disadvantages: Assistant and non-slip surface needed.

Agility Test- Illinois Agility Test

Start lying on floor face down. On 'go' get up and print around course in direction indicated.

Advantages: Cheap to do. Minimal equipment needed.

Disadvantages: Good surface needed to minimise slipping risk.



Strength Test- Grip Dynamometer Test

Hold dynamometer parallel to the side of body (arms by side) with display facing away from body. Squeeze as hard as possible for 5 seconds without moving arm.

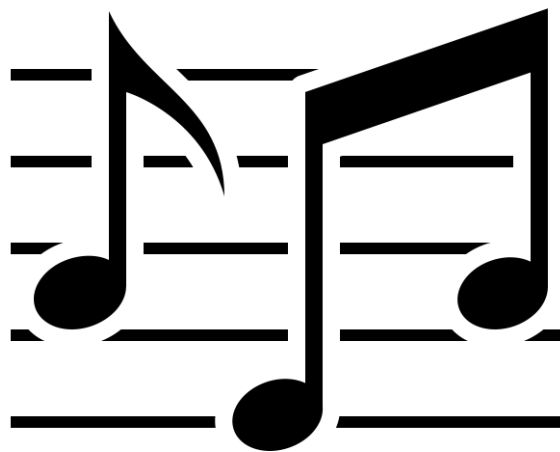
Advantages: Minimal equipment needed.

Disadvantages: Only measures strength of arm muscles.



MUSIC

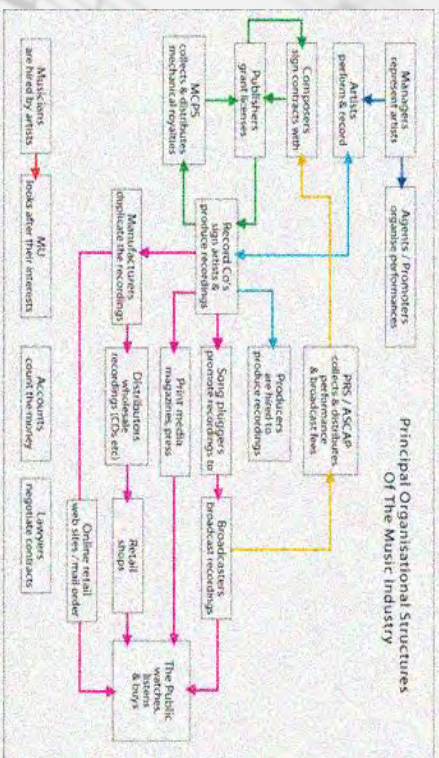
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BTEC MUSIC Knowledge Organiser – UNIT 1

1

agent	finds you work
manager	nurtures your career – gets you gigs
contract	a legal agreement concerning employment – written or verbal
permanent	a contract that lasts until you resign or are asked to leave
temporary	a short term contract – a day, a month etc
full-time	more than 37hrs a week
Part-time	less than 35hrs a week
casual	variable hours, flexible
freelance	work for yourself, not committed to an employer
invoice	a document which states how much you are owed and how you can be paid
NI	National Insurance
Income Tax	Tax paid by every working person



3

music journalist	writes for music magazines, blogs, radio tv
session musician	hired to record in studios and play in live sessions – not permanent members of the group
studio manager	controls studio bookings and hires staff and promotes studio
roadie	sets up and packs away equipment
door staff	security guard employed at venues
instrument technician	looks after, sets up, tunes and fixes instruments
live sound technician	sound checks and in charge of sound at a gig

2

SERVICE COMPANIES	provide services to the artist, the venue and the production companies
PRS for Music	Performing Rights Society
MCPs	Mechanical Copyright Protection Society
PPL	Phonographic Performance Licence
A&R	Artist and Representation
MU	Musicians' Union
PLASA	Professional Lighting and Sound Association
BECTU	Broadcast Entertainment Cinematograph Theatre Union
EQUITY	Union for actors/dancers
MPG	Music Producers' Guild
APRS	The Association of Professional Recording Services

BTEC MUSIC Knowledge Organiser - UNIT 2

1

target audience	who your music is for
artistic intention	What you want to achieve
download	digital transfer of music via the internet
podcast	a series of files which are downloaded
copyright	the legal right of ownership of an original work
PRS	Performing Rights Society
royalties	payment made to the copyright holder
PPL	Phonographic Performance Licence
streaming	multimedia which is constantly delivered and received
social media	technology which helps share information



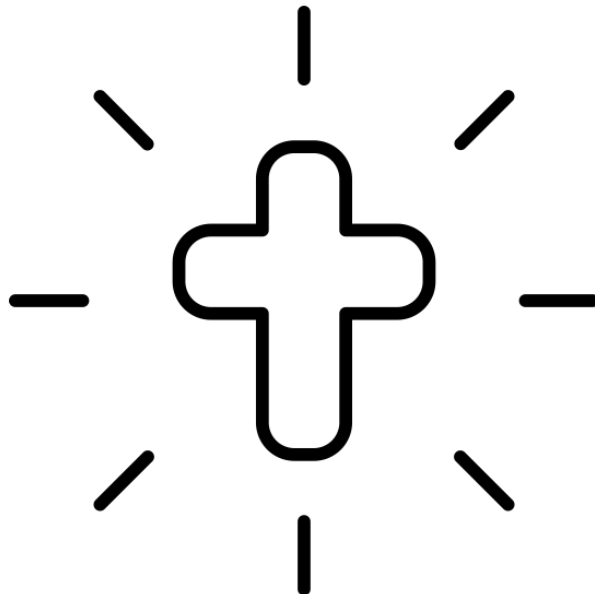
promotion	publicity in order to increase sales
distributor	someone who supplies goods to a retailer
retailer	someone who sells to the consumer
digipack	CD packaging
press release	a form of communication to give information – audio/video or written
website	a collection of pages on the internet under a common name
merchandise	branded products which help to market an artist and their music
poster	paper product used to advertise

AWESOME MERCHANDISE



RELIGION, ETHICS AND PHILOSOPHY

Use the knowledge organiser on the next page to test yourself about key Christian beliefs (using the look/cover/check method). Then, create a mind map using what you can remember. Look back at the knowledge organiser and add anything you have forgotten to your mind map.



KNOWLEDGE ORGANISER: CHRISTIAN BELIEFS

The nature of God	<p>Omnipotent – All powerful. Can do anything.</p> <p>Loving – God loves us like a father.</p> <p>Just – God is the ultimate judge because he knows everything and is loving</p>
Problem of evil	If God is loving He must want to stop evil and suffering. If God is omnipotent then He is able to stop evil and suffering. However, evil and suffering still exist.
The Trinity	Most Christians believe that there are three persons in one God; Father, Son and Holy Spirit . Each of these is wholly God but they are not the same. Some Christians do not believe this.
Different Christian beliefs about creation	<p>All Christians believe that God is the creator of the universe and that the universe he created was good.</p> <p>Fundamentalist Christians believe that the world was created by God in six days, literally as described in the book of Genesis because it is written in the Bible “All scripture is God breathed.”</p> <p>Liberal Christians believe that the Genesis account is not literally true. They believe it is an allegory with a message that God is the creator and Lord of the universe.</p>
Role of the Word	During creation the Word “was with God and was God” and creation was done through the Word . Christians believe this shows the role of Jesus in creation.
Role of the Spirit	Before creation, the Spirit of God “hovered over the waters.” This refers to the role of the Holy Spirit in creation.
Christian beliefs about the afterlife	<p>Judgement – All Christians believe that after death they will be judged by God.</p> <p>Particular Judgement – Some Christians believe that they will be judged immediately after they die because Jesus said to the thief “today you will be with me in paradise.”</p> <p>General Judgement – Some Christians believe that they will not be judged until they are resurrected at the end of the world and judged by Jesus, as described in the Parable of the Sheep and Goats.</p> <p>Resurrection – Most Christians believe that they will be resurrected on Judgement Day</p> <p>Heaven – Heaven is a place where God is and where the saved will be happy for ever</p> <p>Hell – Hell is a place of eternal suffering. Some Christians don’t believe that a loving God would condemn people to hell for eternity.</p> <p>Purgatory – A place where, according to Roman Catholics, the soul is purified before it goes to heaven.</p>
The incarnation	Incarnation means ‘God made flesh.’ Most Christians believe that God became human in the form of Jesus. The term ‘Son of God’ is used to express this relationship.
The death, resurrection and ascension of Jesus	<p>Crucifixion – Jesus was scourged and crucified. As he died, he asked God to forgive his murderers.</p> <p>Resurrection – Christians believe that three days after he died, Jesus rose from the dead and was seen by various followers and disciples.</p> <p>Ascension – Christians believe that forty days after the resurrection, Jesus rose into heaven to be with God until judgement day.</p>
Sin	<p>Sin means to break God’s laws. According to the Bible “all have sinned and fallen short” and “the wages of sin are death.”</p> <p>The original sin was Eve eating the forbidden fruit, which caused Adam and Eve to be banished from the Garden of Eden and into a world of suffering. This event is known as The Fall.</p>
The role of Christ in salvation	Christians believe that Christ’s sacrifice was an act of atonement that paid the penalty for our sins and meant that all can be saved.
Salvation	<p>Salvation means to be saved from the consequences of sin. There are three main beliefs about how this comes about, grace, law and spirit</p> <p>Grace – this is the belief that salvation is a gift from God that is unearned and undeserved</p> <p>Law – this is the belief that salvation is earned by using our free will to choose to follow the laws of God as described in the parable of the sheep and the goats.</p> <p>Spirit – Christians believe that after Christ’s ascension, God remains on earth in the form of the Holy Spirit which plays an important role in salvation. It motivates people to become Christian and helps them to understand the faith.</p>

