GCSE

TOPIC LISTS



Progression level 1 – Resource and research theme.	Achieved
Skill 1 Finding a number of good quality resources to draw from.	
Skill 2 Creating own primary resources. Taking own photographs	
Skill 3 Understanding your personal theme through reading and research. Research and knowledge organizer.	
Progression level 2 – Drawing	**Achieved**
Skill 1 Accurate observational drawing from one of your resources. A4 size maximum.	
Skill 2 Experimental drawing with a different material using artist example	
Progression level 3 – Understanding Artists	**Achieved**
Skill 1 Research from two specific sources, books, websites, gallery visit. Fill in artist research sheet.	
Skill 2 Critical and contextual analysis of artist work. 400 words.	
Skill 3 Apply artist understanding linked to your project.	
Progression level 4 – Improving use of materials through deliberate practice	**Achieved**
Skill 1 Developing formal elements such as colour, tone and line through using materials.	
Skill 2 Technical improvement of chosen materials through focused deliberate practice	
Progression level 5 – Planning out final composition	**Achieved**
Skill 1 Composition studies of your final piece with composition sketches	
Progression level 6 – Final Piece	Achieved
Skill 1 Final piece completed in mock exam and final exam.	

Unit 1 : Multiple Choice – Business and Economics GCSE Edexcel

Topic	☺	😐	☹
Customer needs			
Primary and secondary research			
Quantitative and qualitative research			
Market mapping			
Market segments			
Gaps in the market			
Analysing competitors			
Added value			
Franchising			
Location factors			
Features of enterprise			
Goods / services			
Creative thinking			
Deliberate creativity			
Lateral thinking			
Questions asked by entrepreneurs			
Innovation			
Invention			
Patents			
Copyright			
Calculated risk			
More enterprise skills			
Mindmaps			
Financial objectives			
Non-financial objectives			
Qualities shown by entrepreneurs			
Forecasting sales			
Fixed and variable costs			
Calculating profit			
The difference between price and cost			
Cash flow forecasting			
Inflows and outflows			
How cash flow is affected by stock and credit terms			
Insolvency			
Business plans			
Sources of finance			
Customer focus			
The marketing mix			
Limited and unlimited liability			
Sole traders and private limited companies			
Naming a business			
Tax and record-keeping			
Features of good customer service			
Repeat purchase			
Recruitment			
Skills Vs attitude			
Legislation affecting the workplace			
Commodities and the impact of changes in commodity prices			
Interest rates			
Exchange rates			
The business cycle			
Stakeholders			

Unit 5 : Economics exam - Business and Economics GCSE Edexcel

Topic	☺	😐	☹
What trade-offs exist? - Trade-offs, Opportunity cost			
Does raising or lowering the price always work? – price sensitivity, demand, supply, necessities, substitutes			
Do all stakeholders have the same perspective? – stakeholders, conflict of interest			
Are there any hidden costs or benefits? - Negative and positive externalities			
How can success be measured? - profits, market share, social success, environmental awareness			
What causes business failure? - change in demand, marketing mix, cash flow, productivity			
What problems does the economy face? – changing demand, inflation, unemployment, internal and external shocks			
How important are exchange rates? – exchange rates, international trade, imports, exports, what causes rates to change, impact on stakeholders			
Can the government solve economic and social problems? – interest rates, taxation, social problems, economic activity, monetary policy, fiscal policy, changing habits			
How do businesses grow? – internal growth, external growth, innovation, research and development, merger, takeover, conglomerate mergers			
Why do businesses grow? – economics of scale, bulk buying, market power, drawbacks to growth, diseconomies of scale			
Monopoly power – good or bad? – monopoly, (Bad - price, choice, excessive profits), (Good – value for money, developing new products, natural monopolies)			
Can big businesses be controlled? – regulation, government intervention, privatisation, EU regulation, self-regulation, pressure groups			
What is growth? – measuring the size of economy, GDP, what is economic growth? What causes economic growth?, output, resources, investment, human capital, physical capital, what the government can do – grants, infrastructure, LEDCs			
Does growth increase the standard of living? – GDP per capita, income inequalities, quality of life, infant mortality, life expectancy, literacy rates			
Can growth be bad? – drawbacks of growth, externalities (negative – non-renewable resources, congestion, waste, pollution)			
Can growth be sustainable? – sustainable economic growth, renewable resources, CSR, greenwashing, ethical responsibility, environmentally friendly			
What can the government do? – taxes, subsidies, legislation, regulation, the impact on business			
Is everybody equal? – Poverty in the UK, poverty line, welfare state, absolute poverty, relative poverty, universal benefits, means-tested benefits, income inequalities, poverty in LEDCs			
Can international trade help? – benefits of trade, the drawbacks of trade, how can trade be restricted (free trade, tariff, quota, non-tariff barriers, protectionism), single European market, multinational corporations (benefits, drawbacks)			
Is there any other help? – international debt, world bank, diversified industry, encourage investment, limit population growth, encourage free trade, NGOs and charities, World Trade Organisation (WTO), Fairtrade, ethical responsibility			

Child Development RO18: Examination Unit Checklist

Learning Outcome 1: Understand reproduction and the roles and responsibilities of parenthood

The wide range of factors which affect the decision to have children, i.e.

- relationship between partners
- finance
- parental age
- peer pressure/social expectations
- genetic counselling for hereditary diseases (e.g. Down's Syndrome, cystic fibrosis, sickle cell anaemia, muscular dystrophy)

Pre-conception health, i.e.

- diet
- exercise
- healthy weight
- dangers of smoking/alcohol/recreational drugs
- up-to-date immunisations

Roles and responsibilities of parenthood, i.e.

- meeting primary needs, i.e.
    - food
    - clothing
    - shelter
    - warmth
    - rest/sleep
- providing love and nurture
- socialisation, customs, values (e.g. patterns of behaviour, social interaction, role models)

To recognise and evaluate methods of contraception, their efficiency and reliability, i.e.

- barrier methods, i.e.
    - male and female condoms
    - diaphragm or cap
- contraceptive pill, i.e.
    - combined
    - progestogen-only
- intrauterine device and intrauterine system
- contraceptive injection
- contraceptive patch
- contraceptive implant
- natural family planning
- emergency contraceptive pill

The structure and function of male and female reproductive systems, i.e.

- female reproductive system, i.e.
    - ovaries
    - fallopian tubes
    - uterus/lining of the uterus
    - cervix
    - vagina
    - the menstrual cycle
- male reproductive system, i.e.
    - testes
    - sperm duct system/epididymis
    - urethra
    - penis
    - vas deferens

How reproduction takes place, i.e.

- ovulation
- conception/fertilisation
- implantation
- development of the embryo
- development of the foetus
- multiple pregnancies

The signs and symptoms of pregnancy, i.e.

- missed period
- breast changes
- passing urine frequently
- tiredness
- nausea

Learning Outcome 2: Understand antenatal care and preparation for birth

The roles of the different health professionals supporting the pregnant mother, i.e.

- Midwife
- Obstetrician
- General Practitioner
- Gynaecologist
- Paediatrician

The importance of antenatal and parenting classes, i.e.

- preparing for a safe pregnancy and delivery
- preparation of both parents for labour and parenthood
- role of father/partner in supporting the mother throughout pregnancy and birth
- for the birth to be an emotionally satisfying experience
- promotion of healthy lifestyle and breastfeeding

Routine checks carried out at an antenatal clinic, including scans, i.e.

- weight check
- blood tests
- blood pressure
- urine test
- STIs
- examination of the uterus
- baby's heartbeat
- ultrasound dating scan

Specialised diagnostic tests, i.e.

- ultrasound anomaly scan/mid-pregnancy scan
- nuchal fold translucency scan
- AFP (alpha fetoprotein) test
- CVS (chorionic villus sampling)
- amniocentisis
- NIPT blood test (non-invasive prenatal testing)

The choices available for delivery, i.e.

- hospital birth (e.g. Consultant-led units, Midwife or GP-led units, birthing centres)
- home birth
- domino scheme
- private hospital/independent midwife

The stages of labour and the methods of delivery, including pain relief, i.e.

- stage 1 – neck of the uterus opens
- stage 2 – the birth of the baby
- stage 3 – delivery of placenta and membranes
- methods of delivery, i.e.
    - forceps
    - ventouse
    - elective/emergency caesarean section
- pain relief, i.e.
    - gas and air (Entonox)
    - pethidine
    - epidural anaesthetic
    - TENS
    - water birth
    - breathing and relaxation techniques

Learning Outcome 3: Understand postnatal checks, postnatal provision and conditions for development

The postnatal checks of the newborn baby, i.e.

- Apgar score
- skin
    - vernix

    - lanugo
- physical checks
    - weight
    - length
    - head circumference
    - fontanelle
    - eyes
    - mouth
    - feet
    - fingers
    - hips
- reflexes
    - sucking
    - rooting
    - grasp
    - walking
    - startle (Moro)

The specific needs of the pre-term (premature) baby, i.e.

- baby born before 37 weeks
- • specific needs, i.e.
    - treatment for infection
    - breathing problems
    - feeding problems

The postnatal provision available for the mother and baby and the postnatal needs of the family, i.e.

- the role of the father/partner
- support from other family and friends
- information, advice and support from the GP, Midwife and Health Visitor
- postnatal check 6 weeks after birth
- 6-8 week review by Health Visitor or Doctor

Conditions for development, i.e.

- the importance of the environment to the child and the need for, i.e.
    - love and security
    - warmth
    - rest/sleep
    - exercise/fresh air
    - cleanliness
    - stimulation/opportunities to play
    - opportunities for listening and talking
    - routine (e.g. bedtime, bath time, feeding)
    - awareness of Sudden Infant Death Syndrome (SIDS)
- the need for acceptable patterns of behaviour and approaches to discipline, i.e.
    - need for boundaries
    - consideration of others

- safety
- promoting positive behaviour

Learning Outcome 4: Understand how to recognise, manage and prevent childhood illnesses

How immunity to disease and infection can be acquired, i.e.

- babies' natural immunity
- childhood immunisation and vaccination programmes
- reasons for immunisation

How to recognise and treat common childhood ailments and diseases, i.e.

- general signs of illness
- common childhood ailments and diseases
- caring for an ill child

When to seek treatment by a doctor, and when emergency medical help should be sought, i.e.

- key signs and symptoms (e.g. breathing difficulties, unresponsive, limp, high fever, fitting)

Diet-related illnesses, i.e.

- childhood obesity
- deficiency diseases
- food intolerances and allergies

The needs of an ill child, i.e.

- physical needs
- social needs
- emotional needs (e.g. explanation of illness)
- intellectual needs (e.g. stimulation)

How to prepare a child for a stay in hospital, i.e.

- hospital/ward visit
- acting out fears, hospital games
- books and DVDs
- explanation and honesty
- involvement in child's care

Learning Outcome 5: Know about child safety

How to create a safe, child-friendly environment, i.e.

- within the home, i.e.
  - kitchen
  - bathroom
  - living room
  - bedroom

    - stairs
- garden/play areas
- road safety

Safety labelling, i.e.

- Kite Mark
- BSI safety mark
- Lion Mark
- age advice symbol
- CE symbol
- children's nightwear labelling

To be aware of the most common childhood accidents, i.e.

- choking and suffocation
- burns
- falls
- electric shocks
- drowning
- poisoning

Social safety, i.e.

- personal safety awareness, i.e.
    - awareness of strangers (e.g. "stranger danger")
    - avoiding inappropriate personal contact (e.g. physical, emotional)
- internet safety, i.e.
    - dangers (e.g. inappropriate content, in-app purchases, befriending strangers)
    - talking to children about their internet use and how to be safe
    - safety strategies (e.g. explore sites and apps together, family discussions, set rules and agree boundaries, using safe search facilities and restrictions/parental lock)

Unit R081: My revision planner

LO1 Understand the purpose and content of pre-production

The purpose, uses and content of different pre-production documents

1 Mood boards
2 Mind maps/spider diagrams
3 Visualisation diagrams
4 Storyboards
5 Scripts

LO2 Be able to plan pre-production

Planning pre-production

9 Interpreting client requirements
10 Using research
11 Producing work plans and production schedules
12 Categorising the target audience
13 Hardware, software and techniques for pre-production
15 Health and safety considerations
18 Legislation in creative media production

LO3 Be able to produce pre-production documents

Creating pre-production documents

22 Creating a mood board
23 Creating a mind map/spider diagram
23 Creating a visualisation diagram
25 Creating a storyboard
26 Analysing a script
27 File formats and their properties

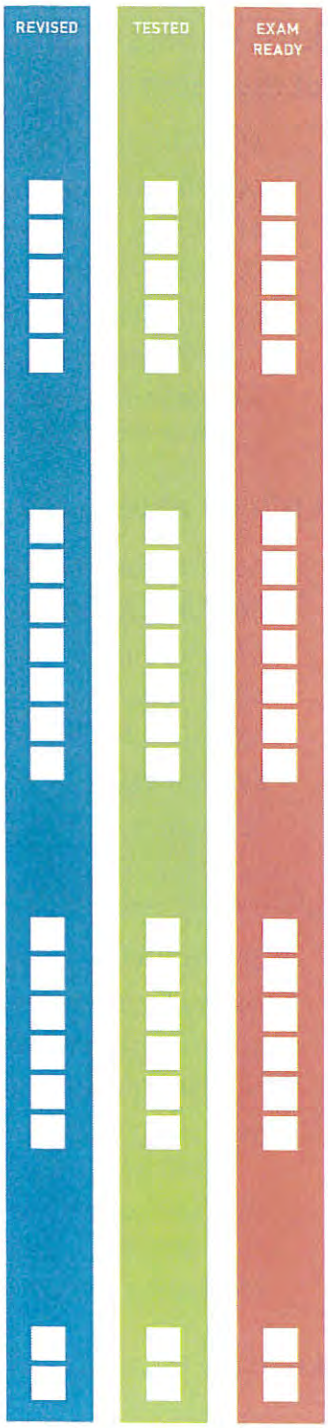
LO4 Be able to review pre-production documents

How to review pre-production documents and identify areas for improvement

33 How to review pre-production documents
34 How to identify areas for improvement

35 Now test yourself answers

36 Exam practice answers



Dance:

Year 9/10/11
A Linha Curva
Emancipation of Expressionism
Artificial Things
Within her Eyes
Shadows
Infra
Performance Skills
Technical Skills
Choreographic Devices
Motif and Motif Development

Music

Year 9
Minimalism
Film Music
Western Classical Music
Music Appreciation

Year 10/11
Performance
Free Composition
Composition to a brief
The Beatles
Haydn Clock Symphony
Listening and Theory

Drama Checklist

Year 9

- Introduction to Naturalism
- Text analysis
- Key practitioners
- Brecht and alienation
- Theatre of the Absurd
- Improvisation/ text work

Year 10

- GCSE breakdown and ensemble skills
- Re-visit Naturalism
- Frantic assembly and Physical theatre
- Designer roles and Production skills
- Unit 1 and 2 Practice and Mock
- Unit 3 Practice and Mock

Year 11

- Unit 1 Devising
- Unit 2 Performance from text
- Unit 3 Theatre Makers in Practice

'An Inspector Calls'

Quotation	What is happening	What it means	Language device	Link with context
"heavy looking" "portentous" (Act 1)	Stage directions, description of Mr Birling.	**He is large, greedy; he is overbearing, bossy, controlling.**	Descriptive – use of adjectives	**Mr Birling represents the rising upper middle class of the era – his main concern is money.**
"a rather cold woman" "her husband's social superior" (Act 1)	Stage directions, description of Mrs Birling.	**She is unfeeling, uncaring; she is of a higher class than Mr Birling, she is a snob.**	Descriptive – use of adjectives	**She is concerned with social standing; she represents outdated ideas of morality and behaviour.**
"very pleased with life and rather excited" (Act 1)	Stage directions, description of Sheila.	**She is smug, complacent; she is proud to be engaged.**	Descriptive	**Role of women in society – higher classes were expected to marry well, not work for a living.**
"very much the easy, well-bred man-about-town" (Act 1)	Stage directions, description of Gerald Croft.	**He is rich, privileged and arrogant.**	Descriptive	**Class system of the time. Gerald's father has a knighthood and so is a member of the aristocracy.**
"not quite at ease, half shy, half assertive" (Act 1)	Stage directions, description of Eric.	**He is nervous, lacks confidence. He is a man, but is treated like a child by his parents.**	Oxymoron/ paradox	**He represents the youth of the time – perhaps the hope for the future.**
"You're squiffy." (Act 1)	Sheila is talking to Eric.	**Eric is drunk. At this stage, we do not know why he is drinking too much.**	Slang/ colloquialism	**Use of Edwardian slang shows us the divide between younger and older generations.**
"no longer competing ...lower costs and higher prices" (Act 1)	Mr Birling talks to Gerald about his engagement to Sheila.	**Mr Birling compares the engagement to a business transaction.**	Irony – Priestley clearly wants us to dislike Mr Birling	**He represents capitalist attitudes; antithesis of socialism.**
"Nobody wants war" "unsinkable, absolutely unsinkable" (Act 1)	Mr Birling speaks at the party.	**All his predictions are wrong, showing that he is ignorant and out of step with progress.**	Dramatic irony	**We know there was war and the Titanic sank. Attitudes about war and progress in society.**
"he creates at once an impression of massiveness" (Act 1)	Stage directions, description of Inspector Goole.	**He dominates the room and the action; he is the most important character.**	Metaphorical use of description	**He represents future ways of thinking. He is Priestley's mouthpiece.**
"I can't accept any responsibility" (Act 1)	Mr Birling talks to Inspector Goole.	**He insists his actions had nothing to do with Eva's death.**	Denial, negative language	**Mr Birling represents the old order – no feelings of social responsibility.**
"Chief Constable Colonel Roberts...an old friend of mine" (Act 1)	Mr Birling talks to Inspector Goole.	**He is showing off his social connections, trying to use his power to evade the law.**	Showing off; name-dropping	**Social connections (class) seen as vital, but Priestley wants them to become less important.**
"But these girls aren't cheap labour – they're *people*."	Sheila talks to the Inspector about her father's story.	**She is going against her father's opinions; she is more humane and empathetic.**	Emotional exclamation, use of *emphasis*.	**Sheila echoes Priestley's notion of how workers should be treated – socialist viewpoint.**
"I'll never, never do it again" (Act 1)	Sheila tells her story to the inspector.	**Sheila bitterly regrets her selfish action in having Eva fired.**	Repetition	**Learning lessons from the past; making things better in the future.**

"We often do on the young ones. They're more impressionable." (Act 2)	Inspector Goole reacts to Mrs Birling's remark about Sheila.	**Younger generation is more flexible, more open to change, to new ideas.**	Metaphorical language – Sheila is a symbol of new generation.	**Changing ideas and attitudes in society.**
"Girls of that class..." (Act 2)	Mrs Birling's remark about Eva Smith.	**Eva is of a lower class, so Mrs Birling dismisses her as irrelevant and worthless.**	Dismissive, derogatory language	**Class – how higher classes regard those "beneath" them.**
"He's only a boy." (Act 2)	Mrs Birling talks to the inspector about Eric.	**Mrs Birling treats Eric like a child, even though he is in his twenties.**	Dismissive, derogatory language	**How the older generation treats the younger; changing attitudes in society.**
"I became at once the most important person in her life" (Act 2)	Gerald tells his story to the inspector.	**Gerald is pompous, self-important. He thinks of himself as a hero.**	Arrogant language	**Class – the attitude of the upper to the lower class in society.**
(with sharp sarcasm) "You were the wonderful Fairy Prince." (Act 2)	Sheila comments on Gerald's treatment of Daisy.	**Sheila sees Gerald's true motivation – that he wanted Daisy to see him as a hero.**	Irony/sarcasm	**Class – the attitude of the upper to the lower class in society. Sheila reflects Priestley's view.**
"it was simply a piece of gross impertinence... prejudiced me against her case" (Act 2)	Mrs Birling tells her story to the inspector.	**Mrs Birling took offence; she is arrogant and prejudiced.**	Emotive language	**Class – Mrs Birling thinks the girl should have treated her as a superior. It is an attitude Priestley thinks is outdated.**
"I've done nothing wrong" (Act 2)	Mrs Birling defends her actions to the inspector.	**Mrs Birling arrogantly thinks she is always in the right.**	Arrogant language	**The attitude of higher classes towards those lower down the social scale at the time.**
"Go and look for the father of the child. It's his responsibility." (Act 2)	Mrs Birling tells the inspector who she thinks is to blame.	**Mrs Birling is determined not to take any blame herself.**	Dramatic irony	**Gender roles and norms of the time.**
"You haven't made it any easier for me, have you, Mother?" (Act 3)	Eric's remark as he prepares to tell his story.	**He is bitter – he realises he has been condemned by his own mother.**	Irony / sarcasm; attempt to gain sympathy	**Attitudes of the different generations. Priestley is on the side of the younger generation.**
"I was in that state when a chap easily turns nasty" (Act 3)	Eric tells his story to the inspector.	**He was drunk and forced his way into her room; it is implied that he also forced her to have sex.**	Colloquial, euphemistic language	**Lifestyle of young men from wealthier families at the time. Gender roles and attitudes.**
"you're not the kind of father a chap could go to when he's in trouble" (Act 3)	Eric's remark to Mr Birling after confessing he got the girl pregnant and stole money.	**Mr Birling is cruel and condemnatory – not kind and understanding.**	Accusatory language	**Role of parents in society; attitudes towards younger generation.**
"as if she was an animal, a thing, not a person" (Act 3)	Inspector Goole describes the way Eric treated the girl.	**Eric behaved without thought or empathy.**	Emotive	**Treatment of lower classes/poorer people/ women in society.**
"I'd give thousands – yes, thousands" (Act	Mr Birling wishes none of	**Money is his only consideration in life.**	Repetition	**Capitalist vs socialist views of society.**

3)	it had happened.			
"there are millions and millions and millions of Eva Smiths and John Smiths" (Act 3)	Inspector Goole's final speech.	**His message to the whole family (and the audience) to take responsibility and think of others.**	Repetition	**Priestley's message – what he thinks we should all do in future; his hopes for society.**
"We don't live alone. We are members of one body." (Act 3)	Inspector Goole's final speech.	**His message about how members of society should act.**	Repetition	**Priestley's message – what he thinks we should all do in future; his hopes for society.**
"they will be taught it in fire and blood and anguish" (Act 3)	Inspector Goole's final speech.	**He warns the family and the audience of violence (war, civil unrest) unless attitudes change.**	Emotive	**WW1 would follow for the characters; WW2 had just ended.**
"you don't seem to have learnt anything" "it's you two who are being childish" (Act 3)	Sheila accuses her parents.	**Sheila has taken responsibility, but Mr and Mrs Birling have not.**	Accusatory	**Responsibility. Learning from past mistakes and building a brighter future.**
"The money's not the important thing. It's what happened to the girl"	Eric joins Sheila in opposing the attitudes of their parents.	**Eric has taken responsibility; he has learned his lesson.**	Accusatory	**Responsibility. Learning from past mistakes and building a brighter future.**
"Well, he inspected us all right." (Act 3	Sheila's reaction to Mr Birling when he realises Inspector Goole was not a real policeman.	**The inspector made Sheila reflect on her behaviour. She wants others to feel the same way.**	Exclamatory	**Personal responsibility. Taking criticism and changing attitudes.**
"The whole story's just a lot of moonshine." "an elaborate sell" (Act 3)	Mr Birling learns that no girl has died.	**Since it was all untrue, there is no reason for him to change his attitude or actions.**	Colloquial / slang	**Differing attitudes of different generations. Refusal to adapt and change.**
"It frightens me the way you talk" (Act 3)	Sheila talks to her parents.	**She feels her parents have not learned anything.**	Emotive	**Differing attitudes of different generations.**
"Everything's all right now, Sheila." (Act 3)	Gerald offers the ring back to Sheila.	**He thinks the events of that evening count for nothing.**	Reassuring	**Different attitudes – class, gender.**
"the famous younger generation who know it all" (Act 3)	Mr Birling's remark to Sheila and Eric.	**Mr Birling is disparaging towards his children, accusing them of stupidity.**	Irony	**Contrast between the attitudes of the different generations; arrogance of the older generation.**

Context

- The play is set in 1912. World War One began just two years later. The audience knows this – use of dramatic irony by Priestley. In 1912, women did not have the vote and a rich elite ran society.
- It was written in 1945 – the year that World War Two ended. Priestley hopes for a new, socialist future and to avoid the mistakes of the past. Barriers between classes and genders had been eliminated to some degree as the nation fought Hitler together; Priestley wants this to continue, rather than for society to slip back into old divisions and factions.
- Priestley was a socialist (member of the Labour Party). He wants to see an end to social divisions by class, money and gender.
- He helped develop the idea of the Welfare State (NHS, state pension, benefits system) – the idea that society should care for and protect the poorer and weaker.

Themes

Responsibility: Priestley's message is that those in positions of power have a responsibility to look out for weaker members of society. This is a lesson learned by Sheila and Eric, but not by Mr and Mrs Birling or Gerald.

The law and morality: Inspector Goole is not investigating a crime, but immorality. Priestley wants us to learn the "right" way to behave towards others.

Public image and hypocrisy: Set at a time when public image and respectability were seen as paramount. The characters see themselves as pillars of society, but Priestley shows us their flaws. Private behaviour has public consequences.

Class, status and power: How the rich and powerful should behave towards others who might be seen as their inferiors.

Generations, young vs old: Different ages reflect different attitudes. Mr and Mrs Birling represent old ways of thinking, while Sheila and Eric represent progress and change (at the end of the play).

Genres

Detective story (whodunit): A mystery is unravelled and the guilty people are identified. The investigator's role is to draw out the truth.

Ghost story: Goole's name is a pun ("ghoul"). Does he really exist, or is he a ghostly presence who can see into the future? How do you interpret what happens at the end?

Greek drama, the unities: The play follows this convention – unity of time, place and action (it takes place in real time in one place and there is a single storyline). The inspector acts as a Greek Chorus, moving the story along. There is catharsis (release of emotion) and changes in fortune.

Morality play: Dating back to the Middle Ages, these were plays with a message – that taught audiences how to live and behave. They often featured the Seven Deadly Sins (pride, sloth, greed, envy, lust, covetousness and anger).

A "well-made play": This is a type of carefully-crafted play designed to create tension (exposition, rising action, climax, falling action, denouement). Most of the story occurs before the action. Carefully timed entrances and exits help the characters explain their actions. A secret is revealed, there is mistaken identity and a logical or plausible ending.

'A Christmas Carol'

Key scenes and quotations

Quotation	What is happening	What it means	Language device	Link with context
"Stave"	Name of chapters.	**Musical term for the lines composers use, on which they write notes.**	Metaphor	**Ties in with the idea of a "carol" – connotations of music, festive celebration.**
"a squeezing, wrenching, grasping, scraping, clutching, covetous old sinner!"	Description of Scrooge – introduction to his character. (Stave 1, pg 12)	**Scrooge is mean, envious of others and greedy.**	List of verbs (gerunds) – suggesting continuous activity.	**Victorian concepts of charity and philanthropy**
"solitary as an oyster"	Description of Scrooge. (Stave 1, pg 12)	**He is always alone – reclusive, secretive, clammed tight shut, cold, shunning human contact.**	Simile	**Although now seen as luxury items, Oysters were once the food of the poor. The meaning links with ideas of social responsibility.**
"heat and cold had little influence on Scrooge"	Description of Scrooge. (Stave 1, Pg12)	**He never shows any emotion or reaction to events.**	Metaphor	**Ideas of social responsibility.**
" 'Bah!' said Scrooge. 'Humbug!' "	Comment to his nephew. (Stave 1, pg 14)	**He considers Christmas to be a fraud, a waste of time and money.**	Exclamation, emotive	**Social responsibility. Use of humour/ catchphrase.**
"Are there no prisons... workhouses?"	Scrooge speaks to the charity collectors. (Stave 1, pg 17)	**Scrooge thinks these are the right places for the poor.**	Emotive language. Repetition (same phrase repeated to Scrooge by Ghost of Christmas Present)	**Notions of "deserving" and "undeserving" poor; social responsibility.**
"Scrooge took his melancholy dinner in his usual melancholy tavern"	Scrooge dines alone (Stave 1, pg 20)	**He is presented as lonely and sad.**	Emotive language	**Social responsibility. Christmas as a time of sociability – contrast with Cratchits later in the book.**
"There's more of gravy than of grave about you"	The ghost of Jacob Marley appears to Scrooge. (Stave 1, pg 24)	**Scrooge thinks the apparition is purely imaginary, due to indigestion.**	Play on words, pun.	**Disbelief in spirits, supernatural. Food and society.**
"like a child, yet...like an old man"	Description of the Ghost of Christmas Past. (Stave 2, pg 33)	**The ghost has the characteristics of youth and old age.**	Oxymoron, paradox.	**Supernatural**
"strong hand" "mildly" "gentle",	Descriptions of the Ghost of Christmas Past. (Stave 2, pgs 34-35)	**The ghost is powerful, but also soft, emotional.**	Oxymoron, paradox.	**Contrasts in society. Supernatural.**
"a jolly Giant"	Description of the Ghost of Christmas	**He is huge and exuberant.**	Alliteration.	**Supernatural. Personification of**

	Present. (Stave 3, pg 51)			**Christmas.**
"genial", "sparkling", "cheery"	Description of the Ghost of Christmas Present. (Stave 3, pg 51)	**The ghost is merry, happy.**	Emotive.	**Personification of the festive spirit.**
"it seemed to scatter gloom and mystery"	Description of the Ghost of Christmas Yet to Come. (Stave 4, pg 74)	**The ghost is dark, sinister, threatening.**	Emotive, alliteration.	**Supernatural. Personification of death.**
"silent", "ghostly", "spectral"	Description of the Ghost of Christmas Yet to Come. (Stave 4, pg 75)	**The ghost does not speak; it is frightening, sinister.**	Emotive.	**Supernatural. Personification of death.**
"I am as light as a feather, I am as happy as an angel!"	Scrooge awakens on Christmas morning. (Stave 5, pg 90)	**He is reborn. He feels elated and delighted.**	Simile	**Religion. Salvation, reformation.**
"Scrooge was better than his word"	How Scrooge has changed at the end. (Stave 5, pg 95)	**He is even better than he promised to be – he is truly a reformed character.**	Authorial intrusion, telling the reader what to think.	**Social change, the ability to reform.**
"God bless Us, Every One!"	Tiny Tim speaks – final words of the story.	**Christmas is a time for good fortune and good cheer – goodwill to all.**	Emotive, emphasis (use of capitals)	**Religion, salvation, social inclusion.**

Context

- The story was written in 1843.
- Ghost stories were immensely popular with Victorian readers, as was spiritualism—perhaps because of the very high infant mortality rate.
- Victorian society—extreme poverty in cities like London; underclass often seen as undeserving. The Poor Law meant those out of work ended up in workhouses.
- Notions of philanthropy (giving to charity or the poor) were strong among some rich people in Victorian society.
- Christmas traditions—many began in the Victorian era, including Christmas trees, cards and being allowed time off work.

Themes

Greed: Scrooge is shown as miserly and greedy, but changes when the ghosts show him the error of his ways.
Christmas: The joy of celebrating this festival. By the end, Scrooge joins in.
Social injustice: Giving to the poor/to charity. Cratchit family has little money. Tiny Tim is doomed—until Scrooge acts to help at the end. The idea of giving to charity/the poor.
Importance of family: Scrooge's attitude towards his nephew. His failed past romance that could have brought happiness. The Cratchits—poor but happy?
Supernatural: The ghosts teach Scrooge a lesson. The idea of seeing into the future.

Gothic: Gothic fiction combines features of horror and romance.
Key features are: Extreme emotion, fear, awe and fear of religion and/or the supernatural, very strong atmosphere.
General features to look for: Mystery, the supernatural, ghosts, haunted houses, castles, darkness, death, madness, secrets.
General characters to look for: Tyrants, villains, maniacs, heroes, persecuted women, magicians, demons, angels, ghosts.

GCSE English Literature Paper 2 – Love and Relationships Poetry

Poem	Read	Annotated	Practice Essay	Revised
Lord Byron – *When We Two Parted*				
Percy Bysshe Shelley – *Love's Philosophy*				
Robert Browning – *Porphyria's Lover*				
Elizabeth Barrett Browning – *Sonnet 29*				
Thomas Hardy – *Neutral Tones*				
Charlotte Mew – *The Farmer's Bride*				
C Day Lewis- *Walking Away*				
Maura Dooley – *Letters from Yorkshire*				
Charles Causley – *Eden Rock*				
Seamus Heaney – *Follower*				
Simon Armitage – *Mother, Any Distance*				
Carol Ann Duffy – *Before You Were Mine*				
Owen Sheers – *Winter Swans*				
Daljit Nagra – *Singh Song!*				
Andrew Waterhouse – *Climbing My Grandfather*				

Macbeth

Key scenes and quotations

Quotation	What is happening	What it means	Language device	Link with context
1.1 (Witches) "Fair is foul and foul is fair"	Witches await Macbeth.	Everything is reversed, unnatural, distorted.	Oxymoron, repetition	Witchcraft
1.3 (Banquo) "The instruments of darkness tell us truths"	Witches talk to Banquo and Macbeth.	Banquo believes the witches' prophecy, but fears what the effect might be.	Metaphor	Tragedy/fate; belief in the supernatural
1.3 (Banquo) "New horrors come upon him, like our strange garments"	Banquo comments on the effect of the witches' prophesy.	Macbeth appears transformed by the thought that he may be king.	Simile	Belief in the supernatural
1.5 (Lady Macbeth) "Come, you spirits that tend on mortal thoughts, unsex me here"	Lady Macbeth's soliloquy, wishing her husband was more decisive and less scrupulous.	She wants to be more like a man, to take charge herself.	Imagery, unusual and powerful verb ("unsex")	Role of women, patriarchal society
1.5 (Lady Macbeth) "Come, thick night, and pall thee in the dunnest smoke of hell"	Lady Macbeth's soliloquy, following the news that Duncan will visit. She is plotting his death.	She wants to become evil, cruel – to turn to the dark side.	Metaphor	Fate, the concept of evil, role of women
1.7 (Macbeth) "If it were done when 'tis done, then 'twere well it were done quickly"	Macbeth is worrying about killing King Duncan.	If he has to kill Duncan, he wants to get it over with rapidly. He is having doubts.	Repetition	Regicide, Divine Right of Kings
1.7 (Macbeth) "Vaulting ambition, which o'erleaps itself and falls on the other"	Macbeth is worrying about killing King Duncan.	He fears his aim to become ruler may lead him to make a tragic mistake.	Metaphor	Regicide, Divine Right
1.7 (Lady Macbeth) "Was the hope drunk wherein you dress'd yourself?"	Lady Macbeth tries to talk her husband into killing King Duncan.	She is insulting Macbeth, insinuating that he is a coward who merely pretended to be courageous.	Metaphor	Patriarchal society, reversal of gender stereotypes
1.7 (Lady Macbeth) "I would, while it	Lady Macbeth tries to talk her husband into	She would rather have killed her own child than to	Hyperbole	Reversal of gender stereotypes

was smiling in my face, have pluck'd my nipple from his boneless gums, and dash'd the brains out, had I so sworn as you have done to this."	killing King Duncan.	backtrack on the plan to kill Duncan, as Macbeth is trying to do.		
2.1 (Macbeth) "Is this a dagger that I see before me, the handle toward my hand?"	Macbeth is preparing to kill King Duncan and hallucinates.	He is imagining the murder weapon – possibly the sign of a guilty mind.	Imagery	Regicide
2.1 (Macbeth) "Hear it not, Duncan; for it is a knell that summons thee to heaven or to hell."	A bell sounds as Macbeth goes off to kill Duncan.	He takes the bell as a portent of death.	Symbolism, imagery	Religion, regicide
2.2 (Macbeth) "Methought I heard a voice cry 'Sleep no more!'"	Macbeth returns to his wife after killing Duncan.	He is overcome with guilt.	Symbolism, imagery	Regicide, guilt, madness
3.1 (Banquo) "Thou play'dst most foully for't"	Banquo is concerned about Macbeth.	He suspects Macbeth is guilty of murder.	Emotive language	Regicide, guilt
3.4 (Macbeth) "If charnel-houses and our graves must send those that we bury back, our monuments shall be the maws of kites."	At a grand feast to celebrate his coronation, Macbeth sees the blood-covered ghost of Banquo – the friend he has had killed.	He is appalled at the gory spectacle of the dead coming back to haunt him.	Imagery	Guilt, madness
4.1 (First Apparition) "Beware the thane of Fife."	The witches present a series of apparitions to Macbeth, foretelling his fate.	The spirit ("an armed head") is warning him that Macduff is his most dangerous enemy.	Imperative verb ("beware")	Belief in the supernatural, portents, fate
4.1 (Second Apparition) "None of woman born shall harm Macbeth"	The witches present a series of apparitions to Macbeth, foretelling his fate.	The spirit ("a bloody child") seems to imply that Macbeth cannot be defeated.	Prediction takes the form of a riddle (perhaps hinting that it is misleading).	Belief in the supernatural, portents, fate
5.1 (Lady Macbeth) "Out, damned spot! Out, I say!"	She is sleepwalking, imagining she is washing her hands.	She sees blood on her hands – a symbol of her guilt.	Repetition, exclamation	Madness, role of women, guilt over regicide

5.1 (Lady Macbeth) "What's done cannot be undone."	She is sleepwalking, pondering on her own guilt over Duncan's death.	King Duncan is dead and cannot be brought back to life.	Repetition? Has the air of an adage.	Fate, fatalism, guilt over regicide, madness
5.5 (Macbeth) "Life's but a walking shadow, a poor player..."	Macbeth learns that his wife has killed herself.	Life is unreal – like a stage performance that is not important.	Metaphor	Theatre of the time, fate
5.8 (Macduff) "Macduff was from his mother's womb untimely ripped."	Macbeth and Macduff fight.	Macduff reveals that he was born by caesarean section, so he can defeat Macbeth.	Imagery	Fate, prophesy, the supernatural

GCSE GEOGRAPHY AQA New specification September 2016

Term	Year 9 (Sept 2017)	Year 10 (Sept 2017)	Year 11 (Sept 2017)
Autumn 1 (8 weeks)	**The challenge of natural hazards** **Tectonic hazards** Natural hazards, Earth's structure, plate tectonics, global distribution. Volcanic hazards 2x earthquake case studies, management. Tectonics assessment	**The changing economic world** **The changing UK economy** UK science business parks, environmental impacts, changing rural landscapes, changing transport infrastructure. UK economy assessment	**Physical landscapes in the UK** **Coastal landscapes in the UK**: protecting coastlines, case study UK coastal management scheme. Coasts assessment **The challenge of resource management** The changing demand and provision of resources in the UK. Energy: Demand for energy resources is rising, areas of surplus and deficit, impacts of energy security. Strategies to increase energy supply. X2 case studies.
Autumn 2 (7 weeks)	**The challenge of natural hazards** **Weather hazards** Tropical storms, formation & location, Hurricane case study. case study Extreme weather in the UK Weather events, effects.	**Urban Issues and challenges** Day trip: London Docklands regeneration, Land use & services 21st Oct 2016. (4weeks) Write up. Hypothesis background, methods, data presentation, interpretation & evaluation. **Urban Issues and challenges**	**The changing economic world** Economic development & quality of life. Demographic transition model, Development indicators Strategies to reduce the development gap. Case study Major changes in the economy of the UK. Case study Economic world assessment

GCSE GEOGRAPHY AQA New specification September 2016

Spring 1 (6 weeks)	Hurricane assessment **The challenge of natural hazards** **Climate change** Evidence, causes, effects, Managing the impacts	**Urban Issues and challenges** Urban change/ urbanization, LIC or NEE, mega cities, case study The UK's urban landscape, UK case study, example of an urban regeneration project. Sustainable urban living. Urban issues assessment	**The challenge of natural hazards** Revision of year 9 topics Natural Hazards Recap Natural hazards, plate tectonics, global distribution. 2x earthquake case studies, management. Weather hazards, tropical storms, UK extreme weather. Natural hazards assessment
Spring 2 (6 weeks)	**The changing economic world** **The development gap** Economic development & quality of life. Demographic transition model, Development indicators Strategies to reduce the development gap. Development gap assessment	**Physical landscapes in the UK** **River landscapes in the UK** Rivers: Fluvial processes, landforms, hydrographs, flood management schemes. Case study	**The Living World** **Ecosystems**, global distribution, example of a small scale ecosystem. **Tropical rainforests.** Characteristics, structure, deforestation & management, Case study. **The Living World** **Hot deserts** Physical characteristics, development opportunities, Causes of desertification & strategies. Case study of a hot desert. Ecosystems assessment
Summer 1 (7 weeks)	**The changing economic world** **Nigeria: a NNE** Case study on industry and quality of life	Day trip: Characteristics of a river downstream. Margaret McMillian, Kent. 28th April & 2nd May 2017. (4weeks) Write up. Hypothesis	**Issue Evaluation (pre-release 12 weeks before exams) March** **Section in GCSE textbooks**

		background, methods, data presentation, interpretation & evaluation.	
Summer 2 (7 weeks)	Completion of any unfinished topics Geographical skills/Revision/ flash cards/ End of year exams	**Physical landscapes in the UK** **River landscapes in the UK to be finished** **Mocks/ work experience.** **To be taught in yr 11** **Physical landscapes in the UK** **The main features of the UK's landscape** **Coastal landscapes in the UK**: coastal processes, landforms, protecting coastlines, case study UK coastal management scheme.	

Health and Social Care RO21 Revision topics:

Learning Outcome 1: Understand how to support individuals to maintain their rights

- how care workers can support individuals to maintain their rights, i.e.:
  - by using effective communication, i.e.:
    - using vocabulary that can be understood
    - not being patronising
    - adapting their communication to meet the needs of the individual or the situation
    - listening to individuals' needs
  - by providing up-to-date information, i.e.:
    - on time services open
    - type of care provided
    - location
    - alternatives available
  - by challenging discriminatory behaviour, i.e.:
    - challenge at the time
    - afterwards through procedures
    - long-term proactive campaigning
  - by providing information about complaints procedures, i.e.:
    - the options they have
    - the steps to take when making a complaint
    - procedures to follow
  - by providing advocacy, someone to speak on behalf of someone who is unable to speak for themselves.

Learning Outcome 1: Understand how to support individuals to maintain their rights

Learners must be taught:

- the rights of individuals to, i.e.:
  - choice, i.e.:
    - joining in activities
    - food options
    - selection of GP
    - where/how receive treatment
  - confidentiality, i.e.:
    - having personal notes stored securely
    - not being spoken about so others can hear
  - protection from abuse and harm
  - equal and fair treatment, being treated for the needs the individual has
  - consultation, i.e.:
    - what type of care the individual would like if it were possible
    - opinions and views being sought

- why it is important to maintain individuals rights, i.e.:
  - to make people feel valued/raise self-esteem
  - to empower
  - to instil confidence and trust
  - to feel safe
  - to equality of access to services/treatments
  - to have your individual needs met

Learning Outcome 2: Understand the importance of the values of care and how they are applied

Learners must be taught:

- the values of care in health and social care:
  - by promoting equality and diversity
  - by maintaining confidentiality
  - by promoting individuals rights and beliefs
- where the values of care are applied, i.e.:
  - in health settings (e.g. GP surgery)
  - in social care settings (e.g. residential homes)
  - in early years care and education (e.g. nurseries)
- how the values are applied, i.e.:
  - by promoting equality and diversity (e.g. providing foods specifically for vegetarians)
  - by maintaining confidentiality (e.g. making sure written documents are stored in a locked filing cabinet)
  - by promoting individuals rights and beliefs (e.g. the right to refuse treatment)
  - by being a reflective practitioner
- how the early years values of care are applied in settings, i.e.:
  - by ensuring the welfare of the child is paramount, i.e.:
    - positive expectations should be encouraged
    - a child must never be smacked or humiliated
  - by keeping children safe and maintaining a healthy and safe environment, i.e.:
    - protecting children from abuse, applying health and safety procedures
  - by working in partnership with parents/guardians and families
  - by encouraging children's learning and development, children should be offered a range of experiences to provide choice
  - by valuing diversity, i.e.:
    - information about various traditions, customs and festivals should be presented
  - by ensuring equality of opportunity, each child should be provided with the opportunity to work towards his/her potential
  - by practising anti-discrimination (e.g. not discriminating on the basis of social background)
  - by ensuring confidentiality, i.e.:
    - information about families must not be shared with others except on a 'need to know basis'
  - by working with others (e.g. to include other professionals or in partnership)

Learning Outcome 2: Understand the importance of the values of care and how they are applied

- the importance of applying the values of care, i.e.:
  - to ensure standardisation of care (e.g. all children receiving the appropriate care and attention)
  - to improve the quality of care (e.g. all hospital patients feeling safe)
  - to provide clear guidelines to inform and improve practice
  - to maintain or improve quality of life
- the effects on people who use services if the values of care are not applied, i.e.:
  - physical (e.g. pain if medication/treatment is not given)
  - intellectual (e.g. loss of focus/concentration)
  - emotional (e.g. feeling betrayed, low self-esteem)
  - social (e.g. feeling excluded from the group).

Learning Outcome 3: Understand how legislation impacts on care settings

Learners must be taught:

- the key aspects of legislation which are relevant to each of the following groups, i.e.:
  - children and young people
  - vulnerable adults
  - ethnic minority groups
  - people with disabilities
  - men and women
  - older adults

- an overview of the key aspects of legislation, i.e.:
  - how the Equality Act 2010, Children's Act 2004, Data Protection Act 1998, Health and Safety at Work Act 1974 and Mental Health Act 2007
    - support an individual's rights
    - provide a framework to maintain and improve quality of practice
    - provide guidance for those who work in the sectors
    - set out the standard of practice and conduct those who work in the sectors should meet

- how key legislation impacts on, i.e.:
  - people who use services (e.g. people can exercise their rights)
  - care practitioners (e.g. training)
  - service providers (e.g. production of organisational policies and procedures).

Learning Outcome 4: Understand how personal hygiene, safety and security measures protect individuals

Learners must be taught:

- personal hygiene, i.e.:
  - hair tied back/covered
  - open wounds covered
  - no jewellery
  - no nail polish
  - appropriate protective clothing
  - appropriate hand washing routines
  - regular showering and hair washing
  - regular brushing of teeth
  - appropriate use and disposal of tissues/antiseptic wipes

- safety procedures, i.e.:
  - emergency procedures (e.g. fire, evacuation)
  - equipment considerations (e.g. appropriate training, fit for purpose)
  - moving and handling techniques

Learning Outcome 4: Understand how personal hygiene, safety and security measures protect individuals

- security measures, i.e.:
  - checking external entrances
  - monitoring of keys
  - security pads on doors
  - window locks
  - reporting of concerns to line managers
  - identifying staff, receiving and monitoring visitors

- how individuals are protected, i.e.:
  - methods for reducing spread of infection (e.g. general cleanliness, wearing gloves/masks)
  - methods for reducing risk/danger (e.g. risk assessment)
  - procedures to prevent accidents and promote good practice (e.g. training programmes).

Superpower relations and the Cold War, 1941–91 – Content List

The origins of the Cold War, 1941–58	Class	Revised
The Grand Alliance. The outcomes of the Tehran, Yalta and Potsdam conferences		
The ideological differences between the superpowers and the attitudes of Stalin, Truman and Churchill		
The impact on US-Soviet relations of the development of the atomic bomb, the Long and Novikov telegrams and the creation of Soviet satellite states in Eastern Europe		
The impact on US-Soviet relations of the Truman Doctrine and the Marshall Plan, 1947		
The significance of Cominform (1947), Comecon (1949) and the formation of NATO (1949)		
Berlin: its division into zones. The Berlin Crisis (blockade and airlift) and its impact. The formation of the Federal Republic of Germany and German Democratic Republic		
The significance of the arms race and the formation of the Warsaw Pact		
Events in 1956 leading to the Hungarian Uprising, and Khrushchev's response		
The international reaction to the Soviet invasion of Hungary		
Cold War crises, 1958–70	**Class**	**Revised**
The refugee problem in Berlin, Khrushchev's Berlin ultimatum (1958), and the summit meetings of 1959–61		
Soviet relations with Cuba, the Cuban Revolution and the refusal of the USA to recognise Castro's government. The significance of the Bay of Pigs incident		
Opposition in Czechoslovakia to Soviet control: the Prague Spring		
The construction of the Berlin Wall, 1961		
The events of the Cuban Missile Crisis		
The Brezhnev Doctrine and the re-establishment of Soviet control in Czechoslovakia		
Impact of the construction of the Berlin Wall on US-Soviet relations. Kennedy's visit to Berlin in 1963		
The consequences of the Cuban Missile Crisis: the 'hotline', the Limited Test Ban Treaty 1963; the Outer Space Treaty 1967; and the Nuclear Non-Proliferation Treaty 1968.		

International reaction to Soviet measures in Czechoslovakia		
The end of the Cold War, 1970–91	**Class**	**Revised**
Détente in the 1970s, SALT 1, Helsinki, and SALT 2.		
The significance of Reagan and Gorbachev's changing attitudes		
Gorbachev's 'new thinking' and the Intermediate-Range Nuclear Force (INF) Treaty 1987		
The significance of the Soviet invasion of Afghanistan, the Carter Doctrine and the Olympic boycotts.		
Reagan and the 'Second Cold War', the Strategic Defence Initiative		
The impact of Gorbachev's 'new thinking' on Eastern Europe: the loosening Soviet grip on Eastern Europe		
The significance of the fall of the Berlin Wall		
The collapse of the Soviet Union and its significance in bringing about the end of the Warsaw Pact		

Early Elizabethan England 1558-88 – Content List

Queen, Government and Religion 1558-69	Class	Revised
Elizabethan England in 1558: Society and Government		
The Virgin Queen, the problems of her legitimacy, gender and marriage. Her character and strengths		
Challenges at home and from abroad: the French threat and financial weaknesses		
Religious divisions in England in 1558		
Elizabeth's religious settlement (1559): its features and impact		
The Church of England: its role in society		
The nature and extent of the Puritan challenge		
The nature and extent of the Catholic Challenge: the role of the nobility, papacy and foreign powers		
Mary Queen of Scots: her claim to the English throne and her arrival in England in 1568		
Relations between Elizabeth and Mary 1568-69		
Challenges to Elizabeth at Home and Abroad 1569-88	**Class**	**Revised**
The reasons for and significance of the Revolt of the Northern Earls 1569-70		
The features and significance of the Ridolfi, Throckmorton and Babington Plots. Walsingham and the use of spies		
The reasons for and significance of the execution of Mary Queen of Scots in 1587		
Political and Religious Rivalry with Spain		
Commercial Rivalry with Spain. The New World, privateering and the significance of the rivalry with Drake		
English direct involvement in the Netherlands 1585-88. The role of Robert Dudley		
Drake and the raid on Cadiz: 'Singeing the King of Spain's beard'		
Spanish invasion plans. Reasons why Philip used the Spanish Armada		
The reasons for and consequences of the English victory		

Elizabethan Society in the Age of Exploration 1558-88	Class	Revised
Education in the home, schools and universities		
Sport, pastimes and the theatre		
The reasons for the increase in poverty and vagabondage		
The changing attitudes and policies towards the poor		
Factors prompting exploration. The impact of new technology on ships and sailing and the drive to expand trade		
The reasons for and the significance of Drake's circumnavigation of the globe		
The significance of Raleigh and the attempted colonisation of Virginia		
Reasons for the failure of Virginia		

Weimar and Nazi Germany 1918-39 – Content List

The Weimar Republic 1918-29	Class	Revised
The Legacy of WW1, Abdication, Armistice and Revolution,1918-19		
The Weimar Republic: Strengths and Weaknesses		
Reasons for the early unpopularity of the Republic: 'stab in the back' theory and Treaty of Versailles		
Political Threats – Left and Right: Spartacists, Freikorps and Kapp Putsch		
The Challenges of 1923: hyperinflation and the Invasion of the Ruhr		
Reasons for economic recovery: Stresemann, Rentenmark, Dawes and Young Plan		
The impact of Stresemann on foreign affairs: Locarno, League of Nations and the Kellogg-Briand Pact.		
Changes in the standard of living; wages, housing and unemployment insurance		
Changes in the position of women, politics and leisure		
Cultural changes: architecture, art and the cinema		
Hitler's Rise to Power 1919-33	**Class**	**Revised**
The Early Years of the Nazi Party 1919-20		
The early growth and features of the Party. The 25 Point Programme and role of SA		
The reasons for, events of and consequences of the Munich Putsch		
Reasons for limited support for the Nazis, 1924-28: Party reorganisation, Mein Kampf and Bamberg Conference of 1926		
The growth of unemployment causes and impact. Weimar governments reactions. Communist growth		
Reasons for the growth in support of the Nazi Party: Appeal of Hitler, propaganda and work of SA		
Political developments in 1932: Hindenburg, Bruning, von Papen and von Schleicher		
The role of Hindenburg and von Papen in Hitler becoming Chancellor		

Nazi Control and Dictatorship 1933-39	Class	Revised
The Reichstag Fire and the Enabling Act		
The threat from Rohm and the SA. The Night of the Long Knives and the death of Hindenburg. Fuhrer and Army Oath		
Role of the Gestapo, SS, SD and concentration camps		
Nazi control of the legal system, judges and law courts		
Nazi policies towards Catholics and Protestants		
Goebbels, censorship, media, rallies and sport		
Nazi control of culture and the arts		
Opposition to the regime: Churches and Niemoller. Swing Youth and Eidelweiss Pirates		
Life in Nazi Germany 1933-39	**Class**	**Revised**
Nazi views on women and the Family		
Nazi policies towards women: marriage, family, employment and appearance		
Nazi aims and policies towards the young: Hitler Youth and the League of German Maidens		
Nazi control of youth through education, curriculum and teachers		
Nazi policies to reduce unemployment: labour service, autobahns, rearmament and invisible unemployment		
Changes in the standard of living: The Labour Front, Strength Through Joy, Beauty of Labour		
Nazi racial beliefs and the treatment of minorities: Slavs, gypsies, homosexuals and those with disabilities		
The persecution of the Jews: Boycotts, the Nuremberg Laws and Krystallnacht		

Medicine Through Time c.1250-present day – Content List

Medieval Medicine c.1250-1500	Class	Revised
Supernatural causes of disease believed by people		
Rational causes of disease believed by people		
Treatments used by people in medieval England		
Medieval Medics		
The Black Death Case Study		
Renaissance Medicine c.1500-1700	**Class**	**Revised**
The importance of Thomas Sydenham		
Who was Vesalius and how did he help improve surgery?		
Who was Harvey, what did he discover and why did he have a limited impact on Renaissance medicine?		
The impact of the Printing Press on people's understanding of medicine		
The role of the Royal Society		
Continuity between Renaissance and Medieval medicine		
The Great Plague Case Study		

18th and 19th Century Medicine c.1700-1900	Class	Revised
Edward Jenner and the link between smallpox and cowpox		
Parliament and Jenner		
Louis Pasteur and Germ Theory		
Florence Nightingale and nursing		
Discovery of chloroform		
The 1875 Public Health Act		
Cholera Case Study		

Present day medicine c.1900-present	Class	Revised
Watson and Crick and DNA		
The discovery of X-rays		
Fleming, Florey and Chain		
Magic bullets		
Advances in surgery after 1900		
The National Health Service		
Vaccinations		
Lung Cancer Case Study		

GRAMMAR & General REVISION (Spanish and French)

www.languagesonline.org.uk	lots of grammar & exercises + topics at GCSE and AL
www.bbc.co.uk/bitesize/gcse/french	good site, lots of practice
www.bbc.co.uk/bitesize/gcse/spanish	
http://revisionworld.co.uk/gcse-revision/french	some good past papers for examples
http://revisionworld.co.uk/gcse-revision/spanish	

GAMES & VOCAB (Spanish and French)

www.quia.com/shared/french	various language/vocab games
www.quia.com/shared/spanish	
www.funwithlanguages.vacau.com	a great site with vocab games Yr7 to AS
www.quizlet.com	a useful site for vocab learning

LISTENING/READING (Spanish and French)

www.coerll.utexas.edu/cmaj/home	listening exercises with transcripts (in the form of interviews)
www.bbc.co.uk/learningzone/clips	listening videos from basic to AS standard
www.bonjourdefrance.com	try the karaoke section aimed at AS/A2
www.audio-lingua.eu/?lang	advanced level mp3 recording on many topics

DICTIONARY (Spanish and French)

www.wordreference.com	a very reliable site with tons of examples

LATIN

https://www.clc.cambridgescp.com/online-activities	support for the language learning
https://www.exams.cambridgescp.com/wjec-and-eduqas/eduqas-gcse-9-1-2018-onwards/eduqas-component-1-language	vocabulary tester
https://www.exams.cambridgescp.com/wjec-and-eduqas/eduqas-gcse-9-1-2018-onwards/eduqas-component-2-day-races	support for the Literature exam
https://www.exams.cambridgescp.com/files/eduqas_entertainment_and_leisure_booklet_2.pdf	sources for the Entertainment and Leisure Unit

MathsWatch - Revision lessons just a click away . . .

Subject Content

Number

Algebra

Ratio, Proportion, Rates of Change

Geometry and Measures

Probability and Statistics

Grades that will be examined:

Higher	1	2	3	4	5	6	7	8	9
Foundation	1	2	3	4	5				

You will find some formulas and information in this insert.

It will be very helpful to learn it all, off-by-heart for your exam.

Area of a circle = πr^2

Circumference of a circle = $2\pi r$



Grade 1

Place Value 1
Ordering Integers 2
Ordering Decimals 3
Reading Scales 4
Simple Mathematical Notation 5
Interpreting Real-Life Tables 6
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Addition/Subtraction

(+) (+) becomes +
(−) (−) becomes +
(+) (−) becomes −
(−) (+) becomes −

eg. 5 − (-3) = 5 + 3

eg. 5 + (-3) = 5 − 3

Multiplication/Division

(+) × (+) becomes +
(−) × (−) becomes +
(+) × (−) becomes −
(−) × (+) becomes −

eg. (-5) × (-3) = 15

eg. (-5) × 3 = -15

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Grade 2

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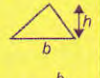
Prime Numbers

2, 3, 5, 7, 11, 13, 17, 19, 23, 29, . . .

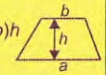
Each prime number has exactly two factors.

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Area of a triangle = $\frac{b \times h}{2}$



Area of trapezium = $\frac{1}{2}(a + b)h$



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Grade 3

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The Laws of Indices

$x^0 \times x^b = x^{a+b}$

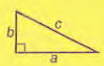
$x^a \div x^b = x^{a-b}$

$(x^a)^b = x^{ab}$

$x^{-a} = \frac{1}{x^a}$

Pythagoras

$a^2 + b^2 = c^2$



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Fractional Indices

$x^{\frac{a}{b}} = \left(\sqrt[b]{x}\right)^a$

Surds

$\sqrt{a} \times \sqrt{a} = a$

$\sqrt{a \times b} = \sqrt{a} \times \sqrt{b}$

$\sqrt{\frac{a}{b}} = \frac{\sqrt{a}}{\sqrt{b}}$

Quadratic Formula

$x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$

Sine Rule

$\frac{a}{\sin A} = \frac{b}{\sin B} = \frac{c}{\sin C}$

Cosine Rule

$a^2 = b^2 + c^2 - 2bc \cos A$

Histograms

frequency density = $\frac{\text{frequency}}{\text{class width}}$

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MATHSWATCH COVERS EVERY TOPIC ON THE 2015 SYLLABUS

Grades that will be examined:

Higher	1	2	3	4	5	6	7	8	9
Foundation	1	2	3	4	5				

Grades that can be obtained:

Higher				4	5	6	7	8	9
Foundation	1	2	3	4	5				

The Maths Grade 1 to 9 syllabus is split into 5 areas and 240 videos.

Number - 65 videos

Algebra - 64 videos

Ratio and Proportion - 17 videos

Geometry and Measures - 66 videos

Probability and Statistics - 28 videos

How long will it take to revise?

The timings of our videos are:

0 to 5 mins . . . . 103 videos
5 to 10 mins . . . . 110 videos
10 to 15 mins . . . . 22 videos
15 to 20 mins . . . . 4 videos
20 to 25 mins . . . . 1 video

Media Studies

Lifestyle Magazines:

Revise genre conventions
Revise media language (typography, layout, colour, language, image)
Revise representation

TV Comedy Texts: The Simpsons and Outnumbered

Revise scheduling
Revise audience appeals

GCSE Religious Studies

Exam Board: Eduqas (Specification A). Within the course there are 3 papers:

1. Christianity: Beliefs, teachings and practices – 1hr Paper, 25% of final grade.
2. Islam: Beliefs, teachings and practices – 1hr Paper, 25% of final grade.
3. Religion, Philosophy & Ethics – 2hr Paper, 50% of final grade (Topics: Relationships, Good & Evil, Life & Death, Human Rights)

Progress Tracker

RPE Unit 2 – Life & Death (Non-religious & Christianity) • Origins of the universe (different views on creation story/scientific theory) • Dominion, stewardship, global citizens, Humanists for a better world • Origin and sanctity of human life; evolution • Abortion, euthanasia, Dignity for Dying • The afterlife and funerals	**RPE Unit 1 – Relationships (Christianity & Islam)** • Sex and contraception • Purpose of relationships and families • Marriage and cohabitation • Adultery, divorce and remarriage • Same sex relationships • Attitudes towards women in authority	**RPE Unit 4 – Human rights (Christianity & Islam)** • Dignity of human life • Human rights • Equality: agape in action • Personal conviction vs law • Censorship; religious extremism • Attitudes towards prejudice and discrimination (e.g. racial, Islamophobic) • Wealth and charity
Christian Beliefs and Teachings • The nature of God • Creation • Law and sin • Jesus' birth, crucifixion, resurrection, ascension • Atonement and salvation • The Holy Spirit • Afterlife	**Muslim Beliefs and Teachings** • The nature of Allah • 6 Sunni articles of faith • 5 Shi'a roots of faith • Angels (Malaikah) • Prophethood (Risalah) • Attitudes to books, scrolls, Torah, psalms & Gospels • Afterlife	**Christian Practices** • Worship (The liturgy, informal and individual worship; prayer: formal and informal) • The Sacraments: Baptism & Eucharist • Pilgrimage • Christmas and Easter • Christianity in Britain • Local and Global church • Persecution of Christianity
• **RPE Unit 3- Good & evil (Christianity & Islam)** • Morality, virtues and sins • Causes of crimes • Purposes of punishment • Treatment of criminals • Prison reformers and Prison chaplains • Forgiveness • The origin of sin • Free will	**Muslim Practices** • 5 Pillars of Islam • 10 obligatory acts of Shi'a Islam • Greater and lesser Jihad • Eid-Ul-Fitr, Ei-Ul-Adha, Ashura, The Night of Power	REVISION

Year 11 GCSE PE topics for revision:

1) Physical, emotional and social health
2) Lifestyle choices
3) Impact of lifestyle choices
4) Sedentary lifestyles and consequences
5) Balanced Diet and the role of nutrition
6) Diet manipulation for sport
7) Optimum weight
8) Functions of the skeletal system
9) Classification of bones
10) Structure of skeletal system
11) Movement possibilities at joints
12) Planes and Axes
13) Lever System, first, second and third class levers
14) Classification and roles of muscles
15) Location and roles of key voluntary muscles
16) Antagonistic muscles
17) Fast and slow twitch muscle fibers
18) Structure and function of the Cardiovascular System
19) Arteries, Capillaries and Veins
20) Vascular shunting
21) Components of blood and their significance for physical activity
22) Respiratory system – composition of air, lung volumes
23) Location and principal components of respiratory system
24) Structure and function of alveoli
25) Classification of skills
26) Forms of practice
27) Types of guidance
28) Mental preparation for performance

29) Sports Psychology – Use of Data

30) PARQs; warm ups and cool downs

31) Components of fitness

32) Fitness tests

33) Principals of training

34) Methods of training

35) Long term effects of training on the musculo skeletal system

36) Long term effects on the Cardio – Respiratory system

37) Identification and treatment of injury

38) Injury prevention in Physical education

39) Performance enhancing drugs

40) Factors affecting participation in Physical activity

41) Participation rate trends – use of data

42) Commercialisation and the media

43) Advantages and disadvantages of commercialisation

44) Sporting behaviours

45) Deviance in Sport

Year 11 BTEC PE

1) Components of fitness
2) Determining exercise intensity
3) The principals of training
4) Flexibility training
5) Strength muscular endurance and Power training
6) Aerobic endurance training
7) Speed training
8) Fitness testing
9) Fitness testing methods and results

Year 10 GCSE topics for revision

Physical, emotional and social health

2) Lifestyle choices
3) Impact of lifestyle choices
4) Sedentary lifestyles and consequences
5) Balanced Diet and the role of nutrition
6) Diet manipulation for sport
7) Optimum weight
8) Functions of the skeletal system
9) Classification of bones
10) Structure of skeletal system
11) Movement possibilities at joints
12) Planes and Axes
13) Lever System, first, second and third class levers
14) Classification and roles of muscles
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24) Structure and function of alveoli
25) Classification of skills
30) PARQs; warm ups and cool downs
31) Components of fitness
32) Fitness tests

33) Principals of training

34) Methods of training

37) Identification and treatment of injury

38) Injury prevention in Physical education

39) Performance enhancing drugs

Year 9 GCSE topics for revision

8) Functions of the skeletal system

9) Classification of bones

10) Structure of skeletal system

11) Movement possibilities at joints

14) Classification and roles of muscles

15) Location and roles of key voluntary muscles

16) Antagonistic muscles

17) Fast and slow twitch muscle fibers

18) Structure and function of the Cardiovascular System

19) Arteries, Capillaries and Veins

Studying Society

Key terms and concepts	Green	Amber	Red
How is the sociological approach different from the biological, psychological or journalistic approach?			
What are social structures and can you give examples?			
What are social processes and can you explain these?			
Social issues: What are the causes and consequences of inequality?			
Social issues: Who has power in society and how do they use it?			
How do we develop as individuals and become part of society?			
What is culture?			
What is socialisation?			
What are norms, values, roles and status?			
What is primary and secondary socialisation?			
What is social control and how do agencies of social control work?			
How are we socialised into gender roles?			
What is the nature versus nurture debate?			
What are the differences between consensus and conflict approaches to sociology?			
How do sociologists carry out research?			
What is quantitative and qualitative data?			
What do validity, reliability and representativeness mean in sociological research?			
What is a hypothesis?			
What are the positive and negative points of using experiments?			
What is the Hawthorne effect?			
What different types of questionnaires can be used?			
What are the positive and negative points of using questionnaires?			
What different types of interviews can be used?			
What are the positive and negative points of using interviews?			
What different types of observation techniques can be used?			
What are the positive and negative points of using observation techniques?			
What different types of secondary data can be used?			
What are the positive and negative points of using secondary data?			
What different types of sample can sociologists use?			
What ethical issues do sociologists need to be aware of?			
How is sociology useful in making and implementing policies in areas such as education, welfare and criminal justice?			
Contemporary examples			
Can you give 3 recent examples from the news that relate to anything above?			

Family

What types of family are there?	Green	Amber	Red
What is a family?			
What are nuclear, extended, lone, same sex, reconstituted and empty nest families?			
Why is there a greater diversity of families in Britain today?			
What are the different sociological viewpoints on the family?			
Is the nuclear family typical of families in modern Britain?			
What are functionalist views on the family?			
What are New Right views on the family?			
What do sociologists mean by the dark side of the family?			
Why do feminists believe the nuclear family is unfair on women?			
What are the different roles people play in the family?			
What is the division of labour?			
What are conjugal roles?			
What is the symmetrical family?			
Does the New Man exist?			
What role do grandparents play in families?			
What role do children play in families?			
How have children's role in the family changed in the last 50 years?			
Why have men and women's roles in the family changed in the last 50 years?			
How has life course changed over the last 50 years?			
How has life expectancy changed?			
How have patterns of fertility changed?			
What impact will an ageing population have on the country?			
How has the family changed over the last 50 years?			
Why has marriage declined?			
Why has cohabitation increased?			
Why have births outside of marriage increased?			
What are the effects of divorce?			
What are the arguments in favour of lone parent families?			
What are the arguments against lone parent families?			
Contemporary examples			
What debates are there around the quality of parenting as a social issue?			
What debates are there around the care of the disabled and elderly as a social issue?			
What debates are there around the relationship between teenagers and adults as a social issue?			
Can you give 3 recent examples from the news that relate to anything above?			

Education

What is the role of education in modern Britain?	Green	Amber	Red
What do functionalists say the role of education is (these are positive reasons)?			
What do Marxists say the role of education is (these are negative reasons)?			
What is the hidden curriculum?			
How has the British education system changed over the last 50 years?			
How did the Grammar School system introduced in 1944 work?			
How did the Comprehensive system introduced in 1965 work?			
What were the main changes introduced by the 1988 Education Act?			
What changes have New Labour made to the Education system?			
What is the structure of the British education system today?			
What in school factors affect educational achievement?			
How does the hidden curriculum work?			
What impact do streaming and setting have?			
What are labelling and the self fulfilling prophecy?			
How do subcultures affect achievement?			
How does social class affect educational achievement?			
What impact does home environment have on achievement?			
What is cultural capital?			
How might teachers label working class pupils?			
What impact could the rising cost of higher education have on working class students?			
How does gender affect educational achievement?			
Why have girls done better than boys in education in the last 20 years?			
Why have boys done worse than girls in education over the last 20 years?			
Why do boys and girls pick different subjects in school?			
How does ethnicity affect educational achievement?			
Why do some ethnic groups do better in education than others?			
Why might cultural differences explain these different levels of achievement?			
What in school factors could lead to students from ethnic minorities doing less well?			
Contemporary examples			
Why is education a political issue?			
What criticisms have been made of recent government education reforms?			
What debates are there around faith schools, testing special needs and alternative forms of provision as a social issue?			
Can you give 3 recent examples from the news that relate to anything above?			

Crime and Deviance

What are the key definitions in crime and deviance?	Green	Amber	Red
What is the difference between crime and deviance?			
Why is deviance socially defined?			
What is the difference between formal and informal rules?			
What are social order and social control?			
What is the difference between formal and informal social control?			
How do sociologists explain criminal and deviant behaviour?			
How might inadequate socialisation lead to crime and deviance?			
Why might lack of opportunity or relative deprivation lead to crime and deviance?			
How do sub-cultural theorists explain crime and deviance?			
How do Marxists explain crime and deviance?			
How does labelling theory explain crime and deviance?			
How would biologists or psychologists explain criminal and deviant behaviour?			
How reliable are official statistics as a measure of crime?			
What are the main sources of official statistics in crime?			
What is the 'hidden' or 'dark' figure of crime?			
What are victim and self report studies?			
How far do official statistics measure the extent of crime?			
Why might crime statistics be described as being socially constructed?			
What is the involvement of different social groups in crime?			
What explanations are there for young people getting involved in crime?			
Why are men more likely to be involved in crime?			
Why are women less likely to be convicted of a crime?			
Why over the last 10 years are women more likely to be convicted?			
Why are some ethnic minorities over represented in the prison population?			
Why are young black and Asian men more likely to be stopped by the police?			
What is white collar crime?			
Why are working class people more likely to end up in jail than middle class people?			
Why is the crime rate higher in urban areas than rural areas?			
What is the impact of crime and deviance?			
What research is done to measure the impact of crime?			
Why is the fear of crime greater than the actual level of crime?			
What is the impact of crime on communities?			
Contemporary examples			
Why is youth crime seen as a social problem?			
How have governments tried to tackle racially motivated crime in recent years?			
Can you give 3 recent examples from the news that relate to anything above?			

Power

	Green	Amber	Red
Defining power legal rational, coercion, authority			
What is a democracy and views of it			
Threats to democracy			
What is the state and views of it			
Participation in the political process			
Age, gender, ethnicity, region, religion and voting patterns.			
What are pressure groups?			
Tactics used by pressure groups			
Pluralist and conflict view of pressure groups			
Barriers to political participation			
Social status of MPs (Power distribution)			
Volunteering			
How the government has tackled poverty, unemployment and discrimination			
Power relationship between parents and children, in classrooms and schools and the public and work			

Social inequality.

What is social inequality and stratification?	Green	Amber	Red
What so sociologists mean by the term social inequality?			
How is society stratified by social class?			
How is society stratified by gender?			
How is society stratified by age?			
How is society stratified by gender?			
How does stratification affect people's life chances?			
How do sociologists measure stratification based on social class?			
Explain Karl Marx's views on stratification?			
Explain Max Weber's views on social class?			
How do functionalists explain social class?			
What are the strengths and weaknesses of the Registrar Generals' scale?			
What are the strengths and weaknesses of the NS-SEC scale?			
How do inequalities based on gender, ethnicity and age affect people?			
What is gender?			
What inequalities are based on gender?			
What is ethnicity?			
What inequalities are based on ethnicity?			
What is life course?			
What inequalities do people face in youth and in old age?			
How are wealth, income and poverty distributed in the UK?			
Is wealth distributed fairly through the UK population?			
What is social mobility?			
What is poverty?			
How do we measure poverty?			
Which social groups are most likely to experience poverty?			
What are the sociological explanations of poverty?			
What is the culture of poverty?			
What is the cycle of poverty?			
What is welfare dependency?			
What is the Marxist explanation of poverty?			
How does unemployment and the inadequacies of the welfare state explain poverty?			
Contemporary examples			
How much social mobility is there in Britain?			
Are other divisions in society more important the social class?			
Has Britain got too high a level of welfare dependency?			
Can you give 3 recent examples from the news that relate to anything above?			

CC1 States of Matter

CC1a States of matter

Step	Learning outcome	Had a look	Nearly there	Nailed it!
2nd	Name the three states of matter, and the physical changes that occur between them.	☐	☐	☐
5th	Describe the arrangements and movement of particles in the different states of matter.	☐	☐	☐
6th	Use information to predict the state of a substance.	☐	☐	☐
5th	Describe the relative energies of particles in the different states of matter.	☐	☐	☐
7th	Explain why the movement and arrangement of particles change during changes of state.	☐	☐	☐
7th	Explain why the energy of particles changes during changes of state.	☐	☐	☐

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CC2 Methods of Separating and Purifying Substances

CC2a Mixtures

Step	Learning outcome	Had a look	Nearly there	Nailed it!
5th	Describe the differences between a pure substance and a mixture.	☐	☐	☐
5th	Use melting point information to decide whether a substance is pure or is a mixture.	☐	☐	☐
6th	Describe what happens to atoms at a pure substance's melting point.	☐	☐	☐
6th	Interpret a heating curve to identify a melting point.	☐	☐	☐
7th	Explain why the temperature does not change as a pure substance melts.	☐	☐	☐

CC2b Filtration and crystallisation

Step	Learning outcome	Had a look	Nearly there	Nailed it!
4th	State some mixtures that can be separated by filtration.	☐	☐	☐
4th	State some mixtures that can be separated by crystallisation.	☐	☐	☐
6th	Draw and interpret diagrams showing how filtration and crystallisation are done.	☐	☐	☐
6th	Explain the formation of crystals during crystallisation.	☐	☐	☐
5th	Explain how mixtures are separated by filtration.	☐	☐	☐
5th	Explain ways of reducing risk when separating mixtures by filtration and crystallisation.	☐	☐	☐

CC2c Paper chromatography

Step	Learning outcome	Had a look	Nearly there	Nailed it!
5th	Describe how some mixtures can be separated by chromatography.	☐	☐	☐
5th	Identify pure substances and mixtures on chromatograms.	☐	☐	☐
5th	Identify substances that are identical on chromatograms.	☐	☐	☐
6th	Draw and interpret diagrams showing how chromatography is done.	☐	☐	☐
6th	Explain how substances can be separated by chromatography.	☐	☐	☐
6th	Calculate R_f values and use them to identify substances.	☐	☐	☐

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CC2d Distillation

Step	Learning outcome	Had a look	Nearly there	Nailed it!
5th	Describe how to carry out, and explain what happens in, simple distillation.	☐	☐	☐
7th	Distinguish between simple distillation and fractional distillation.	☐	☐	☐
7th	Identify when fractional distillation should be used to separate a mixture.	☐	☐	☐
7th	Describe how to carry out fractional distillation.	☐	☐	☐
9th	Explain how the products of fractional distillation are linked to the boiling points of the components.	☐	☐	☐
6th	Explain what precautions are needed to reduce risk in a distillation experiment.	☐	☐	☐

CC2e Drinking water

Step	Learning outcome	Had a look	Nearly there	Nailed it!
5th	Explain why water used in chemical analysis must not contain dissolved salts.	☐	☐	☐
5th	Describe how fresh water can be produced from seawater.	☐	☐	☐
5th	Describe the steps needed to make fresh water suitable for drinking.	☐	☐	☐
5th	Suggest how to purify water when you know what it contains.	☐	☐	☐
8th	Evaluate the hazards and control the risks present when purifying water.	☐	☐	☐

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CC3 Atomic Structure

CC3a Structure of an atom

Step	Learning outcome	Had a look	Nearly there	Nailed it!
8th	Describe how Dalton's ideas about atoms have changed.	☐	☐	☐
8th	Describe how the subatomic particles are arranged in an atom.	☐	☐	☐
8th	Explain how atoms of different elements are different.	☐	☐	☐
7th	Recall the charges and relative masses of the three subatomic particles.	☐	☐	☐
8th	Explain why all atoms have no overall charge.	☐	☐	☐
8th	Describe how the size of an atom compares to the size of its nucleus.	☐	☐	☐

CC3b Atomic number and mass number

Step	Learning outcome	Had a look	Nearly there	Nailed it!
7th	State where most of the mass of an atom is found.	☐	☐	☐
7th	State the meaning of atomic number.	☐	☐	☐
7th	State the meaning of mass number.	☐	☐	☐
8th	Describe how the atoms of different elements vary.	☐	☐	☐
8th	State the number of electrons in an atom from its atomic number.	☐	☐	☐
8th	Calculate the numbers of protons, neutrons and electrons using atomic and mass numbers.	☐	☐	☐

CC3c Isotopes

Step	Learning outcome	Had a look	Nearly there	Nailed it!
7th	State what is meant by an isotope.	☐	☐	☐
7th	Identify isotopes from information about the structure of atoms.	☐	☐	☐
8th	Calculate the numbers of protons, neutrons and electrons using atomic numbers and mass numbers.	☐	☐	☐
9th	Explain why the relative atomic mass of many elements is not a whole number.	☐	☐	☐
10th	H Calculate the relative atomic mass of an element from the relative masses and abundances of its isotopes.	☐	☐	☐

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CC4 The Periodic Table

CC4a Elements and the periodic table

Step	Learning outcome	Had a look	Nearly there	Nailed it!
6th	Recall the chemical symbols of some common elements.	☐	☐	☐
6th	Describe how Mendeleev arranged elements into a periodic table.	☐	☐	☐
7th	Describe how Mendeleev predicted the existence and properties of some elements yet to be discovered.	☐	☐	☐
8th	Explain how Mendeleev's early ideas were supported by later evidence.	☐	☐	☐

CC4b Atomic number and the periodic table

Step	Learning outcome	Had a look	Nearly there	Nailed it!
7th	Explain some problems Mendeleev had when ordering the elements.	☐	☐	☐
6th	Explain the meaning of the term 'atomic number'.	☐	☐	☐
6th	Describe how the elements are arranged in the modern periodic table.	☐	☐	☐
6th	Recall the positions of metals and non-metals in the periodic table.	☐	☐	☐

CC4c Electronic configurations and the periodic table

Step	Learning outcome	Had a look	Nearly there	Nailed it!
7th	State what the term 'electronic configuration' means.	☐	☐	☐
8th	Show electronic configurations in the form 2.8.1 and as diagrams.	☐	☐	☐
9th	Predict the electronic configurations of the elements hydrogen to calcium.	☐	☐	☐
9th	Explain the links between an element's position in the periodic table and its electronic configuration.	☐	☐	☐
6th	Recall the positions of metals and non-metals in the periodic table.	☐	☐	☐

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CC5 Ionic Bonding

CC5a Ionic bonds

Step	Learning outcome	Had a look	Nearly there	Nailed it!
6th	Recall the formulae of simple ions.	☐	☐	☐
8th	Explain how cations and anions are formed.	☐	☐	☐
8th	Use dot and cross diagrams to explain how ionic bonds are formed.	☐	☐	☐
8th	Explain the difference between an atom and an ion.	☐	☐	☐
9th	Calculate the numbers of protons, neutrons and electrons in simple ions.	☐	☐	☐
9th	Explain the formation of ions in groups 1, 2, 6 and 7 of the periodic table.	☐	☐	☐

CC5b Ionic lattices

Step	Learning outcome	Had a look	Nearly there	Nailed it!
6th	Recall the formulae of common polyatomic ions, and the charges on them.	☐	☐	☐
7th	Interpret the use of –ide and –ate endings in the names of compounds.	☐	☐	☐
7th	Name ionic compounds using –ide and –ate endings.	☐	☐	☐
8th	Work out the formula of an ionic compound from the formulae of its ions.	☐	☐	☐
8th	Describe the structure of ionic compounds.	☐	☐	☐
8th	Explain how ionic compounds are held together.	☐	☐	☐

CC5c Properties of ionic compounds

Step	Learning outcome	Had a look	Nearly there	Nailed it!
5th	Describe the properties of ionic compounds.	☐	☐	☐
7th	Explain why ionic compounds have high melting points and high boiling points.	☐	☐	☐
7th	Explain why ionic compounds conduct electricity when they are molten and in aqueous solution.	☐	☐	☐
7th	Explain why ionic compounds do not conduct electricity as solids.	☐	☐	☐
7th	Identify ionic compounds from data about their properties.	☐	☐	☐

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CC6 Covalent bonding

CC6a Covalent bonds

Step	Learning outcome	Had a look	Nearly there	Nailed it!
7th	Explain how covalent bonds are formed.	☐	☐	☐
5th	Recall the names of some common molecular elements.	☐	☐	☐
5th	Recall the names of some common molecular compounds.	☐	☐	☐
6th	State the bonding that is found in molecules.	☐	☐	☐
6th	State the approximate size (order or magnitude) of atoms and small molecules.	☐	☐	☐
8th	Explain the formation of covalent bonds using dot and cross diagrams.	☐	☐	☐

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CC7 Types of Substance

CC7a Molecular compounds

Step	Learning outcome	Had a look	Nearly there	Nailed it!
5th	Recall examples of common covalent, simple molecular compounds.	☐	☐	☐
6th	Describe the general properties of covalent, simple molecular compounds.	☐	☐	☐
8th	Explain why covalent, simple molecular compounds have low melting and boiling points.	☐	☐	☐
9th	Explain why covalent, simple molecular compounds are poor conductors of electricity.	☐	☐	☐
7th	Describe the structure of a polymer.	☐	☐	☐

CC7b Allotropes of carbon

Step	Learning outcome	Had a look	Nearly there	Nailed it!
5th	Recall some allotropes of carbon.	☐	☐	☐
7th	Describe the basic differences between covalent, simple molecules and giant covalent structures.	☐	☐	☐
7th	Describe the structures of diamond, graphite, fullerenes and graphene.	☐	☐	☐
6th	Describe the properties of diamond, graphite, fullerenes and graphene.	☐	☐	☐
9th	Explain the properties and uses of diamond and graphite in terms of their structure and bonding.	☐	☐	☐
9th	Explain the properties of fullerenes and graphene in terms of their structure and bonding.	☐	☐	☐

CC7c Properties of metals

Step	Learning outcome	Had a look	Nearly there	Nailed it!
6th	Describe the particles and how they are arranged in metals.	☐	☐	☐
7th	Explain why metals are malleable.	☐	☐	☐
7th	Explain why metals conduct electricity.	☐	☐	☐
3rd	Describe the typical properties of metals.	☐	☐	☐
3rd	Describe the typical properties of non-metals.	☐	☐	☐

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CC7d Bonding metals

Step	Learning outcome	Had a look	Nearly there	Nailed it!
6th	Give examples of ionic; covalent, simple molecular; covalent, giant molecular; and metallic substances.	☐	☐	☐
7th	Describe how the different types of bonds and structures are formed.	☐	☐	☐
8th	Explain how the structure and bonding of a substance is linked to its physical properties. (Relative melting point and boiling point, relative solubility in water and ability to conduct electricity, as solids and in solution.)	☐	☐	☐
8th	Explain why we use models to represent structure and bonding.	☐	☐	☐
8th	Represent structures and bonding using a variety of different models (dot and cross, ball and stick, 2D, 3D).	☐	☐	☐
9th	Describe the limitations of the different models used to represent structure and bonding (dot and cross, ball and stick, 2D, 3D).	☐	☐	☐

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CC8 Acids and Alkalis

CC8a Acids, alkalis and indicators

Step	Learning outcome	Had a look	Nearly there	Nailed it!
4th	Describe what the main hazard symbols mean.	☐	☐	☐
5th	Describe the safety precautions that should be observed when handling different acids and alkalis.	☐	☐	☐
4th	Name the ions present in all acidic and all alkaline solutions.	☐	☐	☐
5th	State the pH values associated with acidic, alkaline and neutral solutions.	☐	☐	☐
5th	Describe the effect of acids and alkalis on common indicators.	☐	☐	☐
5th	H Explain the link between pH and the concentration of ions in acids and alkalis.	☐	☐	☐

CC8b Looking at acids

Step	Learning outcome	Had a look	Nearly there	Nailed it!
5th	H Describe the relationship between hydrogen ion concentration and pH.	☐	☐	☐
5th	H Explain the difference between a dilute and concentrated solution (in terms of the amount of solute present).	☐	☐	☐
7th	H Explain the difference between strong and weak acids (in terms of the degree of dissociation of the acid molecules).	☐	☐	☐
7th	H Explain how the pH and reactivity of an acid depend on the concentration and the strength of the acid.	☐	☐	☐

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CC8c Bases and salts

Step	Learning outcome	Had a look	Nearly there	Nailed it!
5th	Describe how a base reacts in a neutralisation reaction.	☐	☐	☐
6th	Describe what happens when an acid reacts with a metal oxide.	☐	☐	☐
7th	Write word equations for the reactions of acids and metal oxides.	☐	☐	☐
8th	Write symbol equations for the reactions of acids and metal oxides.	☐	☐	☐
6th	Explain what happens during a neutralisation reaction.	☐	☐	☐
6th	Describe the steps involved in preparing a soluble salt from an acid and an insoluble reactant.	☐	☐	☐
6th	Explain why: an excess of insoluble reactant is used when preparing a soluble salt the excess reactant is removed when preparing a soluble salt the remaining solution contains only a salt and water, when preparing a soluble salt from an acid and an insoluble reactant.	☐	☐	☐

CC8d Alkalis and balancing equations

Step	Learning outcome	Had a look	Nearly there	Nailed it!
6th	Recall the chemical formulae of some common compounds.	☐	☐	☐
6th	Recall and use state symbols.	☐	☐	☐
9th	Balance chemical equations.	☐	☐	☐
4th	Recall that alkalis are soluble bases.	☐	☐	☐
6th	Describe the reactions of alkalis with acids.	☐	☐	☐

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CC8e Alkalis and neutralisation

Step	Learning outcome	Had a look	Nearly there	Nailed it!
6th	Explain what happens to the ions from acids and alkalis during neutralisation.	☐	☐	☐
6th	Explain why titration is used to prepare soluble salts.	☐	☐	☐
6th	Describe how to carry out an acid–alkali titration.	☐	☐	☐

CC8f Reactions of acids with metals and carbonates

Step	Learning outcome	Had a look	Nearly there	Nailed it!
9th	H Write balanced ionic equations.	☐	☐	☐
7th	Explain the general reaction between an acid and a metal to produce a salt and hydrogen.	☐	☐	☐
7th	Explain the general reaction between an acid and a metal carbonate to produce a salt, water and carbon dioxide.	☐	☐	☐
5th	Describe the test for hydrogen.	☐	☐	☐
5th	Describe the test for carbon dioxide.	☐	☐	☐

CC8g Solubility

Step	Learning outcome	Had a look	Nearly there	Nailed it!
4th	Recall the general rules for the solubility of common substances in water.	☐	☐	☐
6th	Predict whether or not a precipitate will form from two solutions.	☐	☐	☐
6th	Name the precipitate formed in a reaction.	☐	☐	☐
6th	Describe how to prepare a pure, dry sample of an insoluble salt.	☐	☐	☐

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CC9 Calculations involving masses

CC9a Masses and empirical formulae

Step	Learning outcome	Had a look	Nearly there	Nailed it!
8th	Calculate the relative formula mass of a substance from relative atomic masses.	☐	☐	☐
8th	Calculate the empirical formula of a compound from the masses of the elements it contains.	☐	☐	☐
8th	Explain the difference between an empirical formula and a molecular formula.	☐	☐	☐
7th	Deduce the empirical formula from a molecular formula.	☐	☐	☐
8th	Deduce the molecular formula for a compound from its empirical formula and its relative formula mass.	☐	☐	☐
7th	Describe an experiment to determine the empirical formula for a compound.	☐	☐	☐

CC9b Conservation of mass

Step	Learning outcome	Had a look	Nearly there	Nailed it!
6th	Explain the law of conservation of mass in a closed system.	☐	☐	☐
6th	Explain the law of conservation of mass in a non-enclosed system.	☐	☐	☐
8th	Calculate the mass of product formed from a given mass of reactant, using a balanced equation.	☐	☐	☐
8th	Calculate the mass of a reactant needed to produce a given amount of product, using a balanced equation.	☐	☐	☐
6th	Calculate the concentration of a solution in g dm^{-3}.	☐	☐	☐

CC9c Moles H

Step	Learning outcome	Had a look	Nearly there	Nailed it!
6th	H Describe what is meant by a mole of particles.	☐	☐	☐
8th	H Calculate the number of moles of particles in a given mass of a certain substance and vice versa.	☐	☐	☐
9th	H Calculate the number of particles in a given number of moles or mass of a substance and vice versa.	☐	☐	☐
7th	H Explain that the mass of a product formed in a reaction is controlled by the mass of reactant that is not in excess.	☐	☐	☐
9th	H Deduce the balanced equation for a reaction from the masses of reactants and/or products.	☐	☐	☐

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CC10 Electrolytic Processes

CC10a Electrolysis

Step	Learning outcome	Had a look	Nearly there	Nailed it!
6th	State the meaning of the term 'electrolyte'.	☐	☐	☐
7th	Outline what happens during electrolysis.	☐	☐	☐
7th	Explain the movement of the ions during electrolysis.	☐	☐	☐
8th	H Write half equations for the reactions at the electrodes.	☐	☐	☐
9th	H Explain the meaning of oxidation and reduction in terms of the movement of electrons.	☐	☐	☐
8th	H State the electrodes at which oxidation and reduction occur.	☐	☐	☐

CC10b Products from electrolysis

Step	Learning outcome	Had a look	Nearly there	Nailed it!
6th	Recall the products formed from the electrolysis of a variety of common compounds and solutions (copper chloride solution, sodium chloride solution, sodium sulfate solution, acidified water, molten lead bromide).	☐	☐	☐
8th	Explain the formation of the products in the electrolysis of a variety of common compounds and solutions (copper chloride solution, sodium chloride solution, sodium sulfate solution, acidified water, molten lead bromide).	☐	☐	☐
8th	Predict the products formed from the electrolysis of a molten, binary, ionic compound.	☐	☐	☐
8th	Explain how the electrolysis of copper sulfate solution using copper electrodes can be used to purify copper.	☐	☐	☐

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CC11 Obtaining and Using Metals

CC11a Reactivity

Step	Learning outcome	Had a look	Nearly there	Nailed it!
5th	Describe the reactions of common metals with water and acids.	☐	☐	☐
5th	Describe the reactions of metals with salt solutions.	☐	☐	☐
8th	H Explain why displacement reactions are redox reactions.	☐	☐	☐
8th	Deduce the order of metals in the reactivity series from their reactions with water, acids and salt solutions.	☐	☐	☐
9th	Explain the reactivity series in terms of the tendency of different metal atoms to form cations.	☐	☐	☐

CC11b Ores

Step	Learning outcome	Had a look	Nearly there	Nailed it!
4th	Recall the meaning of the term 'ore'.	☐	☐	☐
4th	Recall some metals that are found uncombined in the Earth's crust.	☐	☐	☐
7th	Explain how and why some metals are extracted from their ores by heating with carbon.	☐	☐	☐
8th	Explain how and why some metals are extracted from their ores by electrolysis.	☐	☐	☐
7th	H Describe two biological methods of metal extraction.	☐	☐	☐
10th	H Evaluate biological methods of metal extraction.	☐	☐	☐

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CC11c Oxidation and reduction

Step	Learning outcome	Had a look	Nearly there	Nailed it!
9th	H Explain why reactions occurring at the electrodes during electrolysis are redox reactions.	☐	☐	☐
8th	Describe the meanings of oxidation and reduction in terms of oxygen.	☐	☐	☐
9th	Explain which substance has been oxidised and which substance has been reduced in a reaction.	☐	☐	☐
7th	Recall that all metals are extracted by reduction of their ores.	☐	☐	☐
8th	Explain how the position of a metal in the reactivity series is related to its resistance to oxidation.	☐	☐	☐

CC11d Life cycle assessment and recycling

Step	Learning outcome	Had a look	Nearly there	Nailed it!
4th	State the advantages and disadvantages of recycling a metal.	☐	☐	☐
5th	Describe a process where a material or product is recycled for a different use.	☐	☐	☐
8th	Evaluate the advantages and disadvantages of recycling a material or product to decide whether recycling is a viable option.	☐	☐	☐
5th	Describe the four stages in carrying out a life cycle assessment (LCA) of a material or product.	☐	☐	☐
8th	Evaluate data from a life cycle assessment of a material or product.	☐	☐	☐

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CC12 Reversible Reactions and Equilibria

CC12a Dynamic equilibrium

Step	Learning outcome	Had a look	Nearly there	Nailed it!
6th	Describe what happens in reversible reactions.	☐	☐	☐
7th	Explain the use of the symbol ⇌ in chemical equations.	☐	☐	☐
7th	Explain what is meant by dynamic equilibrium.	☐	☐	☐
7th	Describe the formation of ammonia.	☐	☐	☐
5th	State the conditions used for the Haber process.	☐	☐	☐
8th	H Describe how changing the temperature, pressure and concentration all affect the relative amount of substances in an equilibrium mixture.	☐	☐	☐

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CC13 Groups in the Periodic Table

CC13a Group 1

Step	Learning outcome	Had a look	Nearly there	Nailed it!
	Explain the classification of alkali metals, halogens and noble gases, into groups in the periodic table.	☐	☐	☐
	Describe the main physical properties of alkali metals.	☐	☐	☐
	Describe the reactions of lithium, sodium and potassium with water.	☐	☐	☐
	Write word, balanced and H ionic equations (including state symbols) for the reactions of alkali metals.	☐	☐	☐
	Describe the pattern of reactivity of the alkali metals.	☐	☐	☐
	Explain how the electronic configurations of the atoms of alkali metals affect their reactivity.	☐	☐	☐

CC13b Group 7

Step	Learning outcome	Had a look	Nearly there	Nailed it!
	Recall the appearance of chlorine, bromine and iodine at room temperature.	☐	☐	☐
	Describe the trends in colour, melting point and boiling point of chlorine, bromine and iodine down the group, and use these to predict physical properties of other halogens.	☐	☐	☐
	Describe the chemical test for chlorine gas.	☐	☐	☐
	Describe the trends in the reactions of halogens with metals, and use this to predict reactions of other halogens.	☐	☐	☐
	Write word and balanced chemical equations, including state symbols, for the reactions of halogens with metals.	☐	☐	☐
	Describe hydrogen halides and their chemical properties.	☐	☐	☐

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CC13c Halogen reactivity

Step	Learning outcome	Had a look	Nearly there	Nailed it!
6th	Describe the relative reactivity of halogens.	☐	☐	☐
8th	Explain how the reactivity of halogens can be worked out from displacement reactions.	☐	☐	☐
9th	Write balanced chemical equations, including state symbols, for the displacement reactions of halogens.	☐	☐	☐
10th	H Explain how displacement reactions are examples of redox reactions.	☐	☐	☐
8th	H Write ionic equations, including state symbols, for displacement reactions of halogens.	☐	☐	☐
10th	Explain the order of reactivity of halogens (using electronic configurations).	☐	☐	☐

CC13d Group 0

Step	Learning outcome	Had a look	Nearly there	Nailed it!
8th	Explain why noble gases are chemically inert by referring to their electronic configuration.	☐	☐	☐
3rd	Describe uses of noble gases linked with their properties.	☐	☐	☐
6th	Describe the trends in the physical properties of the noble gases.	☐	☐	☐
8th	Use trends in physical properties to predict the physical properties of other noble gases.	☐	☐	☐

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CC14 Rates of Reaction

CC14a Rates of reaction

Step	Learning outcome	Had a look	Nearly there	Nailed it!
6th	Describe different changes that can occur as a reaction proceeds.	☐	☐	☐
7th	Suggest different experimental methods to investigate rates of reaction (e.g. measurements of mass of reactants against time, volume of gas released against time, concentration of reactant or product against time).	☐	☐	☐
7th	Use graphs of changes (in mass, volume or concentration of reactant or product) against time, to interpret what is happening during reactions.	☐	☐	☐

CC14b Factors affecting reaction rates

Step	Learning outcome	Had a look	Nearly there	Nailed it!
8th	Explain what has to happen for reactions to take place.	☐	☐	☐
9th	Explain why changes in the energy of particles affect rates of reaction.	☐	☐	☐
9th	Explain why changes in the frequency of collisions between particles affect the rate of reaction.	☐	☐	☐
9th	Explain why changes in temperature, concentration, surface area and pressure affect the rate of reaction (surface area for solids, pressure for gases only).	☐	☐	☐
8th	Describe ways of speeding up or slowing down chemical reactions.	☐	☐	☐

CC14c Catalysts and activation energy

Step	Learning outcome	Had a look	Nearly there	Nailed it!
6th	Describe what a catalyst does.	☐	☐	☐
7th	Explain how catalysts are useful.	☐	☐	☐
8th	Explain what the activation energy of a reaction is.	☐	☐	☐
9th	Explain how catalysts speed up chemical reactions.	☐	☐	☐
7th	Describe what enzymes are.	☐	☐	☐
6th	Name one or more examples of enzymes.	☐	☐	☐

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CC15 Heat energy changes in chemical reactions

CC15a Exothermic and endothermic reactions

Step	Learning outcome	Had a look	Nearly there	Nailed it!
	Recall some examples of exothermic and endothermic changes.	☐	☐	☐
	Describe how heat changes in solution may be determined.	☐	☐	☐
	Describe the differences between exothermic and endothermic changes.	☐	☐	☐

CC15b Energy changes in reactions

Step	Learning outcome	Had a look	Nearly there	Nailed it!
	Describe exothermic and endothermic reactions in terms of energy changes when bonds are broken and formed.	☐	☐	☐
	H Use bond energies to calculate energy changes in reactions.	☐	☐	☐
	Explain the meaning of activation energy.	☐	☐	☐
	Draw and label reaction profiles.	☐	☐	☐

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CP1 Motion

CP1a Vectors and scalars

Step	Learning outcome	Had a look	Nearly there	Nailed it!
4th	Describe the difference between weight and mass.	☐	☐	☐
7th	Explain the difference between a vector and a scalar quantity.	☐	☐	☐
7th	Describe the difference between displacement and distance.	☐	☐	☐
7th	Describe the difference between velocity and speed.	☐	☐	☐
6th	Define the terms: acceleration, force, momentum, energy.	☐	☐	☐

CP1b Distance/time graphs

Step	Learning outcome	Had a look	Nearly there	Nailed it!
7th	Recall and use equations relating distance, speed and time.	☐	☐	☐
7th	Describe how speed can be measured in a school laboratory.	☐	☐	☐
5th	Recall typical speeds for walking, running, cycling and travelling by car.	☐	☐	☐
6th	Interpret distance/time graphs (including recognising what the steepness of the line tells you).	☐	☐	☐
7th	Represent journeys on distance/time graphs.	☐	☐	☐
8th	Determine speed from the gradient of a distance/time graph.	☐	☐	☐

CP1c Acceleration

Step	Learning outcome	Had a look	Nearly there	Nailed it!
6th	Recall the equation relating acceleration, velocity and time.	☐	☐	☐
8th	Use the equation relating acceleration, velocity and time.	☐	☐	☐
6th	Recall the equation relating acceleration, velocity and distance.	☐	☐	☐
8th	Use the equation relating acceleration, velocity and distance.	☐	☐	☐
6th	Recall the acceleration in free fall.	☐	☐	☐
8th	Estimate the magnitudes of some everyday accelerations.	☐	☐	☐

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CP1d Velocity/time graphs

Step	Learning outcome	Had a look	Nearly there	Nailed it!
	Represent journeys on velocity/time graphs.	☐	☐	☐
	Interpret velocity/time graphs qualitatively.	☐	☐	☐
	Calculate uniform accelerations from the gradients of velocity/time graphs.	☐	☐	☐
	Determine the distance travelled from the area under a velocity/time graph.	☐	☐	☐

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CP2 Motion and Forces

CP2a Resultant forces

Step	Learning outcome	Had a look	Nearly there	Nailed it!
7th	Explain the difference between scalar and vector quantities.	☐	☐	☐
7th	Use arrows to represent the direction and magnitude of forces.	☐	☐	☐
6th	Define a resultant force.	☐	☐	☐
6th	Calculate resultant forces.	☐	☐	☐
6th	Explain whether forces on an object are balanced or unbalanced.	☐	☐	☐

CP2b Newton's First Law

Step	Learning outcome	Had a look	Nearly there	Nailed it!
5th	Describe the effect of balanced forces on moving and stationary objects.	☐	☐	☐
6th	Describe the effect of a non-zero resultant force on moving and stationary objects.	☐	☐	☐
7th	H Describe circular motion at constant speed as a changing velocity and hence as an acceleration.	☐	☐	☐
7th	H Describe the force needed to keep an object moving in a circular path.	☐	☐	☐
8th	H Give some examples of objects moving in circular paths and the type of centripetal force involved.	☐	☐	☐

CP2c Mass and weight

Step	Learning outcome	Had a look	Nearly there	Nailed it!
4th	Describe the difference between mass and weight.	☐	☐	☐
4th	List the factors that determine the weight of an object.	☐	☐	☐
4th	Recall the equation for calculating weight.	☐	☐	☐
7th	Use the equation relating weight, mass and gravitational field strength.	☐	☐	☐
5th	Describe how the weight of an object is affected by gravitational field strength.	☐	☐	☐
4th	Describe how weight is measured.	☐	☐	☐

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CP2d Newton's Second Law

Step	Learning outcome	Had a look	Nearly there	Nailed it!
6th	Describe what an acceleration is.	☐	☐	☐
6th	List the factors that affect the acceleration of an object.	☐	☐	☐
6th	Recall the equation that relates the factors affecting acceleration.	☐	☐	☐
8th	Use the equation relating force, mass and acceleration.	☐	☐	☐
9th	Change the subject of the equation relating force, mass and acceleration.	☐	☐	☐
7th	H Explain what inertial mass means.	☐	☐	☐

CP2e Newton's Third Law

Step	Learning outcome	Had a look	Nearly there	Nailed it!
7th	Describe what Newton's Third Law says.	☐	☐	☐
7th	Recall the meaning of 'equilibrium situation'.	☐	☐	☐
8th	Identify action–reaction pairs in familiar situations.	☐	☐	☐
8th	Distinguish between action–reaction pairs and balanced forces.	☐	☐	☐
8th	H Describe how objects affect each other when they collide.	☐	☐	☐

CP2f Momentum

Step	Learning outcome	Had a look	Nearly there	Nailed it!
7th	Describe the factors that affect the momentum of an object.	☐	☐	☐
9th	Calculate the momentum of moving objects.	☐	☐	☐
7th	Describe examples of momentum in collisions.	☐	☐	☐
9th	Use the idea of conservation of momentum to calculate velocities of objects after collisions.	☐	☐	☐
10th	Calculate the force needed to produce a change in momentum in a given time.	☐	☐	☐

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CP2g Stopping distances

Step	Learning outcome	Had a look	Nearly there	Nailed it!
5th	Describe how human reaction times are measured.	☐	☐	☐
5th	Recall typical human reaction times.	☐	☐	☐
5th	Describe the link between stopping distance, thinking distance and braking distance.	☐	☐	☐
5th	Recall the factors that affect stopping distances.	☐	☐	☐
6th	Describe how different factors affect stopping distances.	☐	☐	☐
6th	Describe the factors that affect a driver's reaction time, including drugs and distractions.	☐	☐	☐

CP2h Crash hazards

Step	Learning outcome	Had a look	Nearly there	Nailed it!
7th	Explain the meaning of a 'large deceleration'.	☐	☐	☐
6th	Describe the dangers caused by large decelerations.	☐	☐	☐
7th	Explain why large decelerations cause dangers.	☐	☐	☐
7th	H Recall some typical forces involved in road collisions.	☐	☐	☐
9th	H Use knowledge of changes in momentum to estimate the forces involved in road collisions.	☐	☐	☐
10th	Calculate the force needed to produce a change in momentum in a given time.	☐	☐	☐

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CP3 Conservation of Energy

CP3a Energy stores and transfers

Step	Learning outcome	Had a look	Nearly there	Nailed it!
6th	Explain, using examples, that energy is conserved.	☐	☐	☐
5th	Give examples of energy being moved between different stores.	☐	☐	☐
6th	Interpret diagrams that represent energy transfers.	☐	☐	☐
7th	Represent energy transfers using diagrams.	☐	☐	☐
7th	Describe what happens to wasted energy in energy transfers.	☐	☐	☐

CP3b Energy efficiency

Step	Learning outcome	Had a look	Nearly there	Nailed it!
8th	Explain some ways in which energy is transferred wastefully by mechanical processes.	☐	☐	☐
7th	Explain some ways of reducing unwanted energy transfers in mechanical processes.	☐	☐	☐
6th	Define what efficiency means.	☐	☐	☐
7th	H Explain how efficiency can be increased.	☐	☐	☐
9th	Recall and use the formula for calculating energy efficiency.	☐	☐	☐

CP3c Keeping warm

Step	Learning outcome	Had a look	Nearly there	Nailed it!
5th	Describe the ways in which energy can be transferred by heating.	☐	☐	☐
7th	Describe ways of reducing unwanted energy transfers using thermal insulation.	☐	☐	☐
5th	Explain how different ways of reducing energy transfer by heating work.	☐	☐	☐
5th	Define the meaning of thermal conductivity.	☐	☐	☐
6th	Describe the effects of the thickness and thermal conductivity of the walls of a building on its rate of cooling.	☐	☐	☐

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CP3d Stored energies

Step	Learning outcome	Had a look	Nearly there	Nailed it!
6th	Describe how different factors affect the gravitational potential energy stored in an object.	☐	☐	☐
8th	Recall and use the equation for gravitational potential energy.	☐	☐	☐
6th	Describe how different factors affect the kinetic energy stored in an object.	☐	☐	☐
8th	Recall and use the equation for kinetic energy.	☐	☐	☐

CP3e Non-renewable resources

Step	Learning outcome	Had a look	Nearly there	Nailed it!
4th	List the non-renewable energy resources in use today.	☐	☐	☐
5th	Describe the advantages and disadvantages of non-renewable energy resources.	☐	☐	☐
7th	Compare the advantages and disadvantages of non-renewable energy resources.	☐	☐	☐
6th	Explain how the use of non-renewable energy resources is changing.	☐	☐	☐

CP3f Renewable resources

Step	Learning outcome	Had a look	Nearly there	Nailed it!
4th	List the renewable energy resources in use today.	☐	☐	☐
5th	Describe the source of energy for different renewable resources.	☐	☐	☐
5th	Describe the ways in which the different energy resources are used.	☐	☐	☐
7th	Explain why we cannot use only renewable energy resources.	☐	☐	☐
6th	Explain how the use of renewable energy resources is changing.	☐	☐	☐

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CP4 Waves

CP4a Describing waves

Step	Learning outcome	Had a look	Nearly there	Nailed it!
5th	Recall that waves transfer energy and information but do not transfer matter.	☐	☐	☐
5th	Describe waves using the terms frequency, wavelength, amplitude, period and velocity.	☐	☐	☐
6th	Describe the differences between longitudinal and transverse waves.	☐	☐	☐
4th	Give examples of transverse and longitudinal waves.	☐	☐	☐

CP4b Waves velocities

Step	Learning outcome	Had a look	Nearly there	Nailed it!
6th	Recall the equation relating wave speed, frequency and wavelength	☐	☐	☐
8th	Use the equation relating wave speed, frequency and wavelength.	☐	☐	☐
6th	Recall the equation relating wave speed, distance and time.	☐	☐	☐
8th	Use the equation relating wave speed, distance and time.	☐	☐	☐
7th	Describe how to measure the velocity of sound in air.	☐	☐	☐
7th	Describe how to measure the velocity of waves on the surface of water.	☐	☐	☐

CP4c Refraction

Step	Learning outcome	Had a look	Nearly there	Nailed it!
5th	Describe what refraction is.	☐	☐	☐
5th	Describe how the direction of a wave changes when it goes from one material to another.	☐	☐	☐
6th	Explain some effects of the refraction of light (explanations in terms of changing speeds are not expected).	☐	☐	☐
7th	H Explain how a change in wave speed can cause a change in direction.	☐	☐	☐

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CP5 Light and the Electromagnetic Spectrum

CP5a Electromagnetic waves

Step	Learning outcome	Had a look	Nearly there	Nailed it!
5th	Recall examples of electromagnetic waves.	☐	☐	☐
5th	Describe the common features of electromagnetic waves.	☐	☐	☐
5th	Describe the transfer of energy by electromagnetic waves.	☐	☐	☐
5th	Describe the range of electromagnetic waves that our eyes can detect.	☐	☐	☐
7th	H Describe an effect caused by the different velocities of electromagnetic waves in different substances.	☐	☐	☐

CP5b The electromagnetic spectrum

Step	Learning outcome	Had a look	Nearly there	Nailed it!
5th	Recall the groups of waves in the electromagnetic spectrum in order.	☐	☐	☐
5th	Recall the colours of the visible spectrum in order.	☐	☐	☐
5th	Describe how the waves in the electromagnetic spectrum are grouped.	☐	☐	☐
7th	H Describe some differences in the ways that different parts of the electromagnetic spectrum are absorbed and transmitted.	☐	☐	☐
8th	H Describe some differences in the ways that different parts of the electromagnetic spectrum are refracted and reflected.	☐	☐	☐

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CP5c Using the long wavelengths

Step	Learning outcome	Had a look	Nearly there	Nailed it!
7th	H Describe how long wavelength electromagnetic waves are affected by different substances.	☐	☐	☐
7th	H Explain the effects caused by long wavelength electromagnetic waves travelling at different velocities in different substances.	☐	☐	☐
6th	Describe some uses of radio waves.	☐	☐	☐
6th	Describe some uses of microwaves.	☐	☐	☐
6th	Describe some uses of infrared.	☐	☐	☐
6th	Describe some uses of visible light.	☐	☐	☐
6th	H Describe how radio waves are produced and detected by electrical circuits.	☐	☐	☐

CP5d Using the short wavelengths

Step	Learning outcome	Had a look	Nearly there	Nailed it!
7th	H Describe how short wavelength electromagnetic waves are affected by different substances.	☐	☐	☐
7th	H Explain the effects caused by short wavelength electromagnetic waves travelling at different velocities in different substances.	☐	☐	☐
6th	Describe some uses of ultraviolet radiation.	☐	☐	☐
6th	Describe some uses of X-rays.	☐	☐	☐
6th	Describe some uses of gamma rays.	☐	☐	☐

CP5e EM radiation dangers

Step	Learning outcome	Had a look	Nearly there	Nailed it!
7th	Describe how the potential danger of electromagnetic radiation depends on its frequency.	☐	☐	☐
6th	Describe the harmful effects of microwave and infrared radiation.	☐	☐	☐
6th	Describe the harmful effects of ultraviolet radiation, X-rays and gamma rays.	☐	☐	☐
7th	Recall the nature of radiation produced by changes in atoms and their nuclei.	☐	☐	☐
7th	Recall that absorption of radiation can cause changes in atoms and their nuclei.	☐	☐	☐

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CP6 Radioactivity

CP6a Atomic models

Step	Learning outcome	Had a look	Nearly there	Nailed it!
7th	Describe the structure of an atom (in terms of nucleus and electrons).	☐	☐	☐
7th	State where most of the mass of an atom is found.	☐	☐	☐
7th	State the sizes of atoms and small molecules.	☐	☐	☐
8th	Describe an early model of the atom.	☐	☐	☐
8th	Describe how and why our model of the atom has changed over time, including the plum pudding model and the Rutherford alpha particle scattering.	☐	☐	☐

CP6b Inside atoms

Step	Learning outcome	Had a look	Nearly there	Nailed it!
7th	State what is meant by an isotope.	☐	☐	☐
8th	Represent isotopes using symbols.	☐	☐	☐
8th	Explain how atoms of different elements are different (in terms of numbers of electrons and protons).	☐	☐	☐
7th	Recall the charges and relative masses of the three subatomic particles.	☐	☐	☐
8th	Explain why all atoms have no overall charge.	☐	☐	☐

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CP6c Electrons and orbits

Step	Learning outcome	Had a look	Nearly there	Nailed it!
7th	Describe where electrons are found inside atoms (in terms of shells).	☐	☐	☐
8th	Describe when electrons can change orbit.	☐	☐	☐
7th	Recall what an ion is.	☐	☐	☐
8th	Describe how ionisation occurs.	☐	☐	☐
8th	Describe some of the evidence for the Bohr model of the atom.	☐	☐	☐

CP6d Background radiation

Step	Learning outcome	Had a look	Nearly there	Nailed it!
9th	Explain what background radiation is.	☐	☐	☐
9th	Describe how radiation measurements need to be corrected for background radiation.	☐	☐	☐
8th	List some sources of background radiation.	☐	☐	☐
8th	Describe how photographic film can be used to detect radioactivity.	☐	☐	☐
9th	Describe how a Geiger-Müller tube works.	☐	☐	☐
8th	Describe how the amount of radioactivity can be measured (in terms of the darkness of photographic film or by attaching a counter to a GM tube).	☐	☐	☐

CP6e Types of radiation

Step	Learning outcome	Had a look	Nearly there	Nailed it!
8th	List five types of radiation that are emitted in random processes from unstable nuclei.	☐	☐	☐
8th	State that the five types of radiation are ionising radiations.	☐	☐	☐
8th	Describe what alpha and beta particles are.	☐	☐	☐
8th	Describe the nature of gamma radiation.	☐	☐	☐
11th	Compare the penetrating abilities of alpha, beta and gamma radiation.	☐	☐	☐
11th	Compare the ionisation abilities of alpha, beta and gamma radiation.	☐	☐	☐

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CP6f Radioactive decay

Step	Learning outcome	Had a look	Nearly there	Nailed it!
9th	Describe the process of β^- decay.	☐	☐	☐
9th	Describe the process of β^+ decay.	☐	☐	☐
10th	Explain how the proton and mass numbers are affected by different kinds of radioactive decay.	☐	☐	☐
9th	Describe what happens during nuclear rearrangement after radioactive decay.	☐	☐	☐
10th	Balance nuclear equations for mass and charge.	☐	☐	☐

CP6g Half-life

Step	Learning outcome	Had a look	Nearly there	Nailed it!
8th	Describe how the activity of a substance changes over time.	☐	☐	☐
8th	State how half-life can be used to describe the changing activity of a substance.	☐	☐	☐
8th	Recall the unit of activity.	☐	☐	☐
8th	Describe how half-life can be used to work out how much of a substance will decay in a certain time.	☐	☐	☐
10th	Carry out calculations involving half-life.	☐	☐	☐

CP6h Dangers of radioactivity

Step	Learning outcome	Had a look	Nearly there	Nailed it!
8th	Describe the hazards of ionising radiation in terms of tissue damage and possible mutations.	☐	☐	☐
9th	Explain the precautions taken to reduce the risks from radiation and ensure the safety of patients exposed to radiation.	☐	☐	☐
9th	Explain the precautions taken to reduce the risks from radiation and protect people who work with radiation.	☐	☐	☐
9th	Describe the differences between contamination and irradiation effects.	☐	☐	☐
11th	Compare the hazards of contamination and irradiation.	☐	☐	☐

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CP7 Energy

CP7a Work and power

Step	Learning outcome	Had a look	Nearly there	Nailed it!
5th	Describe some ways in which the energy of a system can be changed.	☐	☐	☐
6th	Measure the work done by a force.	☐	☐	☐
8th	Recall and use the equation linking work done, force and distance.	☐	☐	☐
6th	Explain what power means.	☐	☐	☐
8th	Recall and use the equation linking power, work done and time.	☐	☐	☐

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CP8 Forces and their Effects

CP8a Objects affecting each other

Step	Learning outcome	Had a look	Nearly there	Nailed it!
5th	Describe the effect of a gravitational field on objects.	☐	☐	☐
5th	Describe the effects of magnetic fields on objects.	☐	☐	☐
5th	Describe the forces that can occur when objects are in contact with each other.	☐	☐	☐
6th	Describe the effects of electrostatic fields on objects.	☐	☐	☐
8th	Describe how pairs of forces occur when objects affect each other.	☐	☐	☐
8th	Use examples to explain the difference between vector and scalar quantities.	☐	☐	☐

CP8b Vector diagrams

Step	Learning outcome	Had a look	Nearly there	Nailed it!
7th	Describe how to resolve forces.	☐	☐	☐
8th	Use scale drawings to work out the net force on an object.	☐	☐	☐
8th	Draw free body diagrams to represent the forces on an object.	☐	☐	☐
9th	Explain what happens in situations where several forces are acting on an object.	☐	☐	☐

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CP9 Electricity and Circuits

CP9a Electric circuits

Step	Learning outcome	Had a look	Nearly there	Nailed it!
7th	Describe the basic structure of an atom (positions, relative masses and relative charges of protons, neutrons and electrons).	☐	☐	☐
3rd	Recognise the circuit symbols for a range of common electrical components (cells, including batteries, switches, voltmeters, ammeters and lamps).	☐	☐	☐
4th	Draw diagrams for circuits containing common electrical components, using conventions for positive and negative terminals.	☐	☐	☐
5th	Describe and explain the difference between the brightness of identical lamps in series and parallel circuits.	☐	☐	☐
5th	Describe and explain the effects of different numbers of identical lamps, cells and switches in series and parallel circuits.	☐	☐	☐

CP9b Current and potential difference

Step	Learning outcome	Had a look	Nearly there	Nailed it!
4th	Describe how to measure voltage.	☐	☐	☐
5th	Define the term 'potential difference'.	☐	☐	☐
4th	Describe how to measure current.	☐	☐	☐
4th	Describe the conditions needed to produce an electric current. (A complete circuit and a source of voltage/potential difference.)	☐	☐	☐
4th	Describe the behaviour of current at a junction.	☐	☐	☐

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CP9c Current, charge and energy

Step	Learning outcome	Had a look	Nearly there	Nailed it!
6th	Explain the link between the potential difference (voltage) across a battery or a component, the charge passing through it and the amount of energy transferred.	☐	☐	☐
6th	Recall that the unit of potential difference is the volt and explain it in terms of units of energy and charge (a potential difference of one joule per coulomb).	☐	☐	☐
8th	Recall and use the equation to calculate the energy transferred, the charge that flows or the potential difference. ($E = Q \times V$)	☐	☐	☐
5th	Explain the link between electric current and electric charge.	☐	☐	☐
5th	Explain electric current in metals in terms of electrons.	☐	☐	☐
7th	Recall and use the equation to calculate the charge that flows, the current or the time the current flows. ($Q = I \times t$)	☐	☐	☐

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CB1 Key Concepts in Biology

CB1a Microscopes

Step	Learning outcome	Had a look	Nearly there	Nailed it!
5th	Recall what an electron microscope is.	☐	☐	☐
5th	Recall what is meant by an instrument's resolution.	☐	☐	☐
5th	Explain why some cell structures can be seen with an electron microscope but not with a light microscope.	☐	☐	☐
7th	Calculate total magnification using an equation.	☐	☐	☐
7th	Calculate sizes using magnifications.	☐	☐	☐
5th	Interpret the SI prefixes milli-, micro-, nano- and pico-.	☐	☐	☐

CB1b Plant and animal cells

Step	Learning outcome	Had a look	Nearly there	Nailed it!
5th	Identify the parts of plant and animal cells.	☐	☐	☐
5th	Recall the parts of plant and animal cells.	☐	☐	☐
5th	Make drawings of plant and animal cells using a light microscope and identify their parts.	☐	☐	☐
6th	Describe the functions of the sub-cellular structures commonly found in eukaryotic cells (nucleus, cell membrane, cell wall, chloroplasts, mitochondria and ribosomes).	☐	☐	☐
6th	Estimate sizes using microscope fields of view.	☐	☐	☐
6th	Estimate sizes using scale bars.	☐	☐	☐

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CB1c Specialised cells

Step	Learning outcome	Had a look	Nearly there	Nailed it!
6th	Describe how sperm cells are adapted to their function.	☐	☐	☐
6th	Describe how egg cells are adapted to their function.	☐	☐	☐
6th	Describe how ciliated epithelial cells are adapted to their function.	☐	☐	☐
7th	Draw conclusions about a cell's function from its adaptations.	☐	☐	☐

CB1d Inside bacteria

Step	Learning outcome	Had a look	Nearly there	Nailed it!
5th	Identify the common parts of bacteria.	☐	☐	☐
5th	Describe the functions of common parts of bacteria.	☐	☐	☐
6th	Describe why bacteria are classified as being prokaryotic.	☐	☐	☐
6th	Change numbers to and from standard form.	☐	☐	☐
8th	Compare eukaryotic and prokaryotic cells.	☐	☐	☐

CB1e Enzymes and nutrition

Step	Learning outcome	Had a look	Nearly there	Nailed it!
6th	State that enzymes are proteins.	☐	☐	☐
6th	Give examples of enzymes and where they are found in the human body and in other species.	☐	☐	☐
6th	Recall the subunits from which carbohydrates, proteins and lipids are formed (sugars, amino acids, fatty acids and glycerol).	☐	☐	☐
6th	Describe what enzymes do (catalyse the synthesis and breakdown of substances, such as carbohydrates, proteins and lipids, by speeding up the rate of reaction).	☐	☐	☐
6th	Define an enzyme as a biological catalyst.	☐	☐	☐
7th	Explain why catalysis by enzymes is important for life processes (because reactions happen much faster).	☐	☐	☐

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CB1f Enzyme action

Step	Learning outcome	Had a look	Nearly there	Nailed it!
7th	State what enzyme specificity means.	☐	☐	☐
7th	State that an enzyme's action is due to its active site.	☐	☐	☐
7th	Describe the role of the active site in enzyme function (including specificity).	☐	☐	☐
9th	Use the lock-and-key model to develop explanations for enzyme activity.	☐	☐	☐
8th	Explain why enzymes have a particular shape, as a result of the sequence of amino acids in the chain.	☐	☐	☐
9th	Explain how enzymes become denatured.	☐	☐	☐

CB1g Enzyme activity

Step	Learning outcome	Had a look	Nearly there	Nailed it!
8th	Describe the effect of temperature on enzyme activity.	☐	☐	☐
8th	Describe the effect of substrate concentration on enzyme activity.	☐	☐	☐
8th	Describe the effect of pH on enzyme activity.	☐	☐	☐
8th	Explain what is meant by the optimum pH/temperature of an enzyme.	☐	☐	☐
9th	Calculate the rate of enzyme activity from experimental data.	☐	☐	☐
9th	Explain why temperature, substrate concentration and pH affect enzyme activity.	☐	☐	☐

CB1h Transporting substances

Step	Learning outcome	Had a look	Nearly there	Nailed it!
7th	State that substances are transported by diffusion, osmosis and active transport.	☐	☐	☐
7th	Describe how substances are transported by active transport (including the need for energy).	☐	☐	☐
6th	Explain how substances are transported by diffusion.	☐	☐	☐
9th	Explain how substances are transported by osmosis.	☐	☐	☐
9th	Explain the effects of osmosis on cells and tissues.	☐	☐	☐
8th	Investigate osmosis in potatoes.	☐	☐	☐
9th	Calculate percentage gain and loss of mass in osmosis.	☐	☐	☐

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CB2 Cells and control

CB2a Mitosis

Step	Learning outcome	Had a look	Nearly there	Nailed it!
7th	List the names and order of the stages of the cell cycle, including mitosis.	☐	☐	☐
8th	Describe what happens in each stage of the cell cycle, including mitosis.	☐	☐	☐
7th	Describe why mitosis is important for an organism. (growth, repair, asexual reproduction)	☐	☐	☐
9th	Explain why organisms may rely on asexual reproduction.	☐	☐	☐
7th	Describe how mitosis produces genetically identical, diploid cells.	☐	☐	☐
7th	Describe how cancers grow.	☐	☐	☐

CB2b Growth in animals

Step	Learning outcome	Had a look	Nearly there	Nailed it!
4th	Define growth in animals as an increase in cell number and size.	☐	☐	☐
5th	Give examples of specialised animal cells.	☐	☐	☐
6th	Describe how structure of specialised animal cells is related to their function.	☐	☐	☐
7th	Explain why cell differentiation is important in the development of specialised cells.	☐	☐	☐
8th	Use percentile growth curves to interpret growth in children.	☐	☐	☐

CB2c Growth in plants

Step	Learning outcome	Had a look	Nearly there	Nailed it!
8th	Describe the stages of growth in plants (cell division/mitosis, elongation, differentiation).	☐	☐	☐
5th	Give examples of specialised plant cells.	☐	☐	☐
6th	Describe how the structures of specialised plant cells are related to their functions.	☐	☐	☐
7th	Explain why cell differentiation is important in the development of specialised cells in plants.	☐	☐	☐

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CB2d Stem cells

Step	Learning outcome	Had a look	Nearly there	Nailed it!
7th	Describe where stem cells are found.	☐	☐	☐
7th	Describe the function of stem cells in plants and animals.	☐	☐	☐
9th	Compare embryonic and adult stem cells in animals.	☐	☐	☐
7th	Give examples of where stem cells may be used in medicine.	☐	☐	☐
8th	Identify benefits and risks of using stem cells in medicine.	☐	☐	☐
10th	Evaluate the use of stem cells in medicine (by comparing their benefits and risks).	☐	☐	☐

CB2e The nervous system

Step	Learning outcome	Had a look	Nearly there	Nailed it!
6th	List the parts of the nervous system.	☐	☐	☐
4th	Describe how the nervous system detects stimuli.	☐	☐	☐
7th	Describe the structure of sensory neurones.	☐	☐	☐
7th	Describe the routes that impulses take to and from the brain.	☐	☐	☐
8th	Explain how sensory neurones are adapted to their functions (including the myelin sheath).	☐	☐	☐

CB2f Neurotransmission speeds

Step	Learning outcome	Had a look	Nearly there	Nailed it!
7th	Describe how the nervous system responds to stimuli.	☐	☐	☐
7th	Describe the structures of motor neurones and relay neurones.	☐	☐	☐
8th	Explain how motor neurones are adapted to their functions.	☐	☐	☐
9th	Explain the action and function of synapses.	☐	☐	☐
9th	Explain how the structure of the reflex arc allows a faster response.	☐	☐	☐
8th	Describe the structure and function of the reflex arc.	☐	☐	☐

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CB3 Genetics

CB3a Meiosis

Step	Learning outcome	Had a look	Nearly there	Nailed it!
7th	Recall that gametes are produced by meiosis.	☐	☐	☐
8th	Describe what happens in meiosis. [without details of the stages]	☐	☐	☐
8th	Explain why haploid gametes are needed for sexual reproduction.	☐	☐	☐
6th	Recall what an organism's genome is.	☐	☐	☐
6th	Describe where genes are found.	☐	☐	☐
6th	Recall the function of genes.	☐	☐	☐

CB3b DNA

Step	Learning outcome	Had a look	Nearly there	Nailed it!
5th	Recall where DNA is found in a eukaryotic cell.	☐	☐	☐
7th	Name the bases in DNA.	☐	☐	☐
7th	Recall the pairing of bases in DNA.	☐	☐	☐
7th	Describe how DNA strands are held together.	☐	☐	☐
8th	Describe the overall structure of DNA.	☐	☐	☐
7th	*Describe how DNA can be extracted from fruit.*	☐	☐	☐

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CB3c Alleles

Step	Learning outcome	Had a look	Nearly there	Nailed it!
6th	Describe the difference between a gene and an allele.	☐	☐	☐
8th	Explain the effects of alleles on inherited characteristics.	☐	☐	☐
7th	Describe the relationship between a genotype and a phenotype.	☐	☐	☐
7th	Identify homozygous and heterozygous genotypes.	☐	☐	☐
9th	Use genetic diagrams to work out possible combinations of alleles in the offspring of parents.	☐	☐	☐
9th	Explain why the effects of some alleles in an organism's genotype are not seen in its phenotype.	☐	☐	☐

CB3d Inheritance

Step	Learning outcome	Had a look	Nearly there	Nailed it!
8th	Use Punnett squares to work out possible combinations of alleles in the offspring of parents.	☐	☐	☐
9th	Interpret family pedigree charts to work out possible inherited genotypes and phenotypes.	☐	☐	☐
6th	Describe how sex is determined in humans.	☐	☐	☐
9th	Calculate ratios of phenotypes (controlled by alleles of a single gene) when organisms are crossed.	☐	☐	☐
9th	Calculate probabilities of certain phenotypes occurring when organisms are crossed.	☐	☐	☐

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CB3e Gene mutation

Step	Learning outcome	Had a look	Nearly there	Nailed it!
	Give examples of characteristics controlled by multiple genes.	☐	☐	☐
	Define the term mutation.	☐	☐	☐
	Describe some potential applications of mapping human genomes.	☐	☐	☐
	Explain how a mutation can cause variation (limited to changes in the protein formed, which can affect processes in which that protein is needed).	☐	☐	☐
	Give examples of mutations in human genes that affect the phenotype, and examples of those that have little or no obvious effect.	☐	☐	☐
	Explain why many mutations have no effect on the phenotype.	☐	☐	☐

CB3f Variation

Step	Learning outcome	Had a look	Nearly there	Nailed it!
	Distinguish between genetic variation and environmental variation.	☐	☐	☐
	Distinguish between continuous and discontinuous variation.	☐	☐	☐
	Describe the causes of genetic variation (mutation and sexual reproduction).	☐	☐	☐
	Describe the causes of environmental variation (differences in the environment, acquired characteristics).	☐	☐	☐
	Analyse the contribution of genes and environment to the variation in a characteristic.	☐	☐	☐

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CB4 Natural Selection and Genetic Modification

CB4a Evidence for human evolution

Step	Learning outcome	Had a look	Nearly there	Nailed it!
4th	Define 'evolution'.	☐	☐	☐
5th	Recognise binomial species names.	☐	☐	☐
7th	Explain how evidence from fossils and stone tools supports current ideas about human evolution.	☐	☐	☐
5th	Recall how stone tools are dated from their environment.	☐	☐	☐
6th	Describe how stone tools created by human-like species have developed over time.	☐	☐	☐
6th	Describe the fossil evidence for human-like species that lived 4.4, 3.2 and 1.6 million years ago.	☐	☐	☐

CB4b Darwin's theory

Step	Learning outcome	Had a look	Nearly there	Nailed it!
4th	Recall the cause of genetic variation.	☐	☐	☐
5th	Describe how adaptations allow organisms to survive.	☐	☐	☐
8th	Explain how natural selection allows some members of a species to survive better than others when conditions change.	☐	☐	☐
9th	Explain how natural selection can lead to the evolution of a new species.	☐	☐	☐
10th	Explain how the development of resistance in organisms supports Darwin's theory.	☐	☐	☐

CB4c Classification

Step	Learning outcome	Had a look	Nearly there	Nailed it!
5th	Describe how organisms are classified into smaller and smaller groups (based on their characteristics).	☐	☐	☐
6th	Identify genus and species from a binomial name.	☐	☐	☐
6th	Identify an organism as a member of one of the five kingdoms.	☐	☐	☐
7th	Describe what genetic analysis is.	☐	☐	☐
9th	Explain why biologists often now classify organisms into three domains.	☐	☐	☐

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CB4d Breeds and varieties

Step	Learning outcome	Had a look	Nearly there	Nailed it!
7th	Describe why new breeds and varieties are created.	☐	☐	☐
7th	Describe what is meant by a 'genetically modified organism'.	☐	☐	☐
8th	Describe how selective breeding is carried out.	☐	☐	☐
10th	Explain the impact of selective breeding on domesticated plants and animals.	☐	☐	☐

CB4e Genes in agriculture and medicine

Step	Learning outcome	Had a look	Nearly there	Nailed it!
9th	H Describe the main stages of genetic engineering.	☐	☐	☐
7th	Recall some uses of selectively bred organisms (in agriculture).	☐	☐	☐
8th	Recall some uses of genetically engineered organisms (in agriculture, in medicine).	☐	☐	☐
11th	Evaluate the benefits and risks of using selective breeding and genetic engineering to produce new varieties and breeds.	☐	☐	☐

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CB5 Health, Disease and the Development of Medicines

CB5a Health and disease

Step	Learning outcome	Had a look	Nearly there	Nailed it!
6th	Define the term health.	☐	☐	☐
5th	Define the term disease.	☐	☐	☐
6th	Describe how communicable and non-communicable diseases differ.	☐	☐	☐
7th	Outline the role of the immune system in protecting against disease.	☐	☐	☐
8th	Explain how disease can affect the immune system.	☐	☐	☐

CB5b Non-communicable disease

Step	Learning outcome	Had a look	Nearly there	Nailed it!
5th	Give examples of non-communicable diseases.	☐	☐	☐
4th	Define the term malnutrition.	☐	☐	☐
5th	Explain how diet can lead to malnutrition.	☐	☐	☐
6th	Describe the link between alcohol and liver disease.	☐	☐	☐
7th	Explain the effect of alcohol consumption on liver disease at local, national and global levels.	☐	☐	☐

CB5c Cardiovascular disease

Step	Learning outcome	Had a look	Nearly there	Nailed it!
5th	Describe how obesity is measured (BMI and waist : hip calculations).	☐	☐	☐
6th	Describe how obesity correlates with cardiovascular disease.	☐	☐	☐
6th	Describe how smoking correlates with cardiovascular disease.	☐	☐	☐
6th	Explain why exercise and diet affect obesity.	☐	☐	☐
8th	Compare how cardiovascular diseases are treated	☐	☐	☐

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CB5d Pathogens

Step	Learning outcome	Had a look	Nearly there	Nailed it!
5th	Describe some problems and diseases caused by bacteria.	☐	☐	☐
5th	Describe a disease caused by a virus.	☐	☐	☐
5th	Describe a disease caused by a protist	☐	☐	☐
5th	Describe a disease caused by a fungus.	☐	☐	☐
7th	Explain how signs of a disease can be used to identify the pathogen.	☐	☐	☐

CB5e Spreading pathogens

Step	Learning outcome	Had a look	Nearly there	Nailed it!
5th	State the ways in which pathogens can be spread.	☐	☐	☐
6th	Give examples of pathogens that are spread in different ways (e.g. cholera bacteria by water, tuberculosis bacteria and chalara dieback fungi by air, malaria protist by vector, *Helicobacter* by mouth, Ebola by body fluids).	☐	☐	☐
7th	Explain how the spread of different pathogens can be reduced or prevented.	☐	☐	☐

CB5f Physical and chemical barriers

Step	Learning outcome	Had a look	Nearly there	Nailed it!
8th	Explain how the spread of the STIs Chlamydia and HIV can be reduced or prevented.	☐	☐	☐
5th	Give examples of physical barriers.	☐	☐	☐
5th	Give examples of chemical barriers.	☐	☐	☐
6th	Describe how physical barriers protect the body (e.g. skin, mucus and cilia).	☐	☐	☐
6th	Describe how chemical barriers protect the body (e.g. lysozymes, hydrochloric acid).	☐	☐	☐

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CB5g The immune system

Step	Learning outcome	Had a look	Nearly there	Nailed it!
5th	State that the immune system protects the body by attacking pathogens.	☐	☐	☐
7th	Describe how antigens trigger the release of antibodies and the production of memory lymphocytes.	☐	☐	☐
7th	Describe the role of antibodies in the immune response.	☐	☐	☐
7th	Describe the role of memory lymphocytes in triggering a secondary response.	☐	☐	☐
8th	Explain how immunisation protects against infection by a pathogen.	☐	☐	☐

CB5h Antibiotics

Step	Learning outcome	Had a look	Nearly there	Nailed it!
5th	Define the term antibiotic (as medicines that inhibit cell processes in bacteria).	☐	☐	☐
6th	Explain why antibiotics are useful for treating bacterial infections (because they do not damage human cell processes).	☐	☐	☐
6th	Explain why antibiotics cannot be used to treat infections by pathogens other than bacteria.	☐	☐	☐
6th	Describe the stages of development of new medicines.	☐	☐	☐
7th	Explain why each stage of the development of a new medicine is needed.	☐	☐	☐

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CB6 Plant Structures and their Functions

CB6a Photosynthesis

Step	Learning outcome	Had a look	Nearly there	Nailed it!
7th	Explain why photosynthetic organisms are producers of biomass.	☐	☐	☐
6th	Recall some substances produced from glucose and their roles in the plant.	☐	☐	☐
8th	Summarise what happens in photosynthesis (including the use of a word equation).	☐	☐	☐
9th	Explain why photosynthesis is an endothermic reaction.	☐	☐	☐
6th	Explain how a leaf and its cells are adapted for photosynthesis.	☐	☐	☐

CB6b Factors that affect photosynthesis

Step	Learning outcome	Had a look	Nearly there	Nailed it!
5th	Recall what is meant by a rate of reaction.	☐	☐	☐
7th	Describe the effects of temperature, light intensity and carbon dioxide concentration on the rate of photosynthesis.	☐	☐	☐
9th	Explain the effects of limiting factors of photosynthesis.	☐	☐	☐
9th	H Explain the effects of more than one factor on the rate of photosynthesis.	☐	☐	☐
9th	H Describe how light intensity and rate of photosynthesis are related.	☐	☐	☐
9th	H Explain why the rate of photosynthesis is inversely proportional to the distance of a light source.	☐	☐	☐

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CB6c Absorbing water and mineral ions

Step	Learning outcome	Had a look	Nearly there	Nailed it!
6th	Explain how root hair cells are adapted to taking in water and mineral ions.	☐	☐	☐
6th	Recall that substances can be transported by diffusion, osmosis and active transport.	☐	☐	☐
6th	Describe what is meant by a concentration gradient.	☐	☐	☐
7th	Explain why active transport is needed to transport some molecules.	☐	☐	☐
8th	Explain how molecules move by osmosis.	☐	☐	☐

CB6d Transpiration and translocation

Step	Learning outcome	Had a look	Nearly there	Nailed it!
6th	Explain how xylem tissue is adapted to its functions.	☐	☐	☐
6th	Explain how phloem tissue is adapted to its function.	☐	☐	☐
7th	Describe how transpiration occurs.	☐	☐	☐
7th	Describe how translocation occurs.	☐	☐	☐
9th	Explain the effects of environmental factors on the rate of transpiration (light intensity, air movement, temperature, humidity).	☐	☐	☐
7th	Describe how to measure the rate of transpiration.	☐	☐	☐

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CC16 Fuels

CC16a Hydrocarbons in crude oil and natural gas

Step	Learning outcome	Had a look	Nearly there	Nailed it!
4th	Recall the meaning of the term hydrocarbon.	☐	☐	☐
6th	Describe the compounds found in crude oil.	☐	☐	☐
5th	Describe the importance of crude oil for the petrochemical industry.	☐	☐	☐
6th	Explain why crude oil is a finite resource.	☐	☐	☐
4th	Recall the names of some common fossil fuels.	☐	☐	☐

CC16b Fractional distillation of crude oil

Step	Learning outcome	Had a look	Nearly there	Nailed it!
7th	Describe how crude oil is separated by fractional distillation.	☐	☐	☐
8th	Explain how fractional distillation of crude oil works.	☐	☐	☐
6th	Recall the names and uses of fractions from crude oil.	☐	☐	☐
8th	Describe how fractions differ from each other.	☐	☐	☐
8th	Explain why the properties of different fractions differ.	☐	☐	☐

CC16c The alkane homologous series

Step	Learning outcome	Had a look	Nearly there	Nailed it!
6th	Describe that oil fractions mostly contain alkanes.	☐	☐	☐
7th	Describe the main features of an homologous series.	☐	☐	☐
8th	Explain why alkanes form an homologous series.	☐	☐	☐

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CC16d Complete and incomplete combustion

Step	Learning outcome	Had a look	Nearly there	Nailed it!
6th	Describe the complete combustion of hydrocarbon fuels.	☐	☐	☐
7th	Explain the production of harmful products during the incomplete combustion of hydrocarbon fuels.	☐	☐	☐
7th	Explain why carbon monoxide is toxic.	☐	☐	☐
7th	Describe the problems caused by incomplete combustion.	☐	☐	☐

CC16e Combustible fuels and pollution

Step	Learning outcome	Had a look	Nearly there	Nailed it!
6th	Explain how some hydrocarbon fuels produce sulfur dioxide in use.	☐	☐	☐
5th	Recall the names of the pollutants responsible for acid rain.	☐	☐	☐
5th	Describe some effects of acid rain.	☐	☐	☐
6th	Explain why oxides of nitrogen are produced when fuels are burned in engines.	☐	☐	☐

CC16f Breaking down hydrocarbons

Step	Learning outcome	Had a look	Nearly there	Nailed it!
9th	Evaluate hydrogen as an alternative fuel to petrol for cars.	☐	☐	☐
6th	Describe what happens during cracking.	☐	☐	☐
8th	Explain why alkanes are saturated and alkenes are unsaturated.	☐	☐	☐
7th	Explain why cracking is necessary.	☐	☐	☐

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CC17 Earth and Atmospheric Science (Paper 4)

CC17a The early atmosphere

Step	Learning outcome	Had a look	Nearly there	Nailed it!
5th	Describe how the Earth's early atmosphere was formed.	☐	☐	☐
5th	State the names and relative amounts of the gases found in the Earth's early atmosphere.	☐	☐	☐
7th	Draw conclusions from evidence about the Earth's early atmosphere.	☐	☐	☐
6th	Explain how the oceans are thought to have formed.	☐	☐	☐

CC17b The changing atmosphere

Step	Learning outcome	Had a look	Nearly there	Nailed it!
7th	Describe how the formation of the oceans influenced the composition of the atmosphere.	☐	☐	☐
7th	Explain how photosynthetic organisms (including plants) changed the composition of the atmosphere.	☐	☐	☐
5th	State the chemical test for oxygen.	☐	☐	☐

CC17c The atmosphere today

Step	Learning outcome	Had a look	Nearly there	Nailed it!
5th	Recall the names of significant greenhouse gases.	☐	☐	☐
7th	Describe the processes involved in the greenhouse effect.	☐	☐	☐
6th	Describe how human activity increases the concentration of greenhouse gases.	☐	☐	☐
10th	Evaluate the correlation between atmospheric carbon dioxide concentrations and fossil fuel use.	☐	☐	☐
10th	Evaluate the evidence for increased atmospheric greenhouse gas concentrations being part of the cause of global warming and climate change.	☐	☐	☐

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CC17d Climate change

Step	Learning outcome	Had a look	Nearly there	Nailed it!
	Suggest possible effects on the climate of increased levels of carbon dioxide and methane.	☐	☐	☐
	Describe how human activity leads to increased carbon dioxide levels.	☐	☐	☐
	Describe how human activity leads to increased methane levels.	☐	☐	☐
	Describe the projected effects of climate change.	☐	☐	☐
	Describe how the potential harmful effects of climate change can be addressed and limited.	☐	☐	☐

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CB7 Animal Coordination, Control and Homeostasis

CB7a Hormones

Step	Learning outcome	Had a look	Nearly there	Nailed it!
6th	State where hormones are produced (in endocrine glands).	☐	☐	☐
6th	Describe the general role of hormones in the body.	☐	☐	☐
6th	Describe how hormones are transported around the body.	☐	☐	☐
6th	Describe the production and release of some common hormones from their endocrine glands (pituitary gland, thyroid gland, pancreas, adrenal glands, ovaries and testes).	☐	☐	☐
6th	Identify the target organs of some common hormones.	☐	☐	☐
7th	Explain the importance of hormones.	☐	☐	☐

CB7b Hormonal control of metabolic rate

Step	Learning outcome	Had a look	Nearly there	Nailed it!
6th	H Describe the effects of adrenalin on the body.	☐	☐	☐
7th	H Explain how adrenalin prepares the body for fight or flight.	☐	☐	☐
5th	H Define metabolic rate.	☐	☐	☐
6th	H Describe the effect of thyroxine on metabolic rate.	☐	☐	☐
7th	H Describe how a negative feedback mechanism works.	☐	☐	☐
8th	H Explain how negative feedback controls the production of thyroxine.	☐	☐	☐
10th	H Explain why negative feedback mechanisms are important in living organisms.	☐	☐	☐

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CB7c The menstrual cycle

Step	Learning outcome	Had a look	Nearly there	Nailed it!
6th	Describe what happens during the menstrual cycle.	☐	☐	☐
6th	Describe the function of oestrogen in the menstrual cycle.	☐	☐	☐
6th	Describe the function of progesterone in the menstrual cycle.	☐	☐	☐
7th	Explain how barrier methods can be used as contraception.	☐	☐	☐
8th	Explain how hormones can be used as contraception.	☐	☐	☐
9th	Compare, contrast and evaluate hormonal and barrier methods of contraception.	☐	☐	☐

CB7d Hormones and the menstrual cycle

Step	Learning outcome	Had a look	Nearly there	Nailed it!
7th	H Describe how changes in hormones affect the uterus wall, ovulation and menstruation.	☐	☐	☐
8th	H Explain how oestrogen, progesterone, FSH and LH interact in the menstrual cycle.	☐	☐	☐
6th	H Describe examples of Assisted Reproductive Technology (ART).	☐	☐	☐
8th	H Explain how clomifene is used to stimulate ovulation.	☐	☐	☐
8th	H Explain how hormones are used in IVF treatment.	☐	☐	☐

CB7e Control of blood glucose

Step	Learning outcome	Had a look	Nearly there	Nailed it!
7th	Define homeostasis.	☐	☐	☐
8th	Explain why a constant internal environment is important.	☐	☐	☐
8th	Explain the role of insulin in regulating blood glucose concentration.	☐	☐	☐
8th	H Explain the role of glucagon in regulating blood glucose concentration.	☐	☐	☐
7th	Explain how type 1 diabetes is caused.	☐	☐	☐
7th	Explain how type 1 diabetes can be controlled.	☐	☐	☐

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SB1 Key Concepts in Biology

SB1a Microscopes

Step	Learning outcome	Had a look	Nearly there	Nailed it!
5th	Recall what an electron microscope is.	☐	☐	☐
5th	Recall what is meant by an instrument's resolution.	☐	☐	☐
5th	Explain why some cell structures can be seen with an electron microscope but not with a light microscope.	☐	☐	☐
7th	Calculate total magnification using a formula.	☐	☐	☐
7th	Calculate sizes using magnifications.	☐	☐	☐
5th	Interpret the SI prefixes milli-, micro-, nano- and pico-.	☐	☐	☐

SB1b Plant and animal cells

Step	Learning outcome	Had a look	Nearly there	Nailed it!
5th	Identify the parts of plant and animal cells.	☐	☐	☐
5th	Recall the parts of plant and animal cells.	☐	☐	☐
5th	Make drawings of plant and animal cells using a light microscope and identify their parts.	☐	☐	☐
6th	Describe the functions of the sub-cellular structures commonly found in eukaryotic cells (nucleus, cell membrane, cell wall, chloroplasts, mitochondria and ribosomes).	☐	☐	☐
6th	Estimate sizes using microscope fields of view.	☐	☐	☐
6th	Estimate sizes using scale bars.	☐	☐	☐

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SB1c Specialised cells

Step	Learning outcome	Had a look	Nearly there	Nailed it!
6th	Describe how sperm cells are adapted to their function.	☐	☐	☐
6th	Describe how egg cells are adapted to their function.	☐	☐	☐
6th	Describe how ciliated epithelial cells are adapted to their function.	☐	☐	☐
7th	Draw conclusions about a cell's function from its adaptations.	☐	☐	☐

SB1d Inside bacteria

Step	Learning outcome	Had a look	Nearly there	Nailed it!
5th	Identify the common parts of bacteria.	☐	☐	☐
5th	Describe the functions of common parts of bacteria.	☐	☐	☐
6th	Describe why bacteria are classified as being prokaryotic.	☐	☐	☐
6th	Change numbers to and from standard form.	☐	☐	☐
8th	Compare eukaryotic and prokaryotic cells.	☐	☐	☐

SB1e Enzymes and nutrition

Step	Learning outcome	Had a look	Nearly there	Nailed it!
6th	State that enzymes are proteins.	☐	☐	☐
6th	Give examples of enzymes and where they are found in the human body and in other species.	☐	☐	☐
6th	Recall the subunits from which carbohydrates, proteins and lipids are formed (sugars, amino acids, fatty acids and glycerol).	☐	☐	☐
6th	Describe what enzymes do (catalyse the synthesis and breakdown of substances, such as carbohydrates, proteins and lipids, by speeding up the rate of reaction).	☐	☐	☐
6th	Define an enzyme as a biological catalyst.	☐	☐	☐
7th	Explain why catalysis by enzymes is important for life processes (because reactions happen much faster).	☐	☐	☐

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SB1f Testing foods

Step	Learning outcome	Had a look	Nearly there	Nailed it!
5th	Describe how to test for starch in food.	☐	☐	☐
5th	Describe how to test for reducing sugars in food.	☐	☐	☐
5th	Describe how to test for proteins in food.	☐	☐	☐
5th	Describe how to test for lipids in food.	☐	☐	☐
7th	Explain how calorimetry can be used to measure the energy in food.	☐	☐	☐
8th	Evaluate calorimetry tests for accuracy.	☐	☐	☐

SB1g Enzyme action

Step	Learning outcome	Had a look	Nearly there	Nailed it!
7th	State what enzyme specificity means.	☐	☐	☐
7th	State that an enzyme's action is due to its active site.	☐	☐	☐
7th	Describe the role of the active site in enzyme function (including specificity).	☐	☐	☐
9th	Use the lock-and-key model to develop explanations for enzyme activity.	☐	☐	☐
8th	Explain why enzymes have a particular shape, as a result of the sequence of amino acids in the chain.	☐	☐	☐
9th	Explain how enzymes become denatured.	☐	☐	☐

SB1h Enzyme activity

Step	Learning outcome	Had a look	Nearly there	Nailed it!
8th	Describe the effect of temperature on enzyme activity.	☐	☐	☐
8th	Describe the effect of substrate concentration on enzyme activity.	☐	☐	☐
8th	Describe the effect of pH on enzyme activity.	☐	☐	☐
8th	Explain what is meant by the optimum pH/temperature of an enzyme.	☐	☐	☐
9th	Calculate the rate of enzyme activity from experimental data.	☐	☐	☐
9th	Explain why temperature, substrate concentration and pH affect enzyme activity.	☐	☐	☐

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SB1i Transporting substances

Step	Learning outcome	Had a look	Nearly there	Nailed it!
7th	State that substances are transported by diffusion, osmosis and active transport.	☐	☐	☐
7th	Describe how substances are transported by active transport (including the need for energy).	☐	☐	☐
6th	Explain how substances are transported by diffusion.	☐	☐	☐
9th	Explain how substances are transported by osmosis.	☐	☐	☐
9th	Explain the effects of osmosis on cells and tissues.	☐	☐	☐
8th	Investigate osmosis in potatoes.	☐	☐	☐
9th	Calculate percentage gain and loss of mass in osmosis.	☐	☐	☐

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SB2 Cells and control

SB2a Mitosis

Step	Learning outcome	Had a look	Nearly there	Nailed it!
7th	List the names and order of the stages of the cell cycle, including mitosis.	☐	☐	☐
8th	Describe what happens in each stage of the cell cycle, including mitosis.	☐	☐	☐
7th	Describe why mitosis is important for an organism. (growth, repair, asexual reproduction)	☐	☐	☐
9th	Explain why organisms may rely on asexual reproduction.	☐	☐	☐
7th	Describe how mitosis produces genetically identical, diploid cells.	☐	☐	☐
7th	Describe how cancers grow.	☐	☐	☐

SB2b Growth in animals

Step	Learning outcome	Had a look	Nearly there	Nailed it!
4th	Define growth in animals as an increase in cell number and size.	☐	☐	☐
5th	Give examples of specialised animal cells.	☐	☐	☐
6th	Describe how structure of specialised animal cells is related to their function.	☐	☐	☐
7th	Explain why cell differentiation is important in the development of specialised cells.	☐	☐	☐
8th	Use percentile growth curves to interpret growth in children.	☐	☐	☐

SB2c Growth in plants

Step	Learning outcome	Had a look	Nearly there	Nailed it!
8th	Describe the stages of growth in plants (cell division/mitosis, elongation, differentiation).	☐	☐	☐
5th	Give examples of specialised plant cells.	☐	☐	☐
6th	Describe how the structures of specialised plant cells are related to their functions.	☐	☐	☐
7th	Explain why cell differentiation is important in the development of specialised cells in plants.	☐	☐	☐

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SB2d Stem cells

Step	Learning outcome	Had a look	Nearly there	Nailed it!
7th	Describe where stem cells are found.	☐	☐	☐
7th	Describe the function of stem cells in plants and animals.	☐	☐	☐
9th	Compare embryonic and adult stem cells in animals.	☐	☐	☐
7th	Give examples of where stem cells may be used in medicine.	☐	☐	☐
8th	Identify benefits and risks of using stem cells in medicine.	☐	☐	☐
10th	Evaluate the use of stem cells in medicine (by comparing their benefits and risks).	☐	☐	☐

SB2e The brain

Step	Learning outcome	Had a look	Nearly there	Nailed it!
6th	Describe what the brain is made up of.	☐	☐	☐
6th	Identify different parts of the brain (cerebellum, cerebral hemispheres, medulla oblongata).	☐	☐	☐
6th	Describe the functions of different parts of the brain (cerebellum, cerebral hemispheres, medulla oblongata).	☐	☐	☐

SB2f Brain and spinal cord problems

Step	Learning outcome	Had a look	Nearly there	Nailed it!
7th	H Describe CT and PET scanning.	☐	☐	☐
9th	H Explain how brain function is studied using scanning, and the advantages of this	☐	☐	☐
8th	H Explain the effects of spinal cord damage.	☐	☐	☐
8th	H Explain the effects of damage to different parts of the brain (including tumours).	☐	☐	☐
6th	H Explain the limitations of brain surgery.	☐	☐	☐
6th	H Explain why some types of spinal cord damage cannot be fully repaired	☐	☐	☐

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SB2g The nervous system

Step	Learning outcome	Had a look	Nearly there	Nailed it!
6th	List the parts of the nervous system.	☐	☐	☐
4th	Describe how the nervous system detects stimuli.	☐	☐	☐
7th	Describe the structure of sensory neurones.	☐	☐	☐
7th	Describe the routes that impulses take to and from the brain.	☐	☐	☐
8th	Explain how sensory neurones are adapted to their functions (including the myelin sheath).	☐	☐	☐

SB2h The eye

Step	Learning outcome	Had a look	Nearly there	Nailed it!
6th	Identify the main parts of the eye.	☐	☐	☐
7th	Explain how the cornea, lens, iris and retina are adapted to their functions.	☐	☐	☐
7th	Explain how receptor cells allow full colour vision in bright light.	☐	☐	☐
7th	Describe common eye defects (cataracts, long-sightedness, short-sightedness, colour blindness).	☐	☐	☐
7th	Describe how cataracts are treated.	☐	☐	☐
9th	Explain how long- and short-sightedness can be corrected.	☐	☐	☐

SB2i Neurotransmission speeds

Step	Learning outcome	Had a look	Nearly there	Nailed it!
7th	Describe how the nervous system responds to stimuli.	☐	☐	☐
7th	Describe the structures of motor neurones and relay neurones.	☐	☐	☐
8th	Explain how motor neurones are adapted to their functions.	☐	☐	☐
9th	Explain the action and function of synapses.	☐	☐	☐
9th	Explain how the structure of the reflex arc allows a faster response.	☐	☐	☐
8th	Describe the structure and function of the reflex arc.	☐	☐	☐

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SB3 Genetics

SB3a Sexual and asexual reproduction

Step	Learning outcome	Had a look	Nearly there	Nailed it!
6th	Describe features of asexual reproduction (rapid reproductive cycle, no need for mate, no variation of offspring).	☐	☐	☐
7th	Explain how some features of asexual reproduction can be advantageous or disadvantageous.	☐	☐	☐
6th	Describe features of sexual reproduction (slower reproductive cycle, requires mate, variation in offspring).	☐	☐	☐
8th	Explain how some features of sexual reproduction can be advantageous or disadvantageous.	☐	☐	☐
10th	Compare the advantages and disadvantages of asexual and sexual reproduction in evaluating the life cycle of an organism.	☐	☐	☐

SB3b Meiosis

Step	Learning outcome	Had a look	Nearly there	Nailed it!
7th	Recall that gametes are produced by meiosis.	☐	☐	☐
8th	Describe what happens in meiosis. [without details of the stages]	☐	☐	☐
8th	Explain why haploid gametes are needed for sexual reproduction.	☐	☐	☐
6th	Recall what an organism's genome is.	☐	☐	☐
6th	Describe where genes are found.	☐	☐	☐
6th	Recall the function of genes.	☐	☐	☐

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SB3c DNA

Step	Learning outcome	Had a look	Nearly there	Nailed it!
	Recall where DNA is found in a eukaryotic cell.	☐	☐	☐
	Name the bases in DNA.	☐	☐	☐
	Recall the pairing of bases in DNA.	☐	☐	☐
	Describe how DNA strands are held together.	☐	☐	☐
	Describe the overall structure of DNA.	☐	☐	☐
	*Describe how DNA can be extracted from fruit.*	☐	☐	☐

SB3d Protein synthesis

Step	Learning outcome	Had a look	Nearly there	Nailed it!
	H Recall where proteins are made.	☐	☐	☐
	H Describe how the shape of a protein is determined.	☐	☐	☐
	H Explain how the order of amino acids in a protein is determined.	☐	☐	☐
	H Describe what happens during the transcription stage of protein synthesis.	☐	☐	☐
	H Describe what happens during the translation stage of protein synthesis.	☐	☐	☐

SB3e Genetic variants and phenotypes

Step	Learning outcome	Had a look	Nearly there	Nailed it!
	H Describe what a mutation is.	☐	☐	☐
	H Recall some ways in which mutations occur.	☐	☐	☐
	H Describe possible effects of mutations on amino acid sequences.	☐	☐	☐
	H Describe how gene transcription is regulated.	☐	☐	☐
	H Explain the effects of mutations on protein activity.	☐	☐	☐
	H Explain how mutations can influence RNA polymerase binding and so alter protein production.	☐	☐	☐

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SB3f Mendel

Step	Learning outcome	Had a look	Nearly there	Nailed it!
5th	Recall who discovered the basis of genetics.	☐	☐	☐
8th	Describe how breeding pea plants was used to work out the basis of genetics.	☐	☐	☐
8th	Describe why it was difficult to understand inheritance before the idea of genes.	☐	☐	☐

SB3g Alleles

Step	Learning outcome	Had a look	Nearly there	Nailed it!
6th	Describe the difference between a gene and an allele.	☐	☐	☐
8th	Explain the effects of alleles on inherited characteristics.	☐	☐	☐
7th	Describe the relationship between a genotype and a phenotype.	☐	☐	☐
7th	Identify homozygous and heterozygous genotypes.	☐	☐	☐
9th	Use genetic diagrams to work out possible combinations of alleles in the offspring of parents.	☐	☐	☐
9th	Explain why the effects of some alleles in an organism's genotype are not seen in its phenotype.	☐	☐	☐

SB3h Inheritance

Step	Learning outcome	Had a look	Nearly there	Nailed it!
8th	Use Punnett squares to work out possible combinations of alleles in the offspring of parents.	☐	☐	☐
9th	Interpret family pedigree charts to work out possible inherited genotypes and phenotypes.	☐	☐	☐
6th	Describe how sex is determined in humans.	☐	☐	☐
9th	Calculate ratios of phenotypes (controlled by alleles of a single gene) when organisms are crossed.	☐	☐	☐
9th	Calculate probabilities of certain phenotypes occurring when organisms are crossed.	☐	☐	☐

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SB3i Multiple and missing alleles

Step	Learning outcome	Had a look	Nearly there	Nailed it!
7th	Describe ABO blood groups as an example of multiple alleles for one gene.	☐	☐	☐
7th	Describe how ABO blood groups are inherited.	☐	☐	☐
6th	Explain the inheritance of codominance.	☐	☐	☐
9th	H Give examples of sex-linked genetic disorders.	☐	☐	☐
9th	H Explain why some genetic disorders are sex-linked.	☐	☐	☐

SB3j Gene mutation

Step	Learning outcome	Had a look	Nearly there	Nailed it!
6th	Give examples of characteristics controlled by multiple genes.	☐	☐	☐
6th	Define the term mutation.	☐	☐	☐
6th	Describe some potential applications of mapping human genomes.	☐	☐	☐
9th	Explain how a mutation can cause variation (limited to changes in the protein formed, which can affect processes in which that protein is needed).	☐	☐	☐
7th	Give examples of mutations in human genes that affect the phenotype, and examples of those that have little or no obvious effect.	☐	☐	☐
8th	Explain why many mutations have no effect on the phenotype.	☐	☐	☐

SB3k Variation

Step	Learning outcome	Had a look	Nearly there	Nailed it!
4th	Distinguish between genetic variation and environmental variation.	☐	☐	☐
5th	Distinguish between continuous and discontinuous variation.	☐	☐	☐
6th	Describe the causes of genetic variation (mutation and sexual reproduction).	☐	☐	☐
6th	Describe the causes of environmental variation (differences in the environment, acquired characteristics).	☐	☐	☐
7th	Analyse the contribution of genes and environment to the variation in a characteristic.	☐	☐	☐

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SB4 Natural Selection and Genetic Modification

SB4a Evidence for human evolution

Step	Learning outcome	Had a look	Nearly there	Nailed it!
4th	Define 'evolution'.	☐	☐	☐
5th	Recognise binomial species names.	☐	☐	☐
7th	Explain how evidence from fossils and stone tools supports current ideas about human evolution.	☐	☐	☐
5th	Recall how stone tools are dated from their environment.	☐	☐	☐
6th	Describe how stone tools created by human-like species have developed over time.	☐	☐	☐
6th	Describe the fossil evidence for human-like species that lived 4.4, 3.2 and 1.6 million years ago.	☐	☐	☐

SB4b Darwin's theory

Step	Learning outcome	Had a look	Nearly there	Nailed it!
4th	Recall the cause of genetic variation.	☐	☐	☐
5th	Describe how adaptations allow organisms to survive.	☐	☐	☐
8th	Explain how natural selection allows some members of a species to survive better than others when conditions change.	☐	☐	☐
9th	Explain how natural selection can lead to the evolution of a new species.	☐	☐	☐
10th	Explain how the development of resistance in organisms supports Darwin's theory.	☐	☐	☐

SB4c Development of evolution theory

Step	Learning outcome	Had a look	Nearly there	Nailed it!
7th	Recall the names of the scientists who first developed the idea of evolution by natural selection.	☐	☐	☐
8th	Describe some of the evidence that Darwin and Wallace used to support their idea.	☐	☐	☐
9th	Explain the impact of the idea of evolution by natural selection on modern biology.	☐	☐	☐
7th	Recall what is meant by the pentadactyl limb, and where it is found.	☐	☐	☐

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10th	Explain how changes in the pentadactyl limb provide evidence for evolution by natural selection.	☐	☐	☐

SB4d Classification

Step	Learning outcome	Had a look	Nearly there	Nailed it!
5th	Describe how organisms are classified into smaller and smaller groups (based on their characteristics).	☐	☐	☐
6th	Identify genus and species from a binomial name.	☐	☐	☐
6th	Identify an organism as a member of one of the five kingdoms.	☐	☐	☐
7th	Describe what genetic analysis is.	☐	☐	☐
9th	Explain why biologists often now classify organisms into three domains.	☐	☐	☐

SB4e Breeds and varieties

Step	Learning outcome	Had a look	Nearly there	Nailed it!
7th	Describe why new breeds and varieties are created.	☐	☐	☐
7th	Describe what is meant by a 'genetically modified organism'.	☐	☐	☐
8th	Describe how selective breeding is carried out.	☐	☐	☐
10th	Explain the impact of selective breeding on domesticated plants and animals.	☐	☐	☐

SB4f Tissue culture

Step	Learning outcome	Had a look	Nearly there	Nailed it!
7th	Describe how tissue culture is carried out.	☐	☐	☐
8th	Explain why tissue culture produces many identical cells.	☐	☐	☐
9th	Describe advantages of using tissue culture in medical research.	☐	☐	☐
9th	Describe advantages of using tissue culture in plant breeding programmes.	☐	☐	☐

SB4g Genes in agriculture and medicine

Step	Learning outcome	Had a look	Nearly there	Nailed it!
9th	H Describe the main stages of genetic engineering.	☐	☐	☐

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7th	Recall some uses of selectively bred organisms (in agriculture).	☐	☐	☐
8th	Recall some uses of genetically engineered organisms (in agriculture, in medicine).	☐	☐	☐
11th	Evaluate the benefits and risks of using selective breeding and genetic engineering to produce new varieties and breeds.	☐	☐	☐

SB4h GM and agriculture

Step	Learning outcome	Had a look	Nearly there	Nailed it!
8th	Give examples of useful GM organisms.	☐	☐	☐
9th	Describe how crop plants can be modified to make them resistant to insect pests.	☐	☐	☐
7th	Explain how using GM organisms can increase the amount of food we produce.	☐	☐	☐
7th	Explain how using GM organisms can cause problems in the environment.	☐	☐	☐
9th	Evaluate the advantages and disadvantages of using GM organisms.	☐	☐	☐

SB4i Fertilisers and biological control

Step	Learning outcome	Had a look	Nearly there	Nailed it!
6th	Describe the principle of biological control.	☐	☐	☐
5th	Explain why we need to produce more food.	☐	☐	☐
7th	Explain how biological control can help to increase crop yield.	☐	☐	☐
7th	Explain how biological control can cause problems (in decreasing biodiversity).	☐	☐	☐
7th	Explain how fertilisers can increase crop yield.	☐	☐	☐
8th	Explain how fertilisers can damage the environment (by causing pollution).	☐	☐	☐

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SB5 Health, Disease and the Development of Medicines

SB5a Health and disease

Step	Learning outcome	Had a look	Nearly there	Nailed it!
6th	Define the term health.	☐	☐	☐
5th	Define the term disease.	☐	☐	☐
6th	Describe how communicable and non-communicable diseases differ.	☐	☐	☐
7th	Outline the role of the immune system in protecting against disease.	☐	☐	☐
8th	Explain how disease can affect the immune system.	☐	☐	☐

SB5b Non-communicable disease

Step	Learning outcome	Had a look	Nearly there	Nailed it!
5th	Give examples of non-communicable diseases.	☐	☐	☐
4th	Define the term malnutrition.	☐	☐	☐
5th	Explain how diet can lead to malnutrition.	☐	☐	☐
6th	Describe the link between alcohol and liver disease.	☐	☐	☐
7th	Explain the effect of alcohol consumption on liver disease at local, national and global levels.	☐	☐	☐

SB5c Cardiovascular disease

Step	Learning outcome	Had a look	Nearly there	Nailed it!
5th	Describe how obesity is measured (BMI and waist : hip calculations).	☐	☐	☐
6th	Describe how obesity correlates with cardiovascular disease.	☐	☐	☐
6th	Describe how smoking correlates with cardiovascular disease.	☐	☐	☐
6th	Explain why exercise and diet affect obesity.	☐	☐	☐
8th	Compare how cardiovascular diseases are treated	☐	☐	☐

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SB5d Pathogens

Step	Learning outcome	Had a look	Nearly there	Nailed it!
5th	Describe some problems and diseases caused by bacteria.	☐	☐	☐
5th	Describe a disease caused by a virus.	☐	☐	☐
5th	Describe a disease caused by a protist	☐	☐	☐
5th	Describe a disease caused by a fungus.	☐	☐	☐
7th	Explain how signs of a disease can be used to identify the pathogen.	☐	☐	☐

SB5e Spreading pathogens

Step	Learning outcome	Had a look	Nearly there	Nailed it!
5th	State the ways in which pathogens can be spread.	☐	☐	☐
6th	Give examples of pathogens that are spread in different ways (e.g. cholera bacteria by water, tuberculosis bacteria and chalara dieback fungi by air, malaria protist by vector, *Helicobacter* by mouth, Ebola by body fluids).	☐	☐	☐
7th	Explain how the spread of different pathogens can be reduced or prevented.	☐	☐	☐

SB5f Virus life cycles

Step	Learning outcome	Had a look	Nearly there	Nailed it!
5th	Describe the structure of a virus.	☐	☐	☐
6th	Explain how viruses differ from cells.	☐	☐	☐
7th	Describe the lytic pathway of a virus life cycle.	☐	☐	☐
7th	Describe the lysogenic pathway of a virus life cycle.	☐	☐	☐
8th	Compare and contrast the lytic and lysogenic pathways.	☐	☐	☐
7th	Calculate the cross-sectional area of viral cultures and clear agar jelly.	☐	☐	☐

SB5g Plant defences

Step	Learning outcome	Had a look	Nearly there	Nailed it!
5th	Describe some physical barriers of plants to pests and pathogens.	☐	☐	☐
5th	Describe some chemical defences of plants to pests and pathogens.	☐	☐	☐

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6th	Describe how plant protective chemicals are used to treat human diseases or symptoms.	☐	☐	☐
6th	Describe examples of aseptic technique.	☐	☐	☐
7th	Explain why aseptic technique is used during the culture of microorganisms.	☐	☐	☐

SB5h Plant diseases

Step	Learning outcome	Had a look	Nearly there	Nailed it!
6th	H Describe how plant diseases are detected using visible symptoms.	☐	☐	☐
6th	H Describe how environmental causes of plant problems are eliminated when identifying disease.	☐	☐	☐
6th	H Describe how distribution analysis can help identify a plant disease.	☐	☐	☐
6th	H Describe how plant pathogens are diagnosed in the lab.	☐	☐	☐

SB5i Physical and chemical barriers

Step	Learning outcome	Had a look	Nearly there	Nailed it!
8th	Explain how the spread of the STIs Chlamydia and HIV can be reduced or prevented.	☐	☐	☐
5th	Give examples of physical barriers.	☐	☐	☐
5th	Give examples of chemical barriers.	☐	☐	☐
6th	Describe how physical barriers protect the body (e.g. skin, mucus and cilia).	☐	☐	☐
6th	Describe how chemical barriers protect the body (e.g. lysozymes, hydrochloric acid).	☐	☐	☐

SB5j The immune system

Step	Learning outcome	Had a look	Nearly there	Nailed it!
5th	State that the immune system protects the body by attacking pathogens.	☐	☐	☐
7th	Describe how antigens trigger the release of antibodies and the production of memory lymphocytes.	☐	☐	☐
7th	Describe the role of antibodies in the immune response.	☐	☐	☐
7th	Describe the role of memory lymphocytes in triggering a secondary response.	☐	☐	☐
8th	Explain how immunisation protects against infection by a pathogen.	☐	☐	☐

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8th	Discuss advantages and disadvantages of immunisation including herd immunity.	☐	☐	☐

SB5k Antibiotics

Step	Learning outcome	Had a look	Nearly there	Nailed it!
5th	Define the term antibiotic (as medicines that inhibit cell processes in bacteria).	☐	☐	☐
6th	Explain why antibiotics are useful for treating bacterial infections (because they do not damage human cell processes).	☐	☐	☐
6th	Explain why antibiotics cannot be used to treat infections by pathogens other than bacteria.	☐	☐	☐
6th	Describe the stages of development of new medicines.	☐	☐	☐
7th	Explain why each stage of the development of a new medicine is needed.	☐	☐	☐

SB5l Monoclonal antibodies

Step	Learning outcome	Had a look	Nearly there	Nailed it!
6th	H Define the term monoclonal antibody.	☐	☐	☐
6th	H Define the term hybridoma cell.	☐	☐	☐
7th	H Describe how monoclonal antibodies are produced by lymphocytes.	☐	☐	☐
8th	H Explain how monoclonal antibodies are used in pregnancy testing.	☐	☐	☐
8th	H Explain how monoclonal antibodies are used in diagnosis of disease (including blood clots and cancer).	☐	☐	☐
8th	H Explain the advantages of monoclonal antibodies compared with drug and radiotherapy treatments to target cells.	☐	☐	☐

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SB6 Plant Structures and their Functions

SB6a Photosynthesis

Step	Learning outcome	Had a look	Nearly there	Nailed it!
7th	Explain why photosynthetic organisms are producers of biomass.	☐	☐	☐
6th	Recall some substances produced from glucose and their roles in the plant.	☐	☐	☐
8th	Summarise what happens in photosynthesis (including the use of a word equation).	☐	☐	☐
9th	Explain why photosynthesis is an endothermic reaction.	☐	☐	☐
6th	Explain how a leaf and its cells are adapted for photosynthesis.	☐	☐	☐

SB6b Factors that affect photosynthesis

Step	Learning outcome	Had a look	Nearly there	Nailed it!
5th	Recall what is meant by a rate of reaction.	☐	☐	☐
7th	Describe the effects of temperature, light intensity and carbon dioxide concentration on the rate of photosynthesis.	☐	☐	☐
9th	Explain the effects of limiting factors of photosynthesis.	☐	☐	☐
9th	H Explain the effects of more than one factor on the rate of photosynthesis.	☐	☐	☐
8th	H Describe how light intensity and rate of photosynthesis are related.	☐	☐	☐
9th	H Explain why the rate of photosynthesis is inversely proportional to the distance of a light source.	☐	☐	☐

SB6c Absorbing water and mineral ions

Step	Learning outcome	Had a look	Nearly there	Nailed it!
6th	Explain how root hair cells are adapted to taking in water and mineral ions.	☐	☐	☐
6th	Recall that substances can be transported by diffusion, osmosis and active transport.	☐	☐	☐
6th	Describe what is meant by a concentration gradient.	☐	☐	☐
7th	Explain why active transport is needed to transport some molecules.	☐	☐	☐
8th	Explain how molecules move by osmosis.	☐	☐	☐

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SB6d Transpiration and translocation

Step	Learning outcome	Had a look	Nearly there	Nailed it!
6th	Explain how xylem tissue is adapted to its functions.	☐	☐	☐
6th	Explain how phloem tissue is adapted to its function.	☐	☐	☐
7th	Describe now transpiration occurs.	☐	☐	☐
7th	Describe how translocation occurs.	☐	☐	☐
9th	Explain the effects of environmental factors on the rate of transpiration (light intensity, air movement, temperature, humidity).	☐	☐	☐
7th	Describe how to measure the rate of transpiration.	☐	☐	☐

SB6e Plant adaptations

Step	Learning outcome	Had a look	Nearly there	Nailed it!
5th	Identify the different tissues in a leaf.	☐	☐	☐
6th	Describe the functions of the different tissues in a leaf.	☐	☐	☐
5th	Describe some adaptations that plants have to living in extreme environments.	☐	☐	☐
7th	Explain how leaf structure is adapted for photosynthesis and gas exchange.	☐	☐	☐
8th	Explain some ways in which plants are adapted to reducing water loss in extreme environments.	☐	☐	☐

SB6f Plant hormones

Step	Learning outcome	Had a look	Nearly there	Nailed it!
6th	Recall the names of three types of plant hormone.	☐	☐	☐
6th	Define the term tropsim.	☐	☐	☐
7th	Identify negative and positive photo- and gravitropisms.	☐	☐	☐
9th	Explain how auxins cause phototropism in plant shoots and roots.	☐	☐	☐

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SB6g Uses of plant hormones

Step	Learning outcome	Had a look	Nearly there	Nailed it!
	H Describe the uses of axuins by plant growers.	☐	☐	☐
	H Describe the uses of gibberellins by plant growers and fruit farmers.	☐	☐	☐
	H Describe how fruit is artificially ripened using plant hormones.	☐	☐	☐
	H Compare the advantages and disadvantages of using plant hormones in fruit farming.	☐	☐	☐

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SB7 Animal Coordination, Control and Homeostasis

SB7a Hormones

Step	Learning outcome	Had a look	Nearly there	Nailed it!
6th	State where hormones are produced (in endocrine glands).	☐	☐	☐
6th	Describe the general role of hormones in the body.	☐	☐	☐
6th	Describe how hormones are transported around the body.	☐	☐	☐
6th	Describe the production and release of some common hormones from their endocrine glands (pituitary gland, thyroid gland, pancreas, adrenal glands, ovaries and testes).	☐	☐	☐
6th	Identify the target organs of some common hormones.	☐	☐	☐
7th	Explain the importance of hormones.	☐	☐	☐

SB7b Hormonal control of metabolic rate

Step	Learning outcome	Had a look	Nearly there	Nailed it!
6th	H Describe the effects of adrenalin on the body.	☐	☐	☐
7th	H Explain how adrenalin prepares the body for fight or flight.	☐	☐	☐
5th	H Define metabolic rate.	☐	☐	☐
6th	H Describe the effect of thyroxine on metabolic rate.	☐	☐	☐
7th	H Describe how a negative feedback mechanism works.	☐	☐	☐
8th	H Explain how negative feedback controls the production of thyroxine.	☐	☐	☐
10th	H Explain why negative feedback mechanisms are important in living organisms.	☐	☐	☐

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SB7c The menstrual cycle

Step	Learning outcome	Had a look	Nearly there	Nailed it!
6th	Describe what happens during the menstrual cycle.	☐	☐	☐
6th	Describe the function of oestrogen in the menstrual cycle.	☐	☐	☐
6th	Describe the function of progesterone in the menstrual cycle.	☐	☐	☐
7th	Explain how barrier methods can be used as contraception.	☐	☐	☐
8th	Explain how hormones can be used as contraception.	☐	☐	☐
9th	Compare, contrast and evaluate hormonal and barrier methods of contraception.	☐	☐	☐

SB7d Hormones and the menstrual cycle

Step	Learning outcome	Had a look	Nearly there	Nailed it!
7th	H Describe how changes in hormones affect the uterus wall, ovulation and menstruation.	☐	☐	☐
8th	H Explain how oestrogen, progesterone, FSH and LH interact in the menstrual cycle.	☐	☐	☐
6th	H Describe examples of Assisted Reproductive Technology (ART).	☐	☐	☐
8th	H Explain how clomifene is used to stimulate ovulation.	☐	☐	☐
8th	H Explain how hormones are used in IVF treatment.	☐	☐	☐

SB7e Control of blood glucose

Step	Learning outcome	Had a look	Nearly there	Nailed it!
7th	Define homeostasis.	☐	☐	☐
8th	Explain why a constant internal environment is important.	☐	☐	☐
8th	Explain the role of insulin in regulating blood glucose concentration.	☐	☐	☐
8th	H Explain the role of glucagon in regulating blood glucose concentration.	☐	☐	☐
7th	Explain how type 1 diabetes is caused.	☐	☐	☐
7th	Explain how type 1 diabetes can be controlled.	☐	☐	☐

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SB7f Type 2 diabetes

Step	Learning outcome	Had a look	Nearly there	Nailed it!
7th	Explain how type 2 diabetes is caused.	☐	☐	☐
7th	Explain how type 2 diabetes can be controlled.	☐	☐	☐
6th	Describe the correlation between body mass and type 2 diabetes.	☐	☐	☐
7th	Explain how BMI and waist : hip ratio are related to body mass.	☐	☐	☐
8th	Evaluate the correlation between body mass and type 2 diabetes.	☐	☐	☐

SB7g Thermoregulation

Step	Learning outcome	Had a look	Nearly there	Nailed it!
7th	Define the term 'thermoregulation'.	☐	☐	☐
8th	Explain the importance of thermoregulation in enzyme activity.	☐	☐	☐
9th	Explain the role of the skin in thermoregulation [blood flow in dermis, sweating and hair erection in epidermis].	☐	☐	☐
9th	Explain the role of the hypothalamus in thermoregulation.	☐	☐	☐
8th	Explain the role of muscles in raising low body temperature.	☐	☐	☐
9th	H Explain the role of changing blood vessel diameter in thermoregulation.	☐	☐	☐

SB7h Osmoregulation

Step	Learning outcome	Had a look	Nearly there	Nailed it!
5th	Describe the structure of the urinary system.	☐	☐	☐
6th	State how urea is formed.	☐	☐	☐
7th	Define the term 'osmoregulation'.	☐	☐	☐
6th	Describe how kidney failure is treated [kidney dialysis, organ donation]	☐	☐	☐
8th	Explain why osmoregulation is important.	☐	☐	☐

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SB7i The kidneys

Step	Learning outcome	Had a look	Nearly there	Nailed it!
7th	Describe the parts of a nephron.	☐	☐	☐
7th	State what urine contains.	☐	☐	☐
8th	Explain how the structure of the nephron allows filtration.	☐	☐	☐
9th	Explain how the structure of the nephron supports reabsorption of glucose.	☐	☐	☐
9th	Explain how the structure of the nephron supports reabsorption of water.	☐	☐	☐
9th	H Explain the role of ADH in controlling body water content.	☐	☐	☐

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SP1 Motion

SP1a Vectors and scalars

Step	Learning outcome	Had a look	Nearly there	Nailed it!
4th	Describe the difference between weight and mass.	☐	☐	☐
7th	Explain the difference between a vector and a scalar quantity.	☐	☐	☐
7th	Describe the difference between displacement and distance.	☐	☐	☐
7th	Describe the difference between velocity and speed.	☐	☐	☐
6th	Define the terms: acceleration, force, momentum, energy.	☐	☐	☐

SP1b Distance/time graphs

Step	Learning outcome	Had a look	Nearly there	Nailed it!
7th	Recall and use equations relating distance, speed and time.	☐	☐	☐
7th	Describe how speed can be measured in a school laboratory.	☐	☐	☐
5th	Recall typical speeds for walking, running, cycling and travelling by car.	☐	☐	☐
6th	Interpret distance/time graphs (including recognising what the steepness of the line tells you).	☐	☐	☐
7th	Represent journeys on distance/time graphs.	☐	☐	☐
8th	Determine speed from the gradient of a distance/time graph.	☐	☐	☐

SP1c Acceleration

Step	Learning outcome	Had a look	Nearly there	Nailed it!
6th	Recall the formula relating acceleration, velocity and time.	☐	☐	☐
8th	Use the formula relating acceleration, velocity and time.	☐	☐	☐
6th	Recall the equation relating acceleration, velocity and distance.	☐	☐	☐
8th	Use the equation relating acceleration, velocity and distance.	☐	☐	☐
6th	Recall the acceleration in free fall.	☐	☐	☐
8th	Estimate the magnitudes of some everyday accelerations.	☐	☐	☐

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SP1d Velocity/time graphs

Step	Learning outcome	Had a look	Nearly there	Nailed it!
	Represent journeys on velocity/time graphs.	☐	☐	☐
	Interpret velocity/time graphs qualitatively.	☐	☐	☐
	Calculate uniform accelerations from the gradients of velocity/time graphs.	☐	☐	☐
	Determine the distance travelled from the area under a velocity/time graph.	☐	☐	☐

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SP2 Motion and Forces

SP2a Resultant forces

Step	Learning outcome	Had a look	Nearly there	Nailed it!
7th	Explain the difference between scalar and vector quantities.	☐	☐	☐
7th	Use arrows to represent the direction and magnitude of forces.	☐	☐	☐
6th	Define a resultant force.	☐	☐	☐
6th	Calculate resultant forces.	☐	☐	☐
6th	Explain whether forces on an object are balanced or unbalanced.	☐	☐	☐

SP2b Newton's First Law

Step	Learning outcome	Had a look	Nearly there	Nailed it!
5th	Describe the effect of balanced forces on moving and stationary objects.	☐	☐	☐
6th	Describe the effect of a non-zero resultant force on moving and stationary objects.	☐	☐	☐
7th	H Describe circular motion at constant speed as a changing velocity and hence as an acceleration.	☐	☐	☐
7th	H Describe the force needed to keep an object moving in a circular path.	☐	☐	☐
8th	H Give some examples of objects moving in circular paths and the type of centripetal force involved.	☐	☐	☐

SP2c Mass and weight

Step	Learning outcome	Had a look	Nearly there	Nailed it!
4th	Describe the difference between mass and weight.	☐	☐	☐
4th	List the factors that determine the weight of an object.	☐	☐	☐
4th	Recall the equation for calculating weight.	☐	☐	☐
7th	Use the equation relating weight, mass and gravitational field strength.	☐	☐	☐
4th	Describe how weight is measured.	☐	☐	☐
5th	Describe how the weight of an object is affected by gravitational field strength.	☐	☐	☐

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SP2d Newton's Second Law

Step	Learning outcome	Had a look	Nearly there	Nailed it!
6th	Describe what an acceleration is.	☐	☐	☐
6th	List the factors that affect the acceleration of an object.	☐	☐	☐
6th	Recall the equation that relates the factors affecting acceleration.	☐	☐	☐
8th	Use the equation relating force, mass and acceleration.	☐	☐	☐
9th	Change the subject of the equation relating force, mass and acceleration.	☐	☐	☐
7th	H Explain what inertial mass means.	☐	☐	☐

SP2e Newton's Third Law

Step	Learning outcome	Had a look	Nearly there	Nailed it!
7th	Describe what Newton's Third Law says.	☐	☐	☐
7th	Recall the meaning of 'equilibrium situation'.	☐	☐	☐
8th	Identify action–reaction pairs in familiar situations.	☐	☐	☐
8th	Distinguish between action–reaction pairs and balanced forces.	☐	☐	☐
8th	H Describe how objects affect each other when they collide.	☐	☐	☐

SP2f Momentum

Step	Learning outcome	Had a look	Nearly there	Nailed it!
7th	Describe the factors that affect the momentum of an object.	☐	☐	☐
9th	Calculate the momentum of moving objects.	☐	☐	☐
8th	Describe examples of momentum in collisions.	☐	☐	☐
9th	Use the idea of conservation of momentum to calculate velocities of objects after collisions.	☐	☐	☐
10th	Calculate the force needed to produce a change in momentum in a given time.	☐	☐	☐

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SP2g Stopping distances

Step	Learning outcome	Had a look	Nearly there	Nailed it!
5th	Describe how human reaction times are measured.	☐	☐	☐
5th	Recall typical human reaction times.	☐	☐	☐
5th	Describe the link between stopping distance, thinking distance and braking distance.	☐	☐	☐
5th	Recall the factors that affect stopping distances.	☐	☐	☐
6th	Describe how different factors affect stopping distances.	☐	☐	☐

SP2h Braking distances and energy

Step	Learning outcome	Had a look	Nearly there	Nailed it!
9th	Estimate the braking distance of a road vehicle given its mass, speed and braking force.	☐	☐	☐
6th	Explain what 'work done' means.	☐	☐	☐
7th	Calculate the work done when a force moves through a distance.	☐	☐	☐
5th	Describe the factors that affect the kinetic energy of a moving object.	☐	☐	☐
9th	Calculate the kinetic energy of a moving object.	☐	☐	☐

SP2i Crash hazards

Step	Learning outcome	Had a look	Nearly there	Nailed it!
10th	Calculate the force needed to produce a change in momentum in a given time.	☐	☐	☐
7th	Explain the meaning of a 'large deceleration'.	☐	☐	☐
6th	Describe the dangers caused by large decelerations.	☐	☐	☐
7th	Explain why large decelerations cause dangers.	☐	☐	☐
7th	H Recall some typical forces involved in road collisions.	☐	☐	☐
9th	H Use knowledge of changes in momentum to estimate the forces involved in road collisions.	☐	☐	☐

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SP3 Conservation of Energy

SP3a Energy stores and transfers

Step	Learning outcome	Had a look	Nearly there	Nailed it!
6th	Explain, using examples, that energy is conserved.	☐	☐	☐
5th	Give examples of energy being moved between different stores.	☐	☐	☐
6th	Interpret diagrams that represent energy transfers.	☐	☐	☐
7th	Represent energy transfers using diagrams.	☐	☐	☐
7th	Describe what happens to wasted energy in energy transfers.	☐	☐	☐

SP3b Energy efficiency

Step	Learning outcome	Had a look	Nearly there	Nailed it!
8th	Explain some ways in which energy is transferred wastefully by mechanical processes.	☐	☐	☐
7th	Explain some ways of reducing unwanted energy transfers in mechanical processes.	☐	☐	☐
6th	Define what efficiency means.	☐	☐	☐
7th	H Explain how efficiency can be increased.	☐	☐	☐
9th	Recall and use the formula for calculating energy efficiency.	☐	☐	☐

SP3c Keeping warm

Step	Learning outcome	Had a look	Nearly there	Nailed it!
5th	Describe the ways in which energy can be transferred by heating.	☐	☐	☐
7th	Describe ways of reducing unwanted energy transfers using thermal insulation.	☐	☐	☐
5th	Explain how different ways of reducing energy transfer by heating work.	☐	☐	☐
5th	Define the meaning of thermal conductivity.	☐	☐	☐
6th	Describe the effects of the thickness and thermal conductivity of the walls of a building on its rate of cooling.	☐	☐	☐

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SP3d Stored energies

Step	Learning outcome	Had a look	Nearly there	Nailed it!
	Describe how different factors affect the gravitational potential energy stored in an object.	☐	☐	☐
	Recall and use the equation for gravitational potential energy.	☐	☐	☐
	Describe how different factors affect the kinetic energy stored in an object.	☐	☐	☐
	Recall and use the equation for kinetic energy.	☐	☐	☐

SP3e Non-renewable resources

Step	Learning outcome	Had a look	Nearly there	Nailed it!
	List the non-renewable energy resources in use today.	☐	☐	☐
	Describe the advantages and disadvantages of non-renewable energy resources.	☐	☐	☐
	Compare the advantages and disadvantages of non-renewable energy resources.	☐	☐	☐
	Explain how the use of non-renewable energy resources is changing.	☐	☐	☐

SP3f Renewable resources

Step	Learning outcome	Had a look	Nearly there	Nailed it!
	List the renewable energy resources in use today.	☐	☐	☐
	Describe the source of energy for different renewable resources.	☐	☐	☐
	Describe the ways in which the different energy resources are used.	☐	☐	☐
	Explain why we cannot use only renewable energy resources.	☐	☐	☐
	Explain how the use of renewable energy resources is changing.	☐	☐	☐

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SP4 Waves

SP4a Describing waves

Step	Learning outcome	Had a look	Nearly there	Nailed it!
5th	Recall that waves transfer energy and information but do not transfer matter.	☐	☐	☐
5th	Describe waves using the terms frequency, wavelength, amplitude, period and velocity.	☐	☐	☐
6th	Describe the differences between longitudinal and transverse waves.	☐	☐	☐
4th	Give examples of transverse and longitudinal waves.	☐	☐	☐

SP4b Wave speeds

Step	Learning outcome	Had a look	Nearly there	Nailed it!
6th	Recall the equation relating wave speed, frequency and wavelength	☐	☐	☐
8th	Use the equation relating wave speed, frequency and wavelength.	☐	☐	☐
6th	Recall the equation relating wave speed, distance and time.	☐	☐	☐
8th	Use the equation relating wave speed, distance and time.	☐	☐	☐
7th	Describe how to measure the velocity of sound in air.	☐	☐	☐
7th	Describe how to measure the velocity of waves on the surface of water.	☐	☐	☐

SP4c Refraction

Step	Learning outcome	Had a look	Nearly there	Nailed it!
5th	Describe what refraction is.	☐	☐	☐
5th	Describe how the direction of a wave changes when it goes from one material to another.	☐	☐	☐
6th	Explain some effects of the refraction of light (explanations in terms of changing speeds are not expected).	☐	☐	☐
7th	H Explain how a change in wave speed can cause a change in direction.	☐	☐	☐

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SP4d Waves crossing boundaries

Step	Learning outcome	Had a look	Nearly there	Nailed it!
5th	Describe some effects of waves being reflected.	☐	☐	☐
5th	Describe some effects of waves being refracted.	☐	☐	☐
5th	Describe some effects of waves being transmitted and absorbed.	☐	☐	☐
7th	Describe how changes in velocity, frequency and wavelength are related when sound waves go from one medium to another.	☐	☐	☐

SP4e Ears and hearing

Step	Learning outcome	Had a look	Nearly there	Nailed it!
4th	H List the parts of the human ear, in the order in which they transmit vibrations.	☐	☐	☐
4th	H Describe the functions of the parts of the ear.	☐	☐	☐
5th	H Describe how sound waves in air are converted to vibrations in solids.	☐	☐	☐
6th	H Describe some factors that affect how well sound waves transfer energy to solids.	☐	☐	☐
6th	H Explain why the human ear can only detect a certain range of frequencies.	☐	☐	☐

SP4f Ultrasound

Step	Learning outcome	Had a look	Nearly there	Nailed it!
8th	H Calculate the depth of water from information about time and wave velocity.	☐	☐	☐
4th	H Recall that sound with frequencies greater than 20 000 Hz is called ultrasound.	☐	☐	☐
5th	H Explain how ultrasound is used in sonar.	☐	☐	☐
5th	H Describe uses of ultrasound in body scanning.	☐	☐	☐
6th	H Explain how ultrasound is used in foetal scanning.	☐	☐	☐

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SP4g Infrasound

Step	Learning outcome	Had a look	Nearly there	Nailed it!
4th	H Recall that sound with frequencies less than 20 Hz is called infrasound.	☐	☐	☐
4th	H Describe some uses of infrasound.	☐	☐	☐
5th	H Recall that some seismic waves are infrasound waves.	☐	☐	☐
6th	H Describe P waves and S waves and the substances through which they can travel.	☐	☐	☐
7th	H Explain how seismic waves can help us to investigate the Earth's core.	☐	☐	☐

SP5 Light and the Electromagnetic Spectrum

SP5a Ray diagrams

Step	Learning outcome	Had a look	Nearly there	Nailed it!
3rd	Recall the law of reflection.	☐	☐	☐
5th	Draw ray diagrams to show how a mirror forms images.	☐	☐	☐
6th	Draw ray diagrams to show what happens when light is refracted.	☐	☐	☐
6th	Describe what total internal reflection is and when it happens.	☐	☐	☐
7th	Explain the significance of the critical angle in total internal reflection.	☐	☐	☐

SP5b Colour

Step	Learning outcome	Had a look	Nearly there	Nailed it!
6th	Explain the difference between specular and diffuse reflection.	☐	☐	☐
5th	Recall that white light is a mixture of different colours of light.	☐	☐	☐
6th	Explain why surfaces appear to have different colours in terms of differential absorption.	☐	☐	☐
7th	Explain how filters make coloured light in terms of absorption and transmission.	☐	☐	☐
8th	Explain the effect of viewing coloured objects in different colours of light.	☐	☐	☐

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SP5c Lenses

Step	Learning outcome	Had a look	Nearly there	Nailed it!
5th	Define the power of a lens (in terms of a more powerful lens bending light through a greater angle – the formula relating power to focal length is not required).	☐	☐	☐
6th	Describe how the focal length and shape of a lens affect its power.	☐	☐	☐
7th	Use ray diagrams to show how converging and diverging lenses refract light.	☐	☐	☐
8th	Compare and contrast the way in which converging and diverging lenses refract light.	☐	☐	☐
7th	Explain how diverging lenses produce virtual images.	☐	☐	☐
8th	Explain the different types of image that can be formed by converging lenses.	☐	☐	☐

SP5d Electromagnetic waves

Step	Learning outcome	Had a look	Nearly there	Nailed it!
5th	Recall examples of electromagnetic waves.	☐	☐	☐
5th	Describe the common features of electromagnetic waves.	☐	☐	☐
5th	Describe the transfer of energy by electromagnetic waves.	☐	☐	☐
5th	Describe the range of electromagnetic waves that our eyes can detect.	☐	☐	☐
7th	H Describe an effect caused by the different velocities of electromagnetic waves in different substances.	☐	☐	☐

SP5e The electromagnetic spectrum

Step	Learning outcome	Had a look	Nearly there	Nailed it!
5th	Recall the groups of waves in the electromagnetic spectrum in order.	☐	☐	☐
5th	Recall the colours of the visible spectrum in order.	☐	☐	☐
5th	Describe how the waves in the electromagnetic spectrum are grouped.	☐	☐	☐
7th	H Describe some differences in the ways that different parts of the electromagnetic spectrum are absorbed and transmitted.	☐	☐	☐
8th	H Describe some differences in the ways that different parts of the electromagnetic spectrum are refracted and reflected.	☐	☐	☐

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SP5f Using the long wavelengths

Step	Learning outcome	Had a look	Nearly there	Nailed it!
7th	H Describe how long wavelength electromagnetic waves are affected by different substances.	☐	☐	☐
7th	H Explain the effects caused by long wavelength electromagnetic waves travelling at different velocities in different substances.	☐	☐	☐
6th	Describe some uses of radio waves.	☐	☐	☐
6th	Describe some uses of microwaves.	☐	☐	☐
6th	Describe some uses of infrared.	☐	☐	☐
6th	Describe some uses of visible light.	☐	☐	☐
6th	H Describe how radio waves are produced and detected by electrical circuits.	☐	☐	☐

SP5g Radiation and temperature

Step	Learning outcome	Had a look	Nearly there	Nailed it!
6th	Describe how the intensity and wavelength of emitted radiation depends on the temperature of the body.	☐	☐	☐
6th	H Explain that the power radiated and absorbed must be the same to maintain a body at a constant temperature.	☐	☐	☐
6th	H Explain what happens to the temperature of a body when the average power radiated is not balanced by the average power absorbed.	☐	☐	☐
6th	H Describe the factors that affect the energy absorbed and radiated by the Earth.	☐	☐	☐
8th	H Explain how these factors affect the temperature of the Earth.	☐	☐	☐

SP5h Using the short wavelengths

Step	Learning outcome	Had a look	Nearly there	Nailed it!
7th	H Describe how short wavelength electromagnetic waves are affected by different substances.	☐	☐	☐
7th	H Explain the effects caused by short wavelength electromagnetic waves travelling at different velocities in different substances.	☐	☐	☐
6th	Describe some uses of ultraviolet radiation.	☐	☐	☐
6th	Describe some uses of X-rays.	☐	☐	☐
6th	Describe some uses of gamma rays.	☐	☐	☐

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SP5i EM radiation dangers

Step	Learning outcome	Had a look	Nearly there	Nailed it!
7th	Describe how the potential danger of electromagnetic radiation depends on its frequency.	☐	☐	☐
6th	Describe the harmful effects of microwave and infrared radiation.	☐	☐	☐
6th	Describe the harmful effects of ultraviolet radiation, X-rays and gamma rays.	☐	☐	☐
7th	Recall the nature of radiation produced by changes in atoms and their nuclei.	☐	☐	☐
7th	Recall that absorption of radiation can cause changes in atoms and their nuclei.	☐	☐	☐

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SP6 Radioactivity

SP6a Atomic models

Step	Learning outcome	Had a look	Nearly there	Nailed it!
7th	Describe the structure of an atom (in terms of nucleus and electrons).	☐	☐	☐
7th	State where most of the mass of an atom is found.	☐	☐	☐
7th	State the sizes of atoms and small molecules.	☐	☐	☐
8th	Describe an early model of the atom.	☐	☐	☐
8th	Describe how and why our model of the atom has changed over time, including the plum pudding model and the Rutherford alpha particle scattering.	☐	☐	☐

SP6b Inside atoms

Step	Learning outcome	Had a look	Nearly there	Nailed it!
7th	State what is meant by an isotope.	☐	☐	☐
8th	Represent isotopes using symbols.	☐	☐	☐
8th	Explain how atoms of different elements are different (in terms of numbers of electrons and protons).	☐	☐	☐
7th	Recall the charges and relative masses of the three subatomic particles.	☐	☐	☐
8th	Explain why all atoms have no overall charge.	☐	☐	☐

SP6c Electrons and orbits

Step	Learning outcome	Had a look	Nearly there	Nailed it!
7th	Describe where electrons are found inside atoms (in terms of shells).	☐	☐	☐
8th	Describe when electrons can change orbit.	☐	☐	☐
7th	Recall what an ion is.	☐	☐	☐
8th	Describe how ionisation occurs.	☐	☐	☐
8th	Describe some of the evidence for the Bohr model of the atom.	☐	☐	☐

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SP6d Background radiation

Step	Learning outcome	Had a look	Nearly there	Nailed it!
9th	Explain what background radiation is.	☐	☐	☐
9th	Describe how radiation measurements need to be corrected for background radiation.	☐	☐	☐
8th	List some sources of background radiation.	☐	☐	☐
8th	Describe how photographic film can be used to detect radioactivity.	☐	☐	☐
9th	Describe how a Geiger-Müller tube works.	☐	☐	☐
8th	Describe how the amount of radioactivity can be measured (in terms of the darkness of photographic film or by attaching a counter to a GM tube).	☐	☐	☐

SP6e Types of radiation

Step	Learning outcome	Had a look	Nearly there	Nailed it!
7th	Recall the relative masses and relative electric charges of protons, neutrons, electrons and positrons.	☐	☐	☐
8th	List five types of radiation that are emitted in random processes from unstable nuclei.	☐	☐	☐
8th	State that the five types of radiation are ionising radiations.	☐	☐	☐
8th	Describe what alpha and beta particles are.	☐	☐	☐
8th	Describe the nature of gamma radiation.	☐	☐	☐
11th	Compare the penetrating abilities of alpha, beta and gamma radiation.	☐	☐	☐
11th	Compare the ionisation abilities of alpha, beta and gamma radiation.	☐	☐	☐

SP6f Radioactive decay

Step	Learning outcome	Had a look	Nearly there	Nailed it!
9th	Describe the process of β^- decay.	☐	☐	☐
9th	Describe the process of β^+ decay.	☐	☐	☐
10th	Explain how the proton and mass numbers are affected by different kinds of radioactive decay.	☐	☐	☐
9th	Describe what happens during nuclear rearrangement after radioactive decay.	☐	☐	☐
10th	Balance nuclear equations for mass and charge.	☐	☐	☐

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SP6g Half-life

Step	Learning outcome	Had a look	Nearly there	Nailed it!
8th	Describe how the activity of a substance changes over time.	☐	☐	☐
8th	State how half-life can be used to describe the changing activity of a substance.	☐	☐	☐
8th	Recall the unit of activity.	☐	☐	☐
8th	Describe how half-life can be used to work out how much of a substance will decay in a certain time.	☐	☐	☐
10th	Carry out calculations involving half-life.	☐	☐	☐

SP6h Using radioactivity

Step	Learning outcome	Had a look	Nearly there	Nailed it!
7th	Describe how radioactivity is used in smoke alarms.	☐	☐	☐
7th	Describe how radioactivity is used in irradiating food.	☐	☐	☐
7th	Describe how radioactivity is used in sterilising equipment.	☐	☐	☐
7th	Describe how radioactivity is used in tracing and thickness gauging.	☐	☐	☐
6th	Recall that radioactivity is used in cancer diagnosis and treatment.	☐	☐	☐

SP6i Dangers of radioactivity

Step	Learning outcome	Had a look	Nearly there	Nailed it!
8th	Describe the hazards of ionising radiation in terms of tissue damage and possible mutations.	☐	☐	☐
9th	Explain how the dangers of ionising radiation depend on the half-life.	☐	☐	☐
11th	Explain the precautions taken to reduce the risks from radiation and ensure the safety of patients exposed to radiation, and link these to the half-lives of the sources used.	☐	☐	☐
9th	Explain the precautions taken to reduce the risks from radiation and protect people who work with radiation.	☐	☐	☐
9th	Describe the differences between contamination and irradiation effects.	☐	☐	☐
11th	Compare the hazards of contamination and irradiation.	☐	☐	☐

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SP6j Radioactivity in medicine

Step	Learning outcome	Had a look	Nearly there	Nailed it!
9th	Describe the advantages and disadvantages of treating tumours with radiation applied internally.	☐	☐	☐
9th	Describe the advantages and disadvantages of treating tumours with radiation applied externally.	☐	☐	☐
8th	Explain the use of radioactive tracers in diagnosis.	☐	☐	☐
8th	Explain the use of PET scanners in diagnosis.	☐	☐	☐
8th	Explain why isotopes used in PET scanners have to be produced nearby.	☐	☐	☐

SP6k Nuclear energy

Step	Learning outcome	Had a look	Nearly there	Nailed it!
6th	Describe some advantages of using nuclear power to generate electricity.	☐	☐	☐
6th	Describe some disadvantages of using nuclear power to generate electricity.	☐	☐	☐
10th	Evaluate the use of nuclear power to generate electricity.	☐	☐	☐
7th	Describe three types of nuclear reaction.	☐	☐	☐
6th	Recall that nuclear reactions can be a source of energy.	☐	☐	☐

SP6l Nuclear fission

Step	Learning outcome	Had a look	Nearly there	Nailed it!
8th	Describe the products of the fission of U-235.	☐	☐	☐
7th	Describe what a chain reaction is.	☐	☐	☐
8th	Explain how a chain reaction is controlled in a nuclear power station.	☐	☐	☐
7th	Describe how the thermal energy from a chain reaction is converted to electrical energy.	☐	☐	☐
7th	Recall that the products of nuclear fission are radioactive.	☐	☐	☐

SP6m Nuclear fusion

Step	Learning outcome	Had a look	Nearly there	Nailed it!
7th	Describe what happens in nuclear fusion.	☐	☐	☐
7th	Recall that nuclear fusion is the energy source for stars.	☐	☐	☐

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8th	Explain the difference between nuclear fusion and nuclear fission.	☐	☐	☐
9th	Explain why high temperatures and pressures are needed to make fusion happen.	☐	☐	☐
10th	Relate the conditions of fusion to the difficulty of making a practical and economic fusion power station.	☐	☐	☐

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SP7 Astronomy

SP7a The Solar System

Step	Learning outcome	Had a look	Nearly there	Nailed it!
4th	Describe the different bodies that make up the Solar System.	☐	☐	☐
3rd	Recall the names and order of the planets in the Solar System.	☐	☐	☐
4th	Describe how ideas about the structure of the Solar System have changed over time.	☐	☐	☐
7th	Describe how methods of observing the Universe have changed over time.	☐	☐	☐

SP7b Gravity and orbits

Step	Learning outcome	Had a look	Nearly there	Nailed it!
4th	Recall the factors that affect the strength of the gravitational field.	☐	☐	☐
5th	Explain why *g* has different values on different bodies in the Solar System.	☐	☐	☐
7th	Describe the orbits of moons, planets, comets and artificial satellites.	☐	☐	☐
8th	Explain why the velocity of a planet changes even if orbiting at a steady speed.	☐	☐	☐
8th	Describe how changing the speed of an orbiting body affects the radius of its orbit.	☐	☐	☐
9th	Explain how the radius of a stable orbit is affected by the orbital speed.	☐	☐	☐

SP7c Life cycles of stars

Step	Learning outcome	Had a look	Nearly there	Nailed it!
6th	Describe the evolution of stars of similar mass to the Sun (including nebula, main sequence star, red giant, white dwarf).	☐	☐	☐
7th	Describe the forces acting on a star in terms of thermal expansion and gravity.	☐	☐	☐
8th	Explain how the balance of thermal expansion and gravity affects the life cycle of stars.	☐	☐	☐
6th	Describe the evolution of stars with a mass larger than the Sun.	☐	☐	☐

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SP7d Red-shift

Step	Learning outcome	Had a look	Nearly there	Nailed it!
6th	Describe how the movement of a wave source affects the observed frequency and wavelength.	☐	☐	☐
7th	Describe the amount of red-shift observed in galaxies at different distances from Earth.	☐	☐	☐
8th	Explain why the red-shift of galaxies provides evidence that the Universe is expanding.	☐	☐	☐

SP7e Origin of the Universe

Step	Learning outcome	Had a look	Nearly there	Nailed it!
6th	Describe the Steady State and Big Bang theories.	☐	☐	☐
8th	Compare the Steady State and Big Bang theories.	☐	☐	☐
6th	Describe the evidence supporting the Big Bang theory.	☐	☐	☐
7th	Explain why the Big Bang theory is the currently accepted model.	☐	☐	☐
9th	Explain how both theories of the origin of the Universe account for red-shift.	☐	☐	☐
8th	Explain how the discovery of the CMB radiation led to the Big Bang theory becoming the currently accepted model.	☐	☐	☐

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SC1 States of Matter

SC1a States of matter

Step	Learning outcome	Had a look	Nearly there	Nailed it!
2nd	Name the three states of matter, and the physical changes that occur between them.			
5th	Describe the arrangements and movement of particles in the different states of matter.			
6th	Use information to predict the state of a substance.			
5th	Describe the relative energies of particles in the different states of matter.			
7th	Explain why the movement and arrangement of particles change during changes of state.			
7th	Explain why the energy of particles changes during changes of state.			

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SC2 Methods of Separating and Purifying Substances

SC2a Mixtures

Step	Learning outcome	Had a look	Nearly there	Nailed it!
5th	Describe the differences between a pure substance and a mixture.			
5th	Use melting point information to decide whether a substance is pure or is a mixture.			
6th	Describe what happens to atoms at a pure substance's melting point.			
6th	Interpret a heating curve to identify a melting point.			
7th	Explain why the temperature does not change as a pure substance melts.			

SC2b Filtration and crystallisation

Step	Learning outcome	Had a look	Nearly there	Nailed it!
4th	State some mixtures that can be separated by filtration.			
4th	State some mixtures that can be separated by crystallisation.			
6th	Draw and interpret diagrams showing how filtration and crystallisation are done.			
6th	Explain the formation of crystals during crystallisation.			
5th	Explain how mixtures are separated by filtration.			
5th	Explain ways of reducing risk when separating mixtures by filtration and crystallisation.			

SC2c Paper chromatography

Step	Learning outcome	Had a look	Nearly there	Nailed it!
5th	Describe how some mixtures can be separated by chromatography.			
5th	Identify pure substances and mixtures on chromatograms.			
5th	Identify substances that are identical on chromatograms.			
6th	Draw and interpret diagrams showing how chromatography is done.			
6th	Explain how substances can be separated by chromatography.			
6th	Calculate R_f values and use them to identify substances.			

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SC2d Distillation

Step	Learning outcome	Had a look	Nearly there	Nailed it!
	Describe how to carry out, and explain what happens in, simple distillation.			
	Distinguish between simple distillation and fractional distillation.			
	Identify when fractional distillation should be used to separate a mixture.			
	Describe how to carry out fractional distillation.			
	Explain how the products of fractional distillation are linked to the boiling points of the components.			
	Explain what precautions are needed to reduce risk in a distillation experiment.			

SC2e Drinking water

Step	Learning outcome	Had a look	Nearly there	Nailed it!
	Explain why water used in chemical analysis must not contain dissolved salts.			
	Describe how fresh water can be produced from seawater.			
	Describe the steps needed to make fresh water suitable for drinking.			
	Suggest how to purify water when you know what it contains.			
	Evaluate the hazards and control the risks present when purifying water.			

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SC3 Atomic Structure

SC3a Structure of an atom

Step	Learning outcome	Had a look	Nearly there	Nailed it!
8th	Describe how Dalton's ideas about atoms have changed.			
8th	Describe how the subatomic particles are arranged in an atom.			
8th	Explain how atoms of different elements are different.			
7th	Recall the charges and relative masses of the three subatomic particles.			
8th	Explain why all atoms have no overall charge.			
8th	Describe how the size of an atom compares to the size of its nucleus.			

SC3b Atomic number and mass number

Step	Learning outcome	Had a look	Nearly there	Nailed it!
7th	State where most of the mass of an atom is found.			
7th	State the meaning of atomic number.			
7th	State the meaning of mass number.			
8th	Describe how the atoms of different elements vary.			
8th	State the number of electrons in an atom from its atomic number.			
8th	Calculate the numbers of protons, neutrons and electrons using atomic and mass numbers.			

SC3c Isotopes

Step	Learning outcome	Had a look	Nearly there	Nailed it!
7th	State what is meant by an isotope.			
7th	Identify isotopes from information about the structure of atoms.			
8th	Calculate the numbers of protons, neutrons and electrons using atomic numbers and mass numbers.			
9th	Explain why the relative atomic mass of many elements is not a whole number.			
10th	H Calculate the relative atomic mass of an element from the relative masses and abundances of its isotopes.			

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SC4 The Periodic Table

SC4a Elements and the periodic table

Step	Learning outcome	Had a look	Nearly there	Nailed it!
6th	Recall the chemical symbols of some common elements.			
6th	Describe how Mendeleev arranged elements into a periodic table.			
7th	Describe how Mendeleev predicted the existence and properties of some elements yet to be discovered.			
8th	Explain how Mendeleev's early ideas were supported by later evidence.			

SC4b Atomic number and the periodic table

Step	Learning outcome	Had a look	Nearly there	Nailed it!
7th	Explain some problems Mendeleev had when ordering the elements.			
6th	Explain the meaning of the term 'atomic number'.			
6th	Describe how the elements are arranged in the modern periodic table.			
6th	Recall the positions of metals and non-metals in the periodic table.			

SC4c Electronic configurations and the periodic table

Step	Learning outcome	Had a look	Nearly there	Nailed it!
7th	State what the term 'electronic configuration' means.			
8th	Show electronic configurations in the form 2.8.1 and as diagrams.			
9th	Predict the electronic configurations of the elements hydrogen to calcium.			
9th	Explain the links between an element's position in the periodic table and its electronic configuration.			
6th	Recall the positions of metals and non-metals in the periodic table.			

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SC5 Ionic Bonding

SC5a Ionic bonds

Step	Learning outcome	Had a look	Nearly there	Nailed it!
6th	Recall the formulae of simple ions.			
8th	Explain how cations and anions are formed.			
8th	Use dot and cross diagrams to explain how ionic bonds are formed.			
8th	Explain the difference between an atom and an ion.			
9th	Calculate the numbers of protons, neutrons and electrons in simple ions.			
9th	Explain the formation of ions in groups 1, 2, 6 and 7 of the periodic table.			

SC5b Ionic lattices

Step	Learning outcome	Had a look	Nearly there	Nailed it!
6th	Recall the formulae of common polyatomic ions, and the charges on them.			
7th	Interpret the use of –ide and –ate endings in the names of compounds.			
7th	Name ionic compounds using –ide and –ate endings.			
8th	Work out the formula of an ionic compound from the formulae of its ions.			
8th	Describe the structure of ionic compounds.			
8th	Explain how ionic compounds are held together.			

SC5c Properties of ionic compounds

Step	Learning outcome	Had a look	Nearly there	Nailed it!
5th	Describe the properties of ionic compounds.			
7th	Explain why ionic compounds have high melting points and high boiling points.			
7th	Explain why ionic compounds conduct electricity when they are molten and in aqueous solution.			
7th	Explain why ionic compounds do not conduct electricity as solids.			
7th	Identify ionic compounds from data about their properties.			

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SC6 Covalent bonding

SC6a Covalent bonds

Step	Learning outcome	Had a look	Nearly there	Nailed it!
	Explain how covalent bonds are formed.			
	Recall the names of some common molecular elements.			
	Recall the names of some common molecular compounds.			
	State the bonding that is found in molecules.			
	State the approximate size (order or magnitude) of atoms and small molecules.			
	Explain the formation of covalent bonds using dot and cross diagrams.			

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SC7 Types of Substance

SC7a Molecular compounds

Step	Learning outcome	Had a look	Nearly there	Nailed it!
5th	Recall examples of common covalent, simple molecular compounds.			
6th	Describe the general properties of covalent, simple molecular compounds.			
8th	Explain why covalent, simple molecular compounds have low melting and boiling points.			
9th	Explain why covalent, simple molecular compounds are poor conductors of electricity.			
7th	Describe the structure of a polymer.			

SC7b Allotropes of carbon

Step	Learning outcome	Had a look	Nearly there	Nailed it!
5th	Recall some allotropes of carbon.			
7th	Describe the basic differences between covalent, simple molecules and giant covalent structures.			
7th	Describe the structures of diamond, graphite, fullerenes and graphene.			
6th	Describe the properties of diamond, graphite, fullerenes and graphene.			
9th	Explain the properties and uses of diamond and graphite in terms of their structure and bonding.			
9th	Explain the properties of fullerenes and graphene in terms of their structure and bonding.			

SC7c Properties of metals

Step	Learning outcome	Had a look	Nearly there	Nailed it!
6th	Describe the particles and how they are arranged in metals.			
7th	Explain why metals are malleable.			
7th	Explain why metals conduct electricity.			
3rd	Describe the typical properties of metals.			
3rd	Describe the typical properties of non-metals.			

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SC7d Bonding metals

Step	Learning outcome	Had a look	Nearly there	Nailed it!
6th	Give examples of ionic; covalent, simple molecular; covalent, giant molecular; and metallic substances.			
7th	Describe how the different types of bonds and structures are formed.			
8th	Explain how the structure and bonding of a substance is linked to its physical properties. (Relative melting point and boiling point, relative solubility in water and ability to conduct electricity, as solids and in solution.)			
8th	Explain why we use models to represent structure and bonding.			
8th	Represent structures and bonding using a variety of different models (dot and cross, ball and stick, 2D, 3D).			
9th	Describe the limitations of the different models used to represent structure and bonding (dot and cross, ball and stick, 2D, 3D).			

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SC8 Acids and Alkalis

SC8a Acids, alkalis and indicators

Step	Learning outcome	Had a look	Nearly there	Nailed it!
	Describe what the main hazard symbols mean.			
	Describe the safety precautions that should be observed when handling different acids and alkalis.			
	Name the ions present in all acidic and all alkaline solutions.			
	State the pH values associated with acidic, alkaline and neutral solutions.			
	Describe the effect of acids and alkalis on common indicators.			
	H Explain the link between pH and the concentration of ions in acids and alkalis.			

SC8b Looking at acids

Step	Learning outcome	Had a look	Nearly there	Nailed it!
	H Describe the relationship between hydrogen ion concentration and pH.			
	H Explain the difference between a dilute and concentrated solution (in terms of the amount of solute present).			
	H Explain the difference between strong and weak acids (in terms of the degree of dissociation of the acid molecules).			
	H Explain how the pH and reactivity of an acid depend on the concentration and the strength of the acid.			

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SC8c Bases and salts

Step	Learning outcome	Had a look	Nearly there	Nailed it!
5th	Describe how a base reacts in a neutralisation reaction.			
6th	Describe what happens when an acid reacts with a metal oxide.			
7th	Write word equations for the reactions of acids and metal oxides.			
8th	Write symbol equations for the reactions of acids and metal oxides.			
6th	Explain what happens during a neutralisation reaction.			
6th	Describe the steps involved in preparing a soluble salt from an acid and an insoluble reactant.			
6th	Explain why: an excess of insoluble reactant is used when preparing a soluble salt the excess reactant is removed when preparing a soluble salt the remaining solution contains only a salt and water, when preparing a soluble salt from an acid and an insoluble reactant.			

SC8d Alkalis and balancing equations

Step	Learning outcome	Had a look	Nearly there	Nailed it!
6th	Recall the chemical formulae of some common compounds.			
6th	Recall and use state symbols.			
9th	Balance chemical equations.			
4th	Recall that alkalis are soluble bases.			
6th	Describe the reactions of alkalis with acids.			

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SC8e Alkalis and neutralisation

Step	Learning outcome	Had a look	Nearly there	Nailed it!
6th	Explain what happens to the ions from acids and alkalis during neutralisation.			
6th	Explain why titration is used to prepare soluble salts.			
6th	Describe how to carry out an acid–alkali titration.			

SC8f Reactions of acids with metals and carbonates

Step	Learning outcome	Had a look	Nearly there	Nailed it!
9th	H Write balanced ionic equations.			
7th	Explain the general reaction between an acid and a metal to produce a salt and hydrogen.			
7th	Explain the general reaction between an acid and a metal carbonate to produce a salt, water and carbon dioxide.			
5th	Describe the test for hydrogen.			
5th	Describe the test for carbon dioxide.			

SC8g Solubility

Step	Learning outcome	Had a look	Nearly there	Nailed it!
4th	Recall the general rules for the solubility of common substances in water.			
6th	Predict whether or not a precipitate will form from two solutions.			
6th	Name the precipitate formed in a reaction.			
6th	Describe how to prepare a pure, dry sample of an insoluble salt.			

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SC9 Calculations involving masses

SC9a Masses and empirical formulae

Step	Learning outcome	Had a look	Nearly there	Nailed it!
8th	Calculate the relative formula mass of a substance from relative atomic masses.			
8th	Calculate the empirical formula of a compound from the masses of the elements it contains.			
8th	Explain the difference between an empirical formula and a molecular formula.			
7th	Deduce the empirical formula from a molecular formula.			
8th	Deduce the molecular formula for a compound from its empirical formula and its relative formula mass.			
7th	Describe an experiment to determine the empirical formula for a compound.			

SC9b Conservation of mass

Step	Learning outcome	Had a look	Nearly there	Nailed it!
6th	Explain the law of conservation of mass in a closed system.			
6th	Explain the law of conservation of mass in a non-enclosed system.			
8th	Calculate the mass of product formed from a given mass of reactant, using a balanced equation.			
8th	Calculate the mass of a reactant needed to produce a given amount of product, using a balanced equation.			
6th	Calculate the concentration of a solution in g dm^{-3}.			

SC9c Moles H

Step	Learning outcome	Had a look	Nearly there	Nailed it!
6th	H Describe what is meant by a mole of particles.			
8th	H Calculate the number of moles of particles in a given mass of a certain substance and vice versa.			
9th	H Calculate the number of particles in a given number of moles or mass of a substance and vice versa.			
7th	H Explain that the mass of a product formed in a reaction is controlled by the mass of reactant that is not in excess.			
9th	H Deduce the balanced equation for a reaction from the masses of reactants and/or products.			

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SC10 Electrolytic Processes

SC10a Electrolysis

Step	Learning outcome	Had a look	Nearly there	Nailed it!
	State the meaning of the term 'electrolyte'.			
	Outline what happens during electrolysis.			
	Explain the movement of the ions during electrolysis.			
	H Write half equations for the reactions at the electrodes.			
	H Explain the meaning of oxidation and reduction in terms of the movement of electrons.			
	H State the electrodes at which oxidation and reduction occur.			

SC10b Products from electrolysis

Step	Learning outcome	Had a look	Nearly there	Nailed it!
	Recall the products formed from the electrolysis of a variety of common compounds and solutions (copper chloride solution, sodium chloride solution, sodium sulfate solution, acidified water, molten lead bromide).			
	Explain the formation of the products in the electrolysis of a variety of common compounds and solutions (copper chloride solution, sodium chloride solution, sodium sulfate solution, acidified water, molten lead bromide).			
	Predict the products formed from the electrolysis of a molten, binary, ionic compound.			
	Explain how the electrolysis of copper sulfate solution using copper electrodes can be used to purify copper.			

SC11 Obtaining and Using Metals

SC11a Reactivity

Step	Learning outcome	Had a look	Nearly there	Nailed it!
5th	Describe the reactions of common metals with water and acids.			
5th	Describe the reactions of metals with salt solutions.			
8th	H Explain why displacement reactions are redox reactions.			
8th	Deduce the order of metals in the reactivity series from their reactions with water, acids and salt solutions.			
9th	Explain the reactivity series in terms of the tendency of different metal atoms to form cations.			

SC11b Ores

Step	Learning outcome	Had a look	Nearly there	Nailed it!
4th	Recall the meaning of the term 'ore'.			
4th	Recall some metals that are found uncombined in the Earth's crust.			
7th	Explain how and why some metals are extracted from their ores by heating with carbon.			
8th	Explain how and why some metals are extracted from their ores by electrolysis.			
7th	H Describe two biological methods of metal extraction.			
10th	H Evaluate biological methods of metal extraction.			

SC11c Oxidation and reduction

Step	Learning outcome	Had a look	Nearly there	Nailed it!
	H Explain why reactions occurring at the electrodes during electrolysis are redox reactions.			
	Describe the meanings of oxidation and reduction in terms of oxygen.			
	Explain which substance has been oxidised and which substance has been reduced in a reaction.			
	Recall that all metals are extracted by reduction of their ores.			
	Explain how the position of a metal in the reactivity series is related to its resistance to oxidation.			

SC11d Life cycle assessment and recycling

Step	Learning outcome	Had a look	Nearly there	Nailed it!
	State the advantages and disadvantages of recycling a metal.			
	Describe a process where a material or product is recycled for a different use.			
	Evaluate the advantages and disadvantages of recycling a material or product to decide whether recycling is a viable option.			
	Describe the four stages in carrying out a life cycle assessment (LCA) of a material or product.			
	Evaluate data from a life cycle assessment of a material or product.			

SC12 Reversible Reactions and Equilibria

SC12a Dynamic equilibrium

Step	Learning outcome	Had a look	Nearly there	Nailed it!
6th	Describe what happens in reversible reactions.			
7th	Explain the use of the symbol ⇌ in chemical equations.			
7th	Explain what is meant by dynamic equilibrium.			
7th	Describe the formation of ammonia.			
5th	State the conditions used for the Haber process.			
8th	H Describe how changing the temperature, pressure and concentration all affect the relative amount of substances in an equilibrium mixture.			

SC13 Transition Metals, Alloys and Corrosion

SC13a Transition metals

Step	Learning outcome	Had a look	Nearly there	Nailed it!
6th	Describe the position of the transition metals in the periodic table			
6th	Describe some general physical properties of transition metals.			
6th	Describe some general chemical properties of transition metals.			
6th	Explain why iron has the typical properties of a transition metal.			

SC13b Corrosion

Step	Learning outcome	Had a look	Nearly there	Nailed it!
6th	Describe corrosion of metals as the result of oxidation.			
6th	Describe how rusting of iron occurs.			
6th	Explain how rusting can be prevented by excluding oxygen and/or water.			
8th	Explain how sacrificial protection works.			

SC13c Electroplating

Step	Learning outcome	Had a look	Nearly there	Nailed it!
	Recall what electroplating is.			
	Recall some common examples of electroplating.			
	Explain why metal objects may be electroplated.			
	Explain how electroplating is carried out.			

SC13d Alloying

Step	Learning outcome	Had a look	Nearly there	Nailed it!
	Recall the name of a common alloy.			
	Describe what alloys are.			
	Explain why iron is alloyed with other metals.			
	Explain why alloys are often stronger than the metals they contain.			

SC13e Uses of metals and their alloys

Step	Learning outcome	Had a look	Nearly there	Nailed it!
	Recall common uses for aluminium, copper and gold.			
	Recall the names and compositions of common alloys containing aluminium or copper.			
	Explain why different metals and their alloys have different uses.			

SC14 Quantitative Analysis

SC14a Yields

Step	Learning outcome	Had a look	Nearly there	Nailed it!
5th	State what is meant by the theoretical yield of a reaction.			
5th	State what is meant by the actual yield of a reaction.			
8th	Calculate the percentage yield of a reaction.			
6th	Understand that the actual yield is always less than the theoretical yield of a reaction.			
6th	Describe some reasons why the actual yield is less than the theoretical yield of a reaction.			

SC14b Atom economy

Step	Learning outcome	Had a look	Nearly there	Nailed it!
5th	Recall the formula for calculating atom economy.			
9th	Calculate the atom economy for forming a desired product in a reaction.			
7th	H Explain how atom economy and yield determine the choice of reaction pathway.			
7th	H Explain how the usefulness of by-products determines the choice of reaction pathway.			

SC14c Concentrations

Step	Learning outcome	Had a look	Nearly there	Nailed it!
4th	H State the meaning of the term concentration.			
6th	H Calculate concentration in g dm^{-3}.			
6th	H Calculate concentration in mol dm^{-3}.			
8th	H Convert concentration in g dm^{-3} into concentration in mol dm^{-3}.			
9th	H Convert concentration in mol dm^{-3} into concentration in g dm^{-3}.			

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SC14d Titrations and calculations

Step	Learning outcome	Had a look	Nearly there	Nailed it!
5th	Describe the steps in carrying out an acid-alkali titration.			
7th	H Calculate the number of moles of solute in a given volume of solution.			
9th	H Deduce the mole ratio of acid to alkali from a balanced equation.			
9th	H Calculate the concentration of a solution using the results of an acid-alkali titration.			
9th	H Calculate the volume of solution required in an acid-alkali titration, given the concentrations of both the acid and the alkali.			

SC14e Molar volume of gases

Step	Learning outcome	Had a look	Nearly there	Nailed it!
6th	H Describe what is meant by the molar volume of a gas.			
8th	H Use the molar volume in calculations involving solids and gases in reactions.			
6th	H Recall Avogadro's law.			
9th	H Use Avogadro's law to calculate the volumes of reacting gases.			

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SC15 Dynamic Equilibria, Calculations Involving Volumes of Gases

SC15a Fertilisers and the Haber process

Step	Learning outcome	Had a look	Nearly there	Nailed it!
5th	Recall some compounds found in fertilisers.			
7th	Describe and compare small-scale and large-scale production of ammonium sulfate.			
6th	Describe how ammonium nitrate is made using ammonia produced by the Haber process.			

SC15b Factors affecting equilibrium

Step	Learning outcome	Had a look	Nearly there	Nailed it!
7th	Describe how changing the reaction conditions affects the relative amount of substances in an equilibrium mixture.			
8th	Predict how different conditions affect how quickly equilibrium is reached.			
8th	Explain how the conditions are chosen for industrial reactions.			
9th	Explain how the rate of reaction and equilibrium position determine the choice of reaction pathway.			

SC16 Chemical Cells and Fuel Cells

SC16a Chemical cells and fuel cells

Step	Learning outcome	Had a look	Nearly there	Nailed it!
5th	Recall why a chemical cell eventually stops producing a voltage.			
4th	Recall the main features of a hydrogen–oxygen fuel cell.			
8th	Evaluate the use of fuel cells for different purposes.			

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SC17 Groups in the Periodic Table

SC17a Group 1

Step	Learning outcome	Had a look	Nearly there	Nailed it!
	Explain the classification of alkali metals, halogens and noble gases, into groups in the periodic table.			
	Describe the main physical properties of alkali metals.			
	Describe the reactions of lithium, sodium and potassium with water.			
	Write word, balanced and **H** ionic equations (including state symbols) for the reactions of alkali metals.			
	Describe the pattern of reactivity of the alkali metals.			
	Explain how the electronic configurations of the atoms of alkali metals affect their reactivity.			

SC17b Group 7

Step	Learning outcome	Had a look	Nearly there	Nailed it!
	Recall the appearance of chlorine, bromine and iodine at room temperature.			
	Describe the trends in colour, melting point and boiling point of chlorine, bromine and iodine down the group, and use these to predict physical properties of other halogens.			
	Describe the chemical test for chlorine gas.			
	Describe the trends in the reactions of halogens with metals, and use this to predict reactions of other halogens.			
	Write word and balanced chemical equations, including state symbols, for the reactions of halogens with metals.			
	Describe hydrogen halides and their chemical properties.			

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SC17c Halogen reactivity

Step	Learning outcome	Had a look	Nearly there	Nailed it!
6th	Describe the relative reactivity of halogens.			
8th	Explain how the reactivity of halogens can be worked out from displacement reactions.			
9th	Write balanced chemical equations, including state symbols, for the displacement reactions of halogens.			
10th	**H** Explain how displacement reactions are examples of redox reactions.			
8th	**H** Write ionic equations, including state symbols, for displacement reactions of halogens.			
10th	Explain the order of reactivity of halogens (using electronic configurations).			

SC17d Group 0

Step	Learning outcome	Had a look	Nearly there	Nailed it!
8th	Explain why noble gases are chemically inert by referring to their electronic configuration.			
3rd	Describe uses of noble gases linked with their properties.			
6th	Describe the trends in the physical properties of the noble gases.			
8th	Use trends in physical properties to predict the hysical properties of other noble gases.			

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SC18 Rates of Reaction

SC18a Rates of reaction

Step	Learning outcome	Had a look	Nearly there	Nailed it!
6th	Describe different changes that can occur as a reaction proceeds.			
7th	Suggest different experimental methods to investigate rates of reaction (e.g. measurements of mass of reactants against time, volume of gas released against time, concentration of reactant or product against time).			
7th	Use graphs of changes (in mass, volume or concentration of reactant or product) against time, to interpret what is happening during reactions.			

SC18b Factors affecting reaction rates

Step	Learning outcome	Had a look	Nearly there	Nailed it!
8th	Explain what has to happen for reactions to take place.			
9th	Explain why changes in the energy of particles affect rates of reaction.			
9th	Explain why changes in the frequency of collisions between particles affect the rate of reaction.			
9th	Explain why changes in temperature, concentration, surface area and pressure affect the rate of reaction (surface area for solids, pressure for gases only).			
8th	Describe ways of speeding up or slowing down chemical reactions.			

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SC18c Catalysts and activation energy

Step	Learning outcome	Had a look	Nearly there	Nailed it!
6th	Describe what a catalyst does.			
7th	Explain how catalysts are useful.			
8th	Explain what the activation energy of a reaction is.			
9th	Explain how catalysts speed up chemical reactions.			
7th	Describe what enzymes are.			
6th	Name one or more examples of enzymes.			

SC19 Heat Energy Changes in Chemical Reactions

SC19a Exothermic and endothermic reactions

Step	Learning outcome	Had a look	Nearly there	Nailed it!
4th	Recall some examples of exothermic and endothermic changes.			
7th	Describe how heat changes in solution may be determined.			
8th	Describe the differences between exothermic and endothermic changes.			

SC19b Energy changes in reactions

Step	Learning outcome	Had a look	Nearly there	Nailed it!
9th	Describe exothermic and endothermic reactions in terms of energy changes when bonds are broken and formed.			
11th	**H** Use bond energies to calculate energy changes in reactions.			
9th	Explain the meaning of activation energy.			
10th	Draw and label reaction profiles.			

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