Name	

PLAN for GR8ness

You will never regret choosing yourself.

ELA

mathematics

science

social studies

Letter to Students and Families

Dear Students and Families,

We are excited to provide this new resource for 8th grade students as they prepare for their final semester in middle school. Research has shown that student achievement in 8th Grade is a key indicator of future success in college, and a successful transition from middle to high school is critical.

In the spring of 8th grade, students begin to show their readiness for high school through their classwork as well as four important exams: the STAAR Reading, Mathematics, Science, and Social Studies. We have designed this resource to communicate key information and to support students and families as they prepare for a strong finish to their time in middle school.

In this booklet, you will find the following:

- ✓ A calendar that shares major state-wide or district-wide events related to 8th Grade
- ✓ Key information to help you understand and plan for STAAR and SSI (Student Success Initiative)
- ✓ Proven strategies to increase academic success such as effective studying tips and test taking habits
- ✓ The most important content from your English, Mathematics, Science, and Social Studies courses for you to study
- ✓ A list of additional and free online resources to help study

Actions:

Families	Students
☐ Review the information about STAAR and the Student Success Initiative. ☐ Use this resource to help your student study (see p. 4 on ways to do this) ☐ Reach out to your campus if you have any questions.	☐ Review the information about STAAR and the Student Success Initiative. ☐ Bring this resource with you to school and to class daily. Check with your teacher if you're not clear if you can use it on a specific assignment. ☐ Use the resource to study key information from each course. (see p 4 on ways to do this) ☐ Understand the test taking strategies (see p. 6) and use them when you are practicing for and taking the STAAR.

Estimados estudiantes y familias:

Queremos compartir con ustedes el nuevo recurso para los estudiantes de Octavo grado mientras ellos se preparan para finalizar el semestre en la escuela media. Investigaciones han demostrado que el éxito estudiantil en el octavo grado es un indicador clave de éxito tanto en la preparatoria como en la universidad.

Durante el segundo semestre de Octavo grado, los estudiantes empiezan a mostrar qué tan preparados están para la preparatoria en sus trabajos de clase y también en los 4 importantes exámenes: STAAR de Lectura, Matemáticas, Ciencias, y Sociales.

Hemos diseñado este recurso para comunicar información clave y para apoyar a los estudiantes y sus a sus familias durante su preparación para el final del año.

En este documento se encuentra:

- ✓ Un calendario donde puede encontrar los eventos más importantes para los estudiantes de octavo grado en el distrito.
- ✓ Información clave que le ayudará a entender y a planear para el examen STAAR y SSI (Student Success Initiative - Iniciativa de Éxito de los Estudiantes).
- ✓ Estrategias para aumentar el éxito académico, consejos de estudio efectivos y hábitos para tomar exámenes.
- ✓ El contenido más importante de los cursos de inglés, matemáticas, ciencias y estudios sociales para que los estudiantes estudien.
- ✓ Una lista de recursos en línea adicionales y gratuitos para ayudar a estudiar

Acciones

Familias	Estudiantes
☐ Revisar la información sobre STAAR la Iniciativa de Éxito para los estudiantes (ISS) ☐ Usar este recurso para ayudar a estudiar a su estudiante (ver la página 4 para leer cómo hacerlo) ☐ Preguntar a la escuela de su hijo si tiene preguntas.	☐ Revise la información sobre STAAR la Iniciativa de Éxito para los estudiantes (ISS) ☐ Traiga este recurso con usted a la escuela y a la clase todos los días. Consulte con su maestro si no tiene claro si puede usarlo en una tarea específica. (ver la página 4 para leer cómo hacerlo) ☐ Comprenda las estrategias para tomar el examen (ver la página 6 para leer cómo hacerlo) y úselas cuando esté practicando y tomando el STAAR.

Table of Contents

General Resources

Study Skills

The following study skills and habits are based on recent research showing their effectiveness.

Create a study plan (and also seize the moment!)

- ✓ The most effective studying is spaced out, not crammed into a few sessions right before an exam. Use your planning calendar to schedule times you will study over multiple sessions for upcoming Unit Exams and the STAAR test.
- ✓ Attend tutorials when requested by your teacher and inquire about additional opportunities as needed.
- ✓ Think about opportunities to have your family members or friends quiz you on your ability to recall key information (see below for more information).
- ✓ If you find yourself with an extra 5-10 minutes, take the opportunity to review key information or complete practice problems. Research has shown that recalling key information or practicing in multiple locations helps long term retention!

Practice recalling key information.

- ✓ Memorization is not the only key to success but being able to recall key information will be necessary.
- ✓ Follow the process below, using the "Key Information" that follows for English, Mathematics, Science, and Social Studies:
    - o Read a section or fact carefully
    - o Put the section aside and hide your notes
    - o Recall everything you can
    - o Write it down or say it out loud
    - o Evaluate how accurately you remembered the original material
    - o Go back and repeat the process for parts you didn't remember well

Practice on a mix of problem types, using your test-taking strategies.

- ✓ When you review or practice, don't only focus on one type of problem at a time. In life, and in most assessments, you will see different types of problems mixed together, or interleaved. Practicing this way has been proven to be very effective.
- ✓ Use the test taking strategy (see p. __) to ensure you are reading each problem carefully and using annotations to make connections to what you know. Treat each new question as an opportunity to get better and learn how to use the strategy effectively.

Have a growth mindset and take the opportunity to learn from your mistakes.

- ✓ A person's belief that they have the ability to learn and grow, even when things get difficult, can lead to higher achievement.
- ✓ When you miss a question or piece of key information in your studying, go back to understand what you did wrong. If you cannot figure out what your mistake was, reach out to a peer or your teacher for support. Research has shown that people who identify mistakes learn more than those who do not.

Sources

- "Close the Book. Recall. Write It Down" by David Glenn in *The Chronicle of Higher Education*, May 1, 2009
- "Forget What You Know About Good Study Habits" by Benedict Carey in *The New York Times*, Sept. 7, 2010
- Take a Test to Really Learn, Research Suggests" by Pam Belluck in *The New York Times*, Jan. 21, 2011
- "Improving Students' Learning with Effective Learning Techniques: Promising Directions from Cognitive and Educational Psychology" by John Dunlosky, Katherine Rawson, Elizabeth Marsh, Mitchell Nathan, and Daniel Willingham in *Psychological Science in the Public Interest*, January 2013
- *How We Learn* by Benedict Carey (Random House, 2013, p. 223-228)
- "Strengthening the Student Toolbox: Study Strategies to Boost Learning" by John Dunlosky in *American Educator*, Fall 2013
- "Testing Ways to Outfox A.D.H.D." by Benedict Carey in *The New York Times*, February 16, 2016
- "The Importance of Testing as a Learning Strategy" by Henry Roediger and Peter Brown in *School Administrator*, May 2019
- "Learning to Learn: Tips for Teens and Their Teachers" by Ulrich Boser in *Educational Leadership*, May 2019
- https://www.mindsetworks.com/science/

Additional Online Resources

- **Khan Academy:** Khan Academy, is a website which allows students to learn at their own pace! There are a variety of academic videos which include guided support for learning new skills and assessment practice. Student can receive support in **Mathematics**, **Science**, **Social Studies** and **Reading/Literary Analysis**. The best part about using Khan Academy is that it helps you learn new information while providing additional practice on concepts that are bit challenging. You can keep working in Khan until you reach mastery. Students can create an account by entering their email address and a password.
  Khan Academy Website: https://www.khanacademy.org/
  New to Khan Academy? Not to worry. Visit the following link for tips on best ways to get the most out of your Khan Academy experience: https://www.khanacademy.org/resources/students

- **CK-12:** The CK-12 website is divided into **Mathematics and Science**.
  - Mathematics includes subjects from arithmetic to trigonometry and statistics.
  - Science includes biology, chemistry, and physics, as well as life, earth, and physical science.

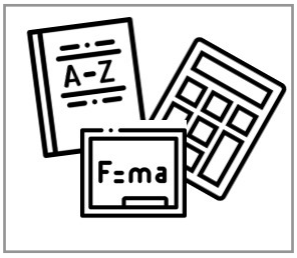
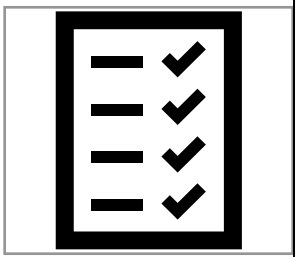
  Within each subject, you can select a variety of concepts (short, chapter-like lessons) and topics. Within these topics, you can choose from a series of reading, practice, videos and real-world applications. Students can create an account by entering their email address and a password.
  CK-12 Website: https://www.ck12.org/student/

- **Read Theory**: Read Theory is a website that helps you become a better reader. This site offers you an 8-question pre-test which sets you on a journey of short/leveled texts and online quizzes in reading practice. After using Reading Theory, you will become a stronger reader! Create an account with your email and password and begin the assessment**. Read Theory**: www.readtheory.org

- **Cram:** Compile your learning into digital flashcards for retrieval and retention practice. You can make your own flashcards or browse/search for existing flashcards. Cram is the ultimate study guide! Create an account and become a study master. **Cram Website:** https://www.cram.com/

Test Taking Strategies

General Strategies

Use Your Resources	Analyze Each Question Carefully	Record Your Confidence Level	Verify Your Answers
			
• For ELA: think about when using a dictionary would be helpful • For Math and Science: think about when using your reference materials or a calculator would be helpful.	• Use annotation strategies to connect what you know to the problem. • See more specific information in "Strategy for Each Question"	• Put a check mark next to questions where you feel confident in your answer. • Put a star next to questions where you are less sure of your answer and want to revisit.	Double check that each answer on your answer document matches what you selected in your booklet before you turn in your test.

Strategy for Each Multiple-Choice Question:

Annotate

- Annotate the question by underlining key words AND writing a brief connection between what you read and what you know.

Predict

- Revisit the text or stimulus, like a diagram (if applicable).
- Write, in your own words, a short answer.

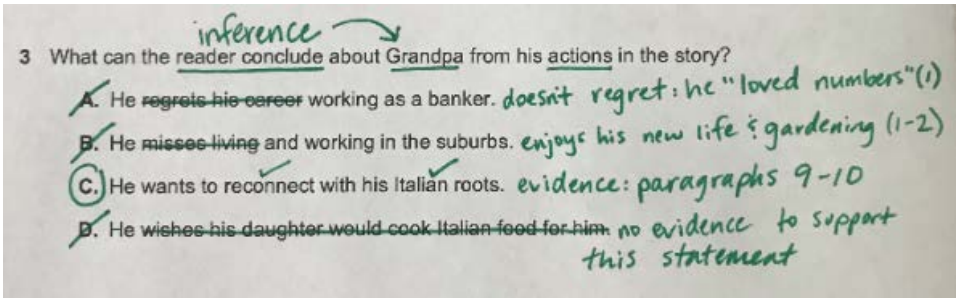
Eliminate

- Read each choice carefully, eliminating choices that do not completely/accurately match with the answer you've predicted.
- When you have two or more answer choices that seem correct:
  a. Look for nuances, or small differences.
  b. Cross out the specific part of the answer choice that makes it wrong.

Justify

- Write a brief justification for your final choice.

ELA Example



inference

3 What can the reader conclude about Grandpa from his actions in the story?

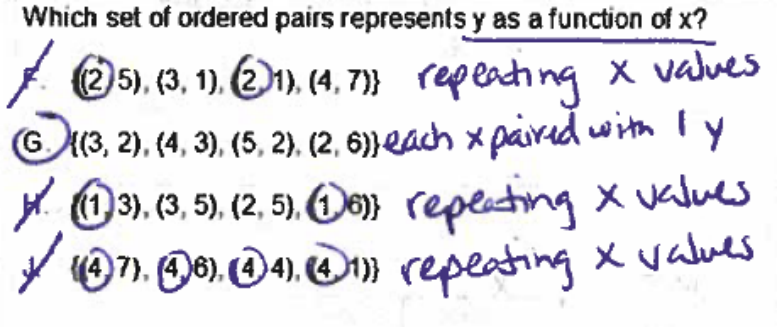
A. He ~~regrets his career~~ working as a banker. doesn't regret: he "loved numbers"(1)

B. He ~~misses living~~ and working in the suburbs. enjoys his new life & gardening (1-2)

C. He wants to reconnect with his Italian roots. evidence: paragraphs 9-10

D. He ~~wishes his daughter would cook Italian food for him~~ no evidence to support this statement

Math Example



Which set of ordered pairs represents y as a function of x?

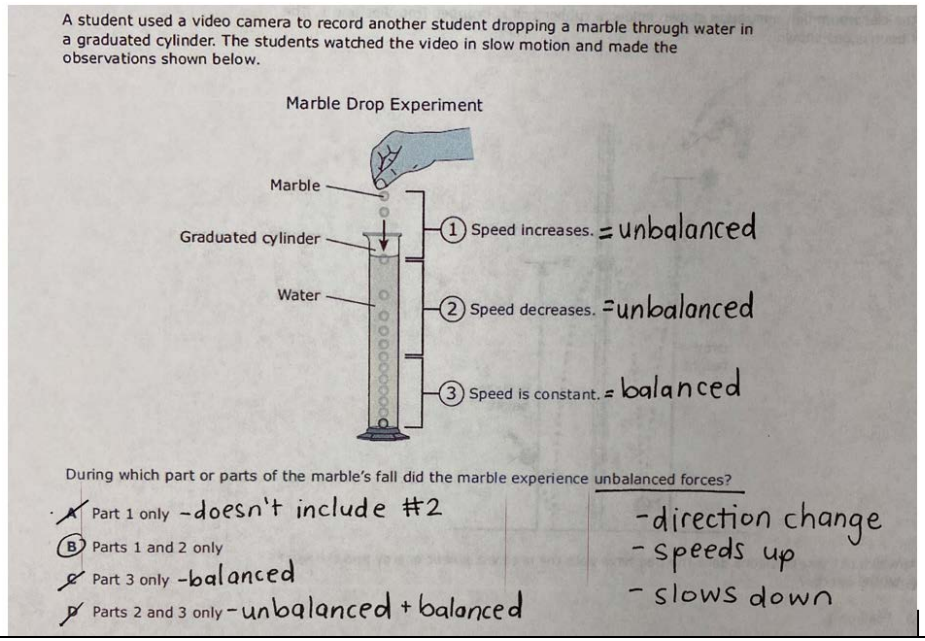
F. {(2, 5), (3, 1), (2, 1), (4, 7)} repeating x values

G. {(3, 2), (4, 3), (5, 2), (2, 6)} each x paired with 1 y

H. {(1, 3), (3, 5), (2, 5), (1, 6)} repeating x values

J. {(4, 7), (4, 6), (4, 4), (4, 1)} repeating x values

Science Example



A student used a video camera to record another student dropping a marble through water in a graduated cylinder. The students watched the video in slow motion and made the observations shown below.

Marble Drop Experiment

Marble

Graduated cylinder

Water

1 Speed increases. = unbalanced

2 Speed decreases. = unbalanced

3 Speed is constant. = balanced

During which part or parts of the marble's fall did the marble experience unbalanced forces?

A Part 1 only - doesn't include #2

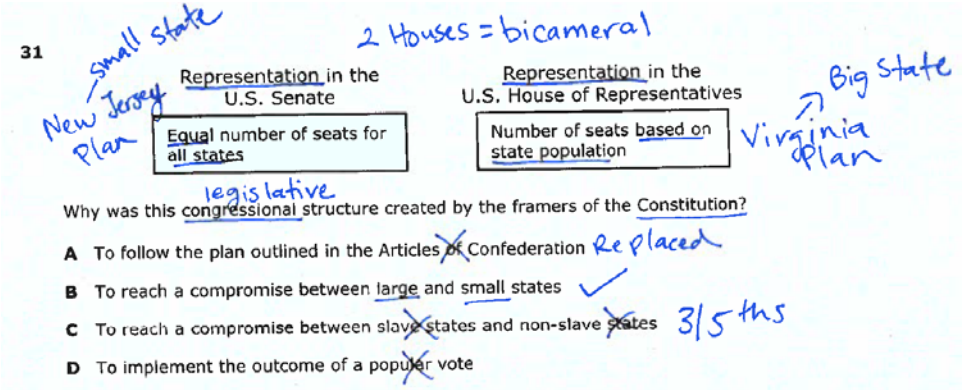
B Parts 1 and 2 only

C Part 3 only - balanced

D Parts 2 and 3 only - unbalanced + balanced

- direction change
- speeds up
- slows down

Social Studies Example



31

small state

2 Houses = bicameral

Representation in the U.S. Senate	Representation in the U.S. House of Representatives
Equal number of seats for all states	Number of seats based on state population

New Jersey Plan

Big State

Virginia Plan

legislative

Why was this congressional structure created by the framers of the Constitution?

A To follow the plan outlined in the Articles of Confederation Replaced

B To reach a compromise between large and small states

C To reach a compromise between slave states and non-slave states 3/5ths

D To implement the outcome of a popular vote

STAAR and SSI Information

The Texas Student Success Initiative (SSI) was passed by the 76th Texas Legislature in 1999. The purpose of this initiative is to ensure that every student makes the academic progress necessary to show a sufficient understanding of the knowledge and skills taught and tested at each grade level.

As grades 5 and 8 are the final grades in elementary and middle school, sufficient preparation is absolutely crucial for students. The SSI requires that students in 5th and 8th grade meet the passing standards ("Approaches" level or higher) on STAAR tests in mathematics and reading before they can advance to the next grade at Texas public/charter schools, including at YES Prep.

Please note that these testing requirements are part of an overall system of support for student academic achievement. This system includes:

- Identification of student needs and ongoing progress monitoring throughout the school year with assistance provided to students with identified academic areas of growth

- Three testing opportunities to pass the state assessments in mathematics and reading:
  - 1st administration: April 7-8, 2020
  - 2nd administration: May 12-13, 2020 (for students who have not yet passed *both* mathematics and reading)
  - 3rd administration: June 23-24, 2020 (for students who have not yet passed *both* mathematics and reading)

- Additional required instruction after each test administration for students have not yet passed *both* the mathematics and reading assessment, including those who were absent:
  - Before the 2nd administration: required tutorials
  - Before the 3rd administration: required summer school (June 15 – June 22). Note: This may be located at a different YES Prep campus.

- A grade placement committee, consisting of a campus administrator, teacher, and parent/guardian, will meet when a student has not met the passing standard after the 2nd administration and after the 3rd administration.
  - Note: Decisions made about grade placement will be made by the ARD committee for students in Special Education.

- An instructional plan for the next school year for every student who has not met the passing standard after the 3rd administration, regardless of whether the student is retained or, upon parent appeal, is promoted by the grade placement committee.

The SSI recognizes and supports the important role parents play in the education of their children. Your child's teacher(s) and I depend upon and look forward to working with you to help your child succeed. Additionally, you may access to your child's STAAR data on the Student Portal (www.texasassessment.com) at any time. Please contact the front office if you need help with locating your child's unique access code.

Please contact your teacher if you have additional questions or concerns.

Estimado padre / tutor del estudiante de grado 8:

Hoy, su hijo recibió un folleto del estado de Texas titulado Prepárese para el éxito sobre SSI (Iniciativa para el éxito del estudiante). Los objetivos de esta carta son garantizar que comprenda el contenido del folleto, los requisitos de SSI en YES Prep y dónde obtener información adicional, si lo desea.
La Iniciativa de Éxito Estudiantil de Texas (SSI), que fue aprobada por la 76a. Legislatura de Texas en 1999. El propósito de esta iniciativa es garantizar que cada estudiante haga el progreso académico necesario para mostrar una comprensión suficiente del conocimiento y las habilidades enseñadas y evaluadas en cada grado

Como los grados 5 y 8 son los grados finales en la escuela primaria y secundaria, una preparación suficiente es absolutamente crucial para los estudiantes. El SSI requiere que en los grados 5 y 8 los estudiantes cumplan con los estándares aprobados (nivel de "Enfoques" o superior) en las pruebas STAAR en matemáticas y lectura antes de poder avanzar al próximo grado en las escuelas públicas / chárter de Texas, incluso en YES Prep.

Tenga en cuenta que estos requisitos de evaluación son parte de un sistema general de apoyo para el rendimiento académico de los estudiantes. Este sistema incluye:

- Identificación de las necesidades de los estudiantes y monitoreo continuo del progreso durante el año escolar con asistencia brindada a los estudiantes con áreas académicas identificadas de crecimiento.

- Tres oportunidades de evaluación para aprobar las evaluaciones estatales en matemáticas y lectur a:
    - 1a administración: 7 y 8 de abril de 2020
    - 2da administración: 12-13 de mayo de 2020
      (para estudiantes que aún no han aprobado las matemáticas y la lectura)
    - 3a administración: 23-24 de junio de 2020
      (para estudiantes que aún no han aprobado las matemáticas y la lectura)

- La instrucción adicional requerida después de cada administración de prueba para los estudiantes aún no ha aprobado la evaluación de matemáticas y lectura, incluidos los que estuvieron ausentes:
    - Antes de la 2da administración: tutoriales requeridos
    - Antes de la 3ª administración: se requiere escuela de verano

- Un comité de colocación de grado, compuesto por un administrador de la escuela, un maestro y un padre / tutor, se reunirá cuando un estudiante no haya cumplido con el estándar de aprobación después de la segunda administración y después de la tercera administración.
    - Nota: Las decisiones tomadas sobre la colocación de grado serán tomadas por el comité ARD para estudiantes de Educación Especial.

- Un plan de instrucción para el próximo año escolar para cada estudiante que no haya cumplido con el estándar de aprobación después de la 3ª administración, independientemente de si el estudiante es retenido o, en apelación de los padres, es promovido por el comité de colocación de grado.

El SSI reconoce y apoya el importante papel que juegan los padres en la educación de sus hijos. Los maestros de su hijo y yo dependemos y esperamos trabajar con usted para ayudar a que su hijo tenga éxito. Además, puede acceder a los datos STAAR de su hijo en el Portal del estudiante (www.texasassessment.com) en cualquier momento. Comuníquese con la recepción si necesita ayuda para localizar el código de acceso único de su hijo.

Comuníquese conmigo si tiene preguntas o inquietudes adicionales.

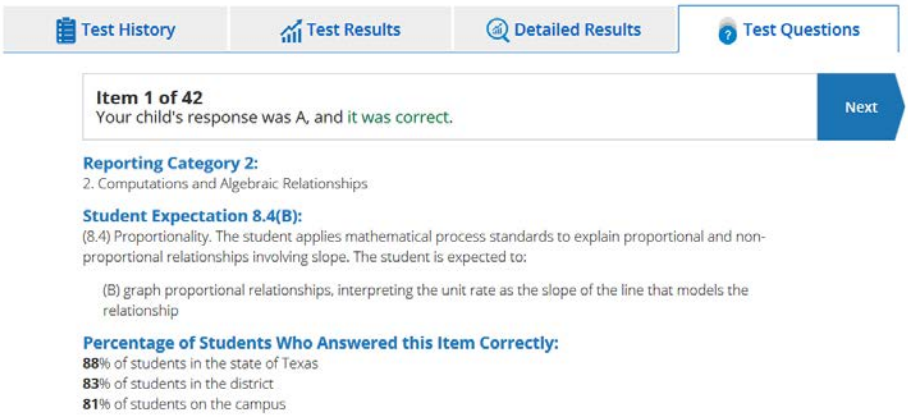
Accessing Your STAAR Scores

Step 1: You may view your assessment results and history at www.texasassessment.com/students. You will need to enter a unique access code and your students' date of birth. This unique access code will be assigned to your child throughout their STAAR testing years.

Your access code is: _____

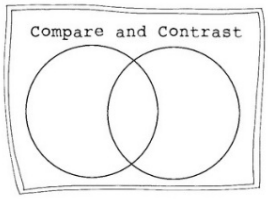
Step 2: Once you login, you will see a screen like the image below. Click on the **Mathematics 8** assessment.

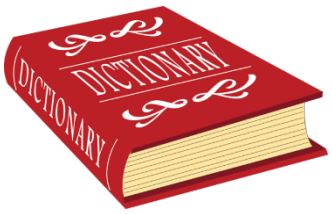
Step 3: Select the fourth tab at the top titled Test Questions. The top section states if the student answered the question correctly. Using this tab, you can identify the TEKS (student expectation) being assessed, and the rationale for each answer choice being incorrect and correct.

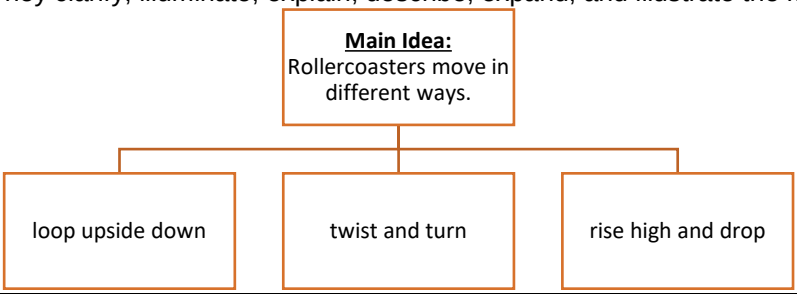
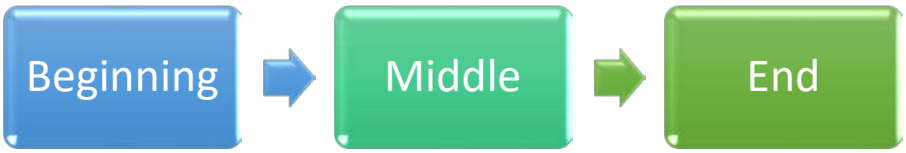


English Resources

Key Information

<table>
<tr><th colspan="2">These are the reading genres that could appear on STAAR.</th></tr>
<tr><td><u>Fiction</u>
written stories about people and events that are not real; literature that tells stories which are imagined by the writer
 
</td><td><u>Literary Nonfiction</u>
a type of prose that employs the literary techniques usually associated with fiction or poetry to report on persons, places, and events in the real world
(also called creative nonfiction)
  </td></tr>
<tr><td><u>Drama</u>
a piece of writing that tells a story and is performed on a stage; a play
  </td><td><u>Poetry</u>
the writings of a poet; poems
  </td></tr>
<tr><td><u>Informational</u>
writing that explains or informs; a subset of the larger category of nonfiction. Its primary purpose is to inform the reader about the natural or social world.
 
</td><td><u>Argumentative</u>
Argumentative writing presents both sides of an issue, appeals to logic, and marshals evidence and reasons for supporting one side or the other. The conclusion usually proposes the action or point of view that the writer would like the reader to take. (also called persuasive writing)
 
</td></tr>
<tr><td colspan="2"><u>Paired Passages</u>
On the exam, you will be asked to compare and contrast two passages. These two passages could be of the same genre or they could be of differing genres. Be prepared to compare the authors' purposes/messages, main ideas, themes, etc.
 
</td></tr>
</table>

These are skills that could be tested on the Reading 8 STAAR.	
8.2	**Vocabulary. Remember, use your dictionary / thesaurus for these questions!**
A	*Use print or digital resources to determine the meaning, syllabication, pronunciation, word origin, and part of speech.*  • **Meaning**: the idea represented by a word • **Syllabication**: the process of forming or dividing words into syllables • **Pronunciation**: the way in which a word is said • **Word origin**: the language from which the word came • **Part of speech**: a class of words (such as adjectives, adverbs, nouns, verbs, etc.) that are identified according to the kinds of ideas they express and the way they work in a sentence
B	*Use context within or beyond a paragraph to clarify the meaning of unfamiliar or ambiguous words.* • **Context clues**: hints that the author gives to help define a difficult or unusual word
C	*Determine the meaning and usage of grade-level academic English words derived from Greek and Latin roots such as* ast*,* qui*,* path*,* mand/mend*, and* duc*.* • ***ast****:* a person who practices something (ex: gymnast) • ***qui****:* rest (ex: quiet, requiem) • ***path****:* feel, hurt (ex: pathetic, pathology) • ***mand****:* to order or command (ex: mandate) • ***duc/duct****:* lead (ex: conductor, introduction)
8.5	**Comprehension skills.**
D	*Create mental images to deepen understanding.*  • **Mental image**: the picture you create in your head while reading using prior knowledge and background information
E	*Make connections to personal experiences, ideas in other texts, and society.* • **Make connections**: to identify relationships between a text to other texts, to self, and to the world • **Intertextual links**: when you compare and contrast ideas within two texts
F	*Make inferences and use evidence to support understanding.*  • **Inference**: a guess or conclusion a reader makes based on what is in the text. An inference is not something that the author tells the reader directly but something that the reader must conclude on their own. An inference must be based on text evidence, or what the text says. • **Text evidence**: information in a text that backs up the main point, or points in general, of a claim or argument

G	*Evaluate details read to determine the main idea and key ideas.* • **Key idea**: also referred to as the main idea, it is the primary concept that the author wants to communicate to the readers about a topic • **Main idea**: the most important thing to take away from the reading. It is what the reading is mostly about. • **Supporting details**: facts, statements, and examples which guide readers to a full understanding of the main idea. They clarify, illuminate, explain, describe, expand, and illustrate the main idea. 
H	*Synthesize information to create new understanding.* • **Synthesize**: to merge new information with prior knowledge or information from other texts to generate insight through a new idea, perspective, or opinion • **Synthesis**: a combination, usually a shortened version, of several texts into one or of several ideas within a text into one. It contains the important points in the text and is written in your own words.
8.6	**Response skills.**
C	*Use text evidence to support an appropriate response.* • **Text evidence**: information in a text that backs up the main point, or points in general, of a claim or argument
D	*Paraphrase and summarize texts in ways that maintain meaning and logical order.* • **Paraphrase**: a restating of the meaning of something in different words keeping the narrator or author's perspective • **Summarize**: to sum up; present main points briefly • **Summary**: a statement that expresses or covers the main points of an entire passage or a smaller section of text. A good summary covers main ideas and important details of the text in a logical order – beginning, middle, and end. A good summary is much shorter than the actual passage of text because it contains only the most essential information or main ideas. 
G	*Discuss and write about the explicit or implicit meanings of text.* • **Explicit meaning**: the exact meaning that is stated clearly and in detail, leaving no room for confusion or doubt • **Implicit meaning**: meaning that is suggested, rather than directly expressed

J	*Defend or challenge the authors' claims using relevant text evidence.* • **Defend**: to speak or write in support of (someone or something that is being challenged or criticized) • **Challenge**: to question the action or authority of someone or something • **Authors' claim**: a statement of the author's argument
8.7	**Multiple genres – Literary elements.**

A	*Analyze how themes are developed through the interaction of characters and events.*
	
	• **Theme**: a central message of a story that the author wants the reader to take away. It is a universal truth. A text can have multiple themes.
	• **Universal truth**: a statement or message that applies to many people regardless of time or space
	• **Character**: any person, animal, or figure represented in literature
	  o **Antagonist**: a character who opposes, or goes against, the main character; often considered a villain, or "bad guy"
	  o **Protagonist**: the central character who drives the story forward
	• **Events**: situations that happens in a story; a series of which makes up the plot
	
	 

B	*Analyze how characters' motivations and behaviors influence events and resolution of the conflict.*
	
	• **Characterization**: how a character is portrayed through his/her speech, thoughts, effects on others, actions, and looks
	• **Character's attitude**: a character's feelings about someone or something
	• **Character's behavior**: the way the character acts or behaves
	• **Character motivation**: a reason behind a character's specific action or behavior
	• **Character's qualities (traits)**: valued aspects of a character's behavior
	• **Conflict**: the problem or extended struggle that takes place in a story
	  o **External conflict**: a problem a character experiences with another character, with a group, or with nature
	  o **Internal conflict**: a problem the character experiences within themselves
	  o **Moral dilemma**: when a character must decide between two or more choices all which blur the line between right and wrong
	  o **Unresolved conflicts**: when a story ends with no clear outcome or conclusion
	• **Resolution of conflict**: when the problem is resolved
	
	  

C *Analyze non-linear plot development such as flashbacks, foreshadowing, subplots, and parallel plot structures and compare it to linear plot development.*

- **Plot**: the events that make up a story that are usually presented in a predictable structure or pattern almost all stories follow
  - **Linear plot**: a story plot that follows a traditional plot line
  - **Non-linear plot**: a story told out of order
  - **Parallel plots**: secondary plots that are usually linked to the primary plot by a similar character or theme
  - **Subplots**: smaller plot lines that take place within the bigger plot line. Subplots may include their own conflicts and resolutions.

- **Flashback**: scene that interrupts the action of a work to show a previous event
- **Foreshadowing**: hint of what is to come, usually negative

- **Plotline**:

  - **Exposition**: the beginning of the story when authors introduce background information about events, settings, characters, or other elements of a work to the audience or readers
  - **Rising action**: characters experience problems and must respond to the problems. In the rising action, things usually keep getting worse or more suspenseful.
  - **Climax**: the most exciting point in the story. This is where the problem or conflict reaches the most suspenseful moment, and everything changes.
  - **Falling action**: the turning point and climax have already occurred, the action slows down, and the problems or conflicts begin to be resolved
  - **Resolution**: when the problems are resolved, and the story concludes

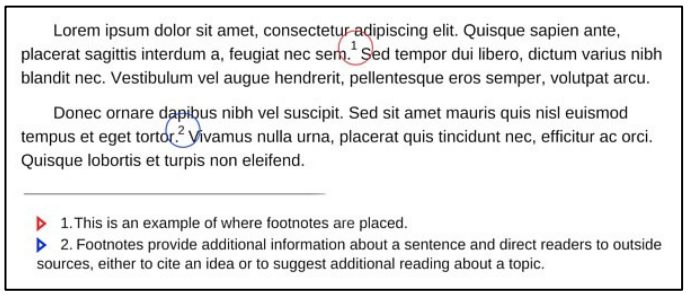
D *Explain how the setting influences the values and beliefs of characters.*

- **Setting**: the time and place in which events in a narrative occur. Elements of setting may include cultural setting, historical setting, geography, and time of day.
  - **Cultural setting**: the beliefs, traditions, and values that surround and impact the characters
  - **Historical setting**: the events occurring in history that are relevant to the people and places in the text
- **Character's values**: a character's principles or standards of behavior; one's judgment of what is important in life
- **Characters' beliefs**: what a character accepts as true or right

8.8	**Multiple genres – Genres.**
B	*Analyze the effect of graphical elements such as punctuation and line length in poems across a variety of poetic forms such as epic, lyric, and humorous poetry.* • **Punctuation**: the marks (such as periods and commas) in a piece of writing that make its meaning clear and that separate it into sentences, clauses, etc. • **Line length**: how long each line in a poem is • **Epic poetry**: a long, narrative poem that is usually about heroic deeds and events that are significant to the culture of the poet. Many ancient writers used epic poetry to tell tales of intense adventures and heroic feats. • **Lyric poetry**: a poem in which the poet either expresses his feelings or emotions • **Humorous poetry**: poetry that is comical
C	*Analyze how playwrights develop dramatic action through the use of acts and scenes.* • **Playwright**: author of the play • **Dramatic action**: the action in a scene that presents a clear and significant meaning to the audience; it contains conflict, tension, suspense, uncertainty, and/or fear • **Act**: the principal divisions of a theatrical work (as a play or opera) • **Scene**: A scene can refer to the actual action that takes place in a specific and single setting and moment in time. It usually begins with the entrance of an actor (which starts the action) and ends with the exit of the actor (the signal of the end of action).  • **Other dramatic elements**: o **Aside**: a comment made directly to the audience that the other characters on stage cannot hear. o **Dialogue**: when two or more characters speak to each other o **Dramatic irony**: moments when the audience knows more than the characters do about plot or conflict o **Interior monologue**: a representation of an “inner voice” or “thinking in words” o **Monologue**: when one character monopolizes, or takes over, the conversation o **Props**: objects used in the setting of a play o **Soliloquy**: when a character speaks true thoughts alone on stage o **Stage directions**: *italicized* moments in the play that give actors background information or directions about how to move or speak o **Stage**: where the action of the play takes place
D	*Analyze characteristics and structural elements of informational text, including:*
	i. *the controlling idea or thesis with supporting evidence* • **Controlling (central) idea**: the main point or underlying direction of a piece of writing • **Thesis statement**: a sentence stating the main claim of a composition. It is usually included as the last sentence in the introductory paragraph and revisited in the conclusion. • **Supporting evidence**: facts, statements, and examples which guide readers to a full understanding of the main idea. They clarify, illuminate, explain, describe, expand, and illustrate the main idea.

ii. *features such as footnotes, endnotes, and citations*

- **Footnote**: a note of reference, explanation, or comment usually placed below the text on a printed page
- **Endnote**: a source citation that refers the readers to a specific place at the end of the paper where they can find out the source of the information or words quoted or mentioned in the paper. When using endnotes, your quoted or paraphrased sentence or summarized material is followed by a superscript number.
- **Citation**: the documentation of the sources of information that you include in your papers, presentations, and any other projects. The reason for citations and documentation is to credit the author and publisher for their original work and to enable your readers to consult the same sources.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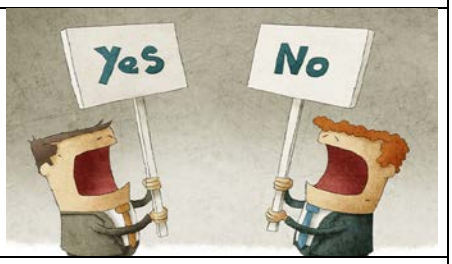
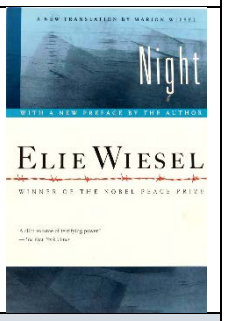
1. This is an example of where footnotes are placed.
2. Footnotes provide additional information about a sentence and direct readers to outside sources, either to cite an idea or to suggest additional reading about a topic.

iii. *multiple organizational patterns within a text to develop the thesis*

- **Organizational pattern**: the way in which the author arranges ideas and information in an informational text
  - **Categories/categorization**: the assignment of items to a group, often named or numbered, based on similarities or defined criteria
  - **Cause and effect**: a structure that describes or discusses an event/action that is caused by another event/action. There may be a single cause and effect or several causes with several effects.
  - **Chronological**: a list of events told in the order that they happened; also called time order, narration, or sequence of events
  - **Comparison**: writing that shows what things have in common, how items or concepts are alike, and/or the similarities between elements or ideas
  - **Contrast**: writing that shows the differences between items or concepts, how things are not alike, and/or distinctions between elements or ideas
  - **Descriptive (description)**: a text structure that describes a topic, idea, person, place, or thing by its features, characteristics, or examples
  - **List of items**: a series of items, facts, reasons, examples, features or characteristics that support the main idea is listed in whatever order the author prefers; also called listing, series, addition, or enumeration
  - **Narration**: the telling of a story, usually based on personal experience. It must have some purpose, as it usually incorporates descriptive elements--senses, metaphors, and similes. Narration is used to get the reader to "identify" with the writer on some level, and thereby ultimately agree with the writer.
  - **Order of importance**: a structure in which details are given in a list, but the author indicates which items in the list are more important than others, either from the least important to the most important or from the most to the least important; also known as chain of command or hierarchical
  - **Problem and solution**: a text structure describes a problem, sometimes explains why the problem exists, and then gives one or more possible solutions
  - **Pro-con (advantage-disadvantage)**: a text structure that presents both sides of an issue with equal emphasis and fairness; divides ideas about a topic into the positive and negative points
  - **Subcategories**: with respect to a given category, a narrower category

E	*analyze characteristics and structures of argumentative text by:*
	i. *identifying the claim and analyzing the argument* • **Claim**: an argument • **Argument**: a statement, reason, or fact for or against a point
	ii. *identifying and explaining the counter argument* • **Counter argument**: a response that addresses the opposite perspective (concession), and then attempts to argue against that perspective (refutation) 
	iii. *identifying the intended audience or reader* • **Intended audience**: who the author is trying to communicate with in their writing
F	*Analyze characteristics of multimodal and digital texts.* • **Multimodal**: a text using two or more modes (communication including images, sounds, signs, gestures, etc.)
G	*Analyze the distinguishing characteristics of literary nonfiction such as diaries, journals, and memoirs.* • **Diary**: a book in which you write down your personal experiences and thoughts regularly • **Journal**: a book in which you write down your personal experiences and thoughts • **Memoir**: a written account in which someone describes and reflects upon past, personal experiences 
8.9	**Author's purpose and craft.**
A	*Explain the author's purpose and message within a text.* • **Author's purpose**: why the author is writing • **Author's message**: the big idea that the author is trying to convey to the reader
B	*Analyze how the use of text structure contributes to the author's purpose.* • **Text structure**: the organization of a paragraph or essay. See *organizational patterns.*

<table>
<tr>
<td>C</td>
<td>
Analyze the author's use of print and graphic features to achieve specific purposes.

• Graphic features: pictures and other images that accompany a piece of text to enhance its meaning for the reader. Some examples of graphic features include photographs, drawings, maps, charts and diagrams.
o Cartoon: an illustration with a humorous message. A political cartoon is an illustration with a social or political message.
o Chart: a sheet of information
o Diagram: a simplified structure showing how something works
o Graph: a visual that shows how two variables interact with each other
o Illustration: a drawing
o Map: an illustration of a geographical region
o Table: shares data using rows and columns rather than a visual
o Timeline: the passage of time (and events that occurred) on a straight line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<tr>
<td>D</td>
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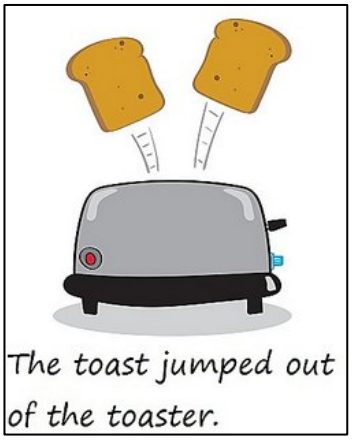
Describe how the author's use of figurative language such as extended metaphor achieves specific purposes.

• Figurative language: language that uses words or expressions with a meaning that is different from the literal interpretation
o Allegory: a work of written, oral, or visual expression that uses symbolic figures, objects, and actions to convey truths or generalizations about human conduct or experience. In an allegory, things stand for other things on a one-to-one basis.
o Allusion: a reference to historical, mythical, or literary person, place, or thing. In many works of literature, allusions to figures in the Bible and from Greek mythology are common. (e.g. "Plan ahead; it was not raining when Noah built the ark.")
o Analogy: a comparison between like features of two different things
▪ Extended metaphor: a comparison that a writer develops over multiple lines of poetry or multiple paragraphs of a story
▪ Metaphor: an implied comparison between two usually unrelated concepts or objects
▪ Simile: a comparison between two unlike things using like or as
o Hyperbole (overstatement): deliberate/outrageous exaggeration
o Personification: attributing human qualities to inanimate objects
o Symbol: a concrete object that represents an abstract quality or idea


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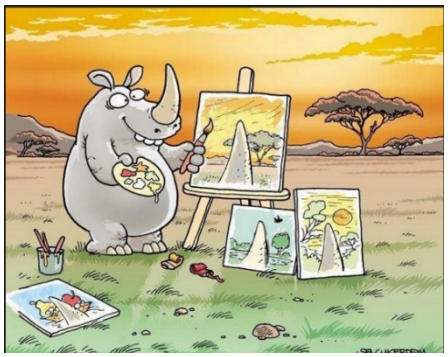
E *Identify and analyze the use of literary devices, including multiple points of view and irony.*

- **Literary device**: narrative techniques that add texture, energy, and excitement to the narrative, capture the reader's attention, and convey information. Some of the more common literary devices include: allusion, diction, foreshadowing, imagery, metaphor, personification, and point of view.
- **Imagery**: language that appeals to the five senses: sight, taste, touch, sound, or smell; also called sensory language, sensory images, or sensory details
- **Point of view**: the perspective from which the narrative is told
  - **First person**: narrator is a person in the story (I, we)
  - **Second person**: Second person is generally only used in instructional writing. It is told from the perspective of "you".
  - **Third person**: narrator is not part of the story (he, she, they)
  - **Limited**: author is restricted to the minds of a few or a single character
  - **Omniscient**: author can enter the minds of all characters
  - **Objective**: narrator tells a story without describing any character's thoughts, opinions, or feelings; instead, it gives an objective, unbiased point of view.
  - **Subjective**: narrator is biased and shares his or her thoughts, opinions, and feelings about the characters and action in the story
- **Irony**: the opposite of what is expected



This rhinoceros has a limited point of view.

F *Analyze how the author's use of language contributes to the mood, voice, and tone.*

- **Mood**: how we, the audience or reader, are made to feel as readers, or the emotion created by the author
- **Voice**: the distinct personality of a piece of writing
- **Tone**: the author's attitude towards the subject

G *Explain the purpose of rhetorical devices such as analogy and juxtaposition and of logical fallacies such as bandwagon appeals and circular reasoning.*

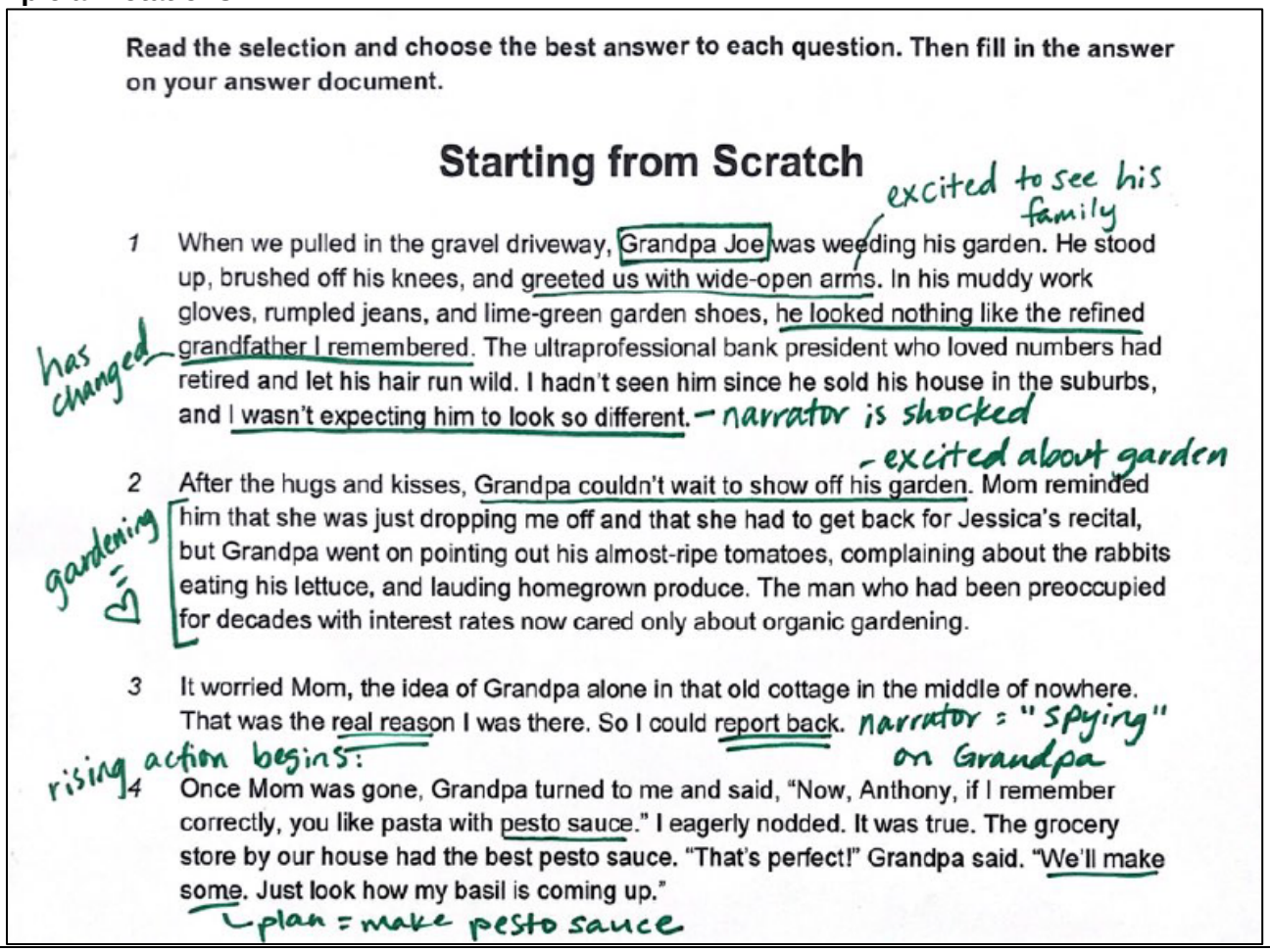
- **Rhetorical device**: A rhetorical device uses words in a certain way to convey meaning or to persuade. It can also be a technique used to evoke emotions within the reader or audience.
  - **Analogy**: a comparison between like features of two different things for the purpose of clarification
  - **Juxtaposition**: putting two or more things side by side in order to compare them

- **Logical fallacy**: faulty reasoning or the breakdown of logic in an argument
  - **Bandwagon appeal**: rhetorical device that a writer or speaker uses to make it seem like everyone else agrees or is doing something, and so the audience should, too
  - **Circular reasoning**: Also known as a circular argument, it is an argument that supports a statement through repetition of the original statement. For example, to say "these people are evil because they are wicked," gives no support for why people are wicked and therefore no support for why they are evil since the two are essentially the same thing.

This is an example of juxtaposition.

Annotating is the key to success!		
Tools	Techniques	Information to mark
• Highlighters • Colored pencils • Colored pens • Sticky notes	• Highlighting • Underlining (straight and squiggly lines) • Boxing and circling • Enclosing information in [brackets] and (parentheses) • Number (1, 2, 3) and/or letting (a, b, c) important points • Drawing arrows to connect related ideas → • Using icons (e.g. smiley faces, stars, etc.) to express your reaction to the text ☺ ★	• Title, subtitle, headings, author's name, information about the author, captions that explain images • Unfamiliar words • Main ideas • Important details • Steps in a process • Examples of literary devices (e.g. simile, metaphor) • The "5 Ws": *who, what, when, where, why* • Repetitions • Patterns

Example annotations:



Read the selection and choose the best answer to each question. Then fill in the answer on your answer document.

Starting from Scratch

excited to see his family

1 When we pulled in the gravel driveway, Grandpa Joe was weeding his garden. He stood up, brushed off his knees, and greeted us with wide-open arms. In his muddy work gloves, rumpled jeans, and lime-green garden shoes, he looked nothing like the refined grandfather I remembered. The ultraprofessional bank president who loved numbers had retired and let his hair run wild. I hadn't seen him since he sold his house in the suburbs, and I wasn't expecting him to look so different. – narrator is shocked

has changed

– excited about garden

2 After the hugs and kisses, Grandpa couldn't wait to show off his garden. Mom reminded him that she was just dropping me off and that she had to get back for Jessica's recital, but Grandpa went on pointing out his almost-ripe tomatoes, complaining about the rabbits eating his lettuce, and lauding homegrown produce. The man who had been preoccupied for decades with interest rates now cared only about organic gardening.

gardening ☺

3 It worried Mom, the idea of Grandpa alone in that old cottage in the middle of nowhere. That was the real reason I was there. So I could report back. narrator = "spying" on Grandpa

rising action begins:

4 Once Mom was gone, Grandpa turned to me and said, "Now, Anthony, if I remember correctly, you like pasta with pesto sauce." I eagerly nodded. It was true. The grocery store by our house had the best pesto sauce. "That's perfect!" Grandpa said. "We'll make some. Just look how my basil is coming up."

↳ plan = make pesto sauce

Mathematics Resources

STAAR Blueprint

STAAR Grade 8 Mathematics Blueprint

Reporting Categories	Number of Standards		Number of Questions	
Reporting Category 1: Numerical Representations and Relationships	Readiness Standards	1	**4**	
	Supporting Standards	3		
	Total	4		
Reporting Category 2: Computations and Algebraic Relationships	Readiness Standards	5	**16**	
	Supporting Standards	9		
	Total	14		
Reporting Category 3: Geometry and Measurement	Readiness Standards	5	**15**	
	Supporting Standards	9		
	Total	14		
Reporting Category 4: Data Analysis and Personal Financial Literacy	Readiness Standards	2	**7**	
	Supporting Standards	6		
	Total	8		
Readiness Standards	**Total Number of Standards**	**13**	**60%–65%**	**25–27**
Supporting Standards	**Total Number of Standards**	**27**	**35%–40%**	**15–17**
Total Number of Questions on Test			**38 Multiple Choice 4 Griddable 42 Total**	

Texas Education Agency
Student Assessment Division
November 2016

STAAR GRADE 8 MATHEMATICS REFERENCE MATERIALS

LINEAR EQUATIONS

Slope-intercept form	$y = mx + b$
Direct variation	$y = kx$
Slope of a line	$m = \frac{y_2 - y_1}{x_2 - x_1}$

CIRCUMFERENCE

Circle	$C = 2\pi r$	or	$C = \pi d$

AREA

Triangle	$A = \frac{1}{2}bh$
Rectangle or parallelogram	$A = bh$
Trapezoid	$A = \frac{1}{2}(b_1 + b_2)h$
Circle	$A = \pi r^2$

SURFACE AREA

	Lateral	Total
Prism	$S = Ph$	$S = Ph + 2B$
Cylinder	$S = 2\pi rh$	$S = 2\pi rh + 2\pi r^2$

VOLUME

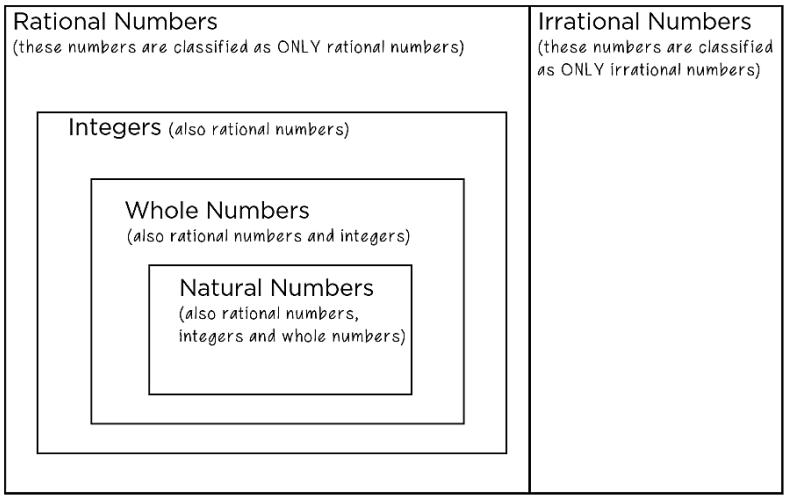
Prism or cylinder	$V = Bh$
Pyramid or cone	$V = \frac{1}{3}Bh$
Sphere	$V = \frac{4}{3}\pi r^3$

ADDITIONAL INFORMATION

Pythagorean theorem	$a^2 + b^2 = c^2$
Simple interest	$I = Prt$
Compound interest	$A = P(1 + r)^t$

Unit 1: The Real Number System

TEKS 8.2A	What do I need to be able to do?	Important Reminders
extend previous knowledge of sets and subsets using a visual representation to describe relationships between sets of real numbers	• Classify a real number • Make connections between subsets of numbers	• Numbers can be a part of more than 1 subset • Repeating decimals are rational numbers NOT irrational



Irrational #s	Is it π? Is it a non-perfect square number? Is it a decimal that does NOT end AND does NOT repeat?
Rational #s	Can I write this number as a fraction? Is it a repeating decimal? Is it a decimal that ends? Is it expressed as a percent?
Integers	Is it a negative, positive number or 0 (with NO fractional or decimal parts)?
Whole #s	Is it 0? Is it a positive number ONLY (with NO fractional or decimal parts)?
Natural #s	If I start counting at 1, will I say this number?

TEKS 8.2B	What do I need to be able to do?	Important Reminder:
approximate the value of an irrational number, including □ and square roots of numbers less than 225, and locate that rational number approximation on a number line	• KNOW the perfect square numbers of 1-15 • KNOW that any number that is NOT a perfect square number, the square root will fall between 2 whole numbers	• $\sqrt{\ }$ does NOT mean $\div 2$

Perfect Square Numbers/Square Roots (MEMORIZE these)

$\sqrt{1} = 1$ $1 \times 1 = 1$	$\sqrt{4} = 2$ $2 \times 2 = 4$	$\sqrt{9} = 3$ $3 \times 3 = 9$	$\sqrt{16} = 4$ $4 \times 4 = 16$	$\sqrt{25} = 5$ $5 \times 5 = 25$
$\sqrt{36} = 6$ $6 \times 6 = 36$	$\sqrt{49} = 7$ $7 \times 7 = 49$	$\sqrt{64} = 8$ $8 \times 8 = 64$	$\sqrt{81} = 9$ $9 \times 9 = 81$	$\sqrt{100} = 10$ $10 \times 10 = 100$
$\sqrt{121} = 11$ $11 \times 11 = 121$	$\sqrt{144} = 12$ $12 \times 12 = 144$	$\sqrt{169} = 13$ $13 \times 13 = 169$	$\sqrt{196} = 14$ $14 \times 14 = 196$	$\sqrt{225} = 15$ $15 \times 15 = 225$

TEKS 8.2C	What do I need to be able to do?	Important Reminders
convert between standard decimal notation and scientific notation	*Scientific Notation* • Coefficient (the 1st number) must be ≥ 1 but < 10 • ALWAYS $\times 10$ • Negative exponent = the # is < 1 • Positive exponent = the # is > 1 *Standard Form* (move the decimal) • Positive exponent = move RIGHT • Negative exponent = move LEFT	• Negative exponent does NOT mean a negative number • Exponent does NOT mean the number of zeros to add

Express in Scientific Notation

$213{,}000{,}000 = 2.13 \times 10^{8}$

8

 # GREATER than 1 = POSITIVE exponent

$0.00872 = 8.72 \times 10^{-3}$

3

 # LESS than 1 = NEGATIVE exponent

Express in Expanded Form

$5.6 \times 10^{4} = 56{,}000$

4

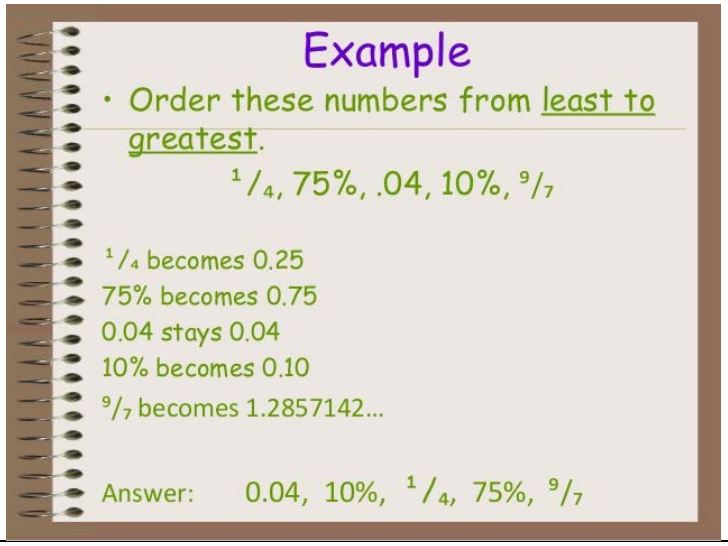
POSITIVE exponent = move RIGHT

$9.71 \times 10^{-5} = 0.0000971$

5

NEGATIVE exponent = move LEFT

TEKS 8.2D order a set of real numbers arising from mathematical and real-world contexts	**What do I need to be able to do?** • Convert numbers to the SAME FORM to compare (decimal is the easiest – USE THE CALCULATOR! ☺) • Make sure the decimals have the same # of digits • Compare EACH place value • G to L = descending, largest to smallest, slowest to fastest • L to G = ascending, smallest to largest, fastest to slowest	**Important Reminder:** Consider the context of the situation to decide the correct order (look for "key words" that mean greatest to least or least to greatest

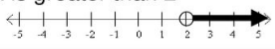
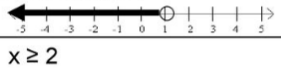
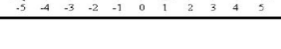


Unit 2: Equations and Inequalities

TEKS 8.8A (Supporting) Write one-variable equations or inequalities with variables on both sides that represent problems using rational number coefficients and constants	What do I need to be able to do? • Given a word problem, create the equation or inequality which represent the situation	Important Reminder: • When working with the phrase "less than", be careful with the order of subtraction. For example, if you need to find 5 less than x, you would write this as $x - 5$ NOT $5 - x$.

Important Information and Visuals

- An *equation* is a number sentence that contains an expression and an equal sign.
- An *inequality* is a number sentence that contains an expression and an inequality sign ($<, >, \leq, \geq$).

Term	Definition	Example
>	Greater than	x > 2 x is greater than 2 
<	Less than	x < 1 x is less than 1 
≥	Greater than or equal to	x ≥ 2 x is greater than or equal to 2 
≤	Less than or equal to	x ≤ 1 x is less than or equal to 1 

TEKS 8.8B (Supporting) Write a corresponding real-world problem when given a one-variable equation or inequality with variables on both sides of the equal sign using rational number coefficients and constants	What do I need to be able to do? • Identify independent and dependent variables from problem / real-world situations • Translate verbal expressions to algebraic expressions.	Important Reminder: • Read the question carefully so that you avoid confusing your variables

TEKS 8.8C (Readiness) Model and solve one-variable equations with variables on both sides of the equal sign that represent mathematical and real-world problems using rational number coefficients and constants	What do I need to be able to do? • Use inverse operations to solve problems • Check your solution using substitution (plugging the answer back into the original equation)	Important Reminders: • When solving an equation, inverse operations is key! Whatever you do to one side of the equation or inequality, you must do to the other side as well. • If you multiply or divide by a negative number, you must switch the direction of the inequality.

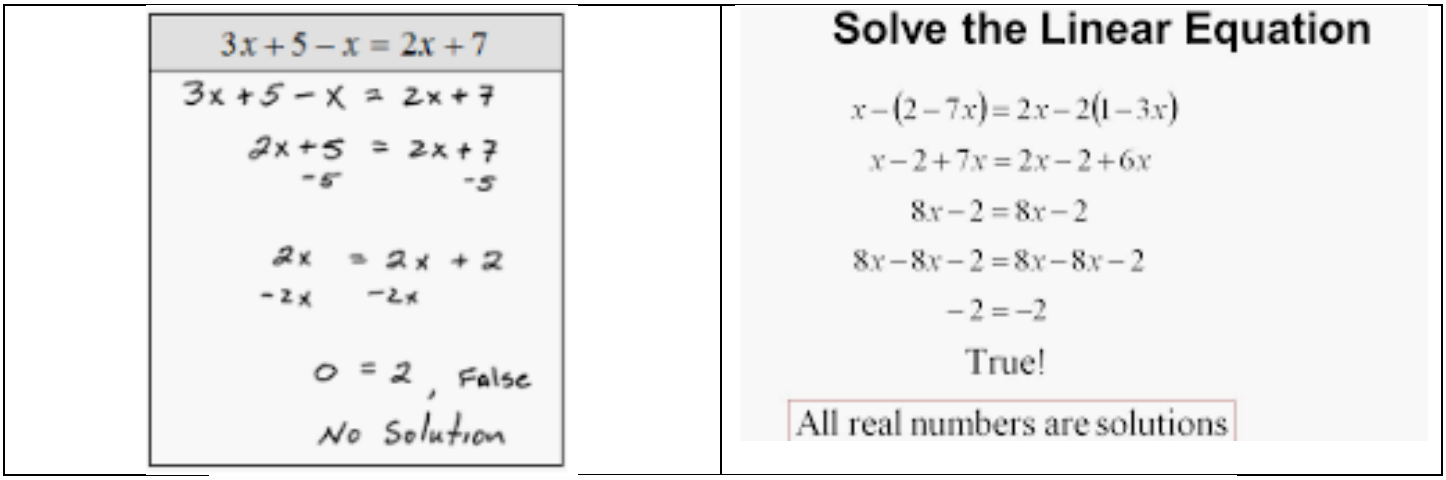
Important Information and Visuals

- When solving an equation, whatever you do to one side of the equation, you must do to the other side as well.
- If the equation involves decimals, you can multiply both sides of the equation by 10, 100, 1000, etc. to eliminate the decimals. This make the problem so much easier to solve!
- If the equation involves fractions, you can multiply both sides of the equation by the least common denominator to eliminate the fractions.

Two Special Cases

- When solving equations with variables on both sides, if the result shows $x = x$ or $constant = constant$ (for example, $6 = 6$), there are an infinite number of solutions to the equation. You can plug in any value for x to create a true mathematical statement.

- When solving equations with variables on both sides, if the result is $constant = a\ different\ constant$ (for example, $6 = 9$), there is no solution for the equation. There is no value of x that you can plug in to create a true mathematical statement.



Sample Problem

Carnival M charges an entrance fee of $5.00 and $0.65 per ticket for the rides. Carnival P charges an entrance fee of $10.00 and $0.45 per ticket for the rides. How many tickets must be purchased in order for the total cost at Carnival M and Carnival P to be the same?

+5 0.65x +10 0.45x =

F. 10

H. 50

G. 25

J. 75

Carnival M = Carnival P

$0.65x + 5 = 0.45x + 10$

$-0.45x \quad -0.45x$

$0.20x + 5 = 10$

$-5 \quad -5$

$\frac{0.20x}{0.20} = \frac{5}{0.20}$

$x = 25$

8.4A use similar right triangles to develop an understanding that slope, m, given as the rate comparing the change in y –values to the change in x –values, $\frac{y_2-y_1}{x_2-x_1}$ is the same for any two points (x_1, y_1) and (x_2, y_2) on the same line;

8.4B graph proportional relationships, interpreting the unit rate as the slope of the line that models the relationship; *Readiness*

8.4C use data from a table or graph to determine the rate of change or slope and y –intercept in mathematical and real-world problems. *Readiness*

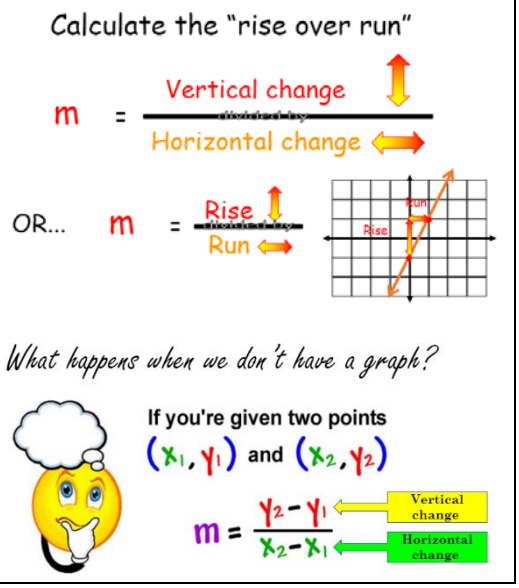
What do I need to be able to do?

- Define rate of change
- Identify the rate of change given the graph of a linear function
- Use $\frac{rise}{run}$ and $\frac{y2-y1}{x2-x1}$ to find the rate of change / slope given a graph
- Use $\frac{y2-y1}{x2-x1}$ to find the slope given two points that fall on the same line
- Identify the y –intercept of a linear function given a graph

Important Information

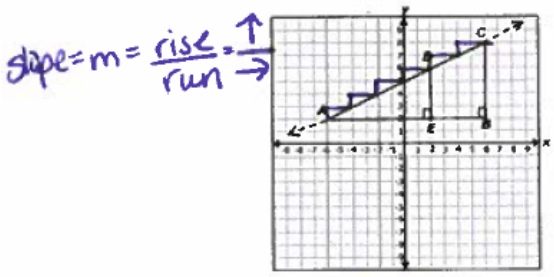
- In order to find the rate of change from context, we must
  - Identify input (x –values) and output (y –values).
  - Create a table or write ordered pairs aligned to the input and output.
  - Calculate the rate of change using the formula: $m = \frac{y_2-y_1}{x_2-x_1}$
- A *rate* is a ratio in which the two quantities being compared are measured in different units.
- A *ratio* is a comparison of two quantities that are measured in the same units.
- The word *per* means "for each" or "for every."
- A *unit rate* is a comparison of two measurements in which the denominator has a value of one unit.
- The *rise* is the vertical change from the first point to the second point.
- The *run* is the horizontal change from the first point to the second point.
- Any ratio with a denominator of 0 is undefined.
- A *term* in a sequence is an individual number, figure, or letter in the sequence.

Helpful Visuals



TEKS 8.4A

The coordinate grid shows similar right triangles ABC and AED.



Which of the following statements is correct?

A. The slope of $\overline{AC}$ is the same as the slope of $\overline{AD}$ which is $\frac{6}{12} = \frac{1}{2}$.

B. The slope of $\overline{AC}$ is the same as the slope of $\overline{BC}$ which is $\frac{3}{2}$.

C. The slope of $\overline{AB}$ is the same as the slope of $\overline{AE}$ which is 2.

D. The slope of $\overline{AC}$ is the same as the slope of $\overline{DE}$ which is 3.

TEKS 8.4C

Carolyn will buy the same number of stamps every month to add to a stamp collection her grandfather gave her. The table shows the number of stamps Carolyn will have at the end of x months.

Carolyn's Stamp Collection

Number of Months, x	x_1 1	x_2 3	6	10
Number of Stamps, y	y_1 250	y_2 350	500	700

How many stamps was Carolyn given? How many stamps will she buy every month?

A. Carolyn was given 180 stamps. She will buy 50 stamps every month.

B. Carolyn was given 180 stamps. She will buy 70 stamps every month.

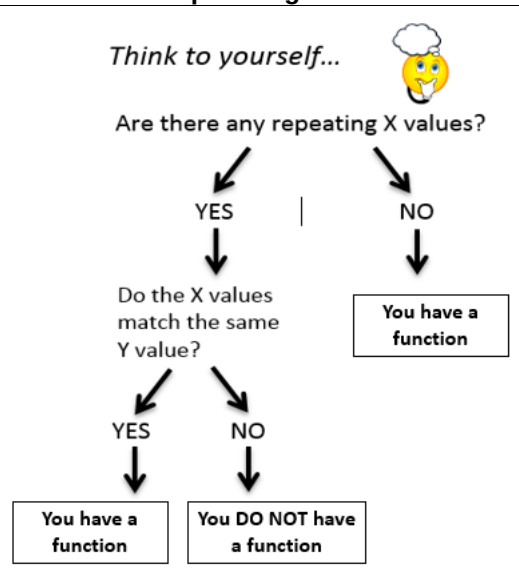
C. Carolyn was given 200 stamps. She will buy 50 stamps every month.

D. Carolyn was given 200 stamps. She will buy 70 stamps every month.

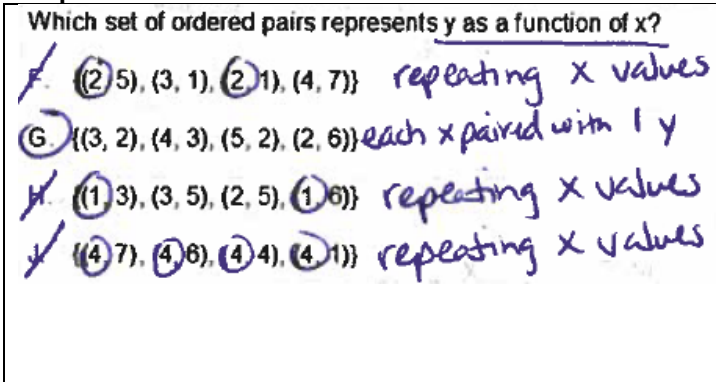
Constant rate of change $= \frac{y_2-y_1}{x_2-x_1} = \frac{350-250}{3-1} = \frac{100}{2} = 50$

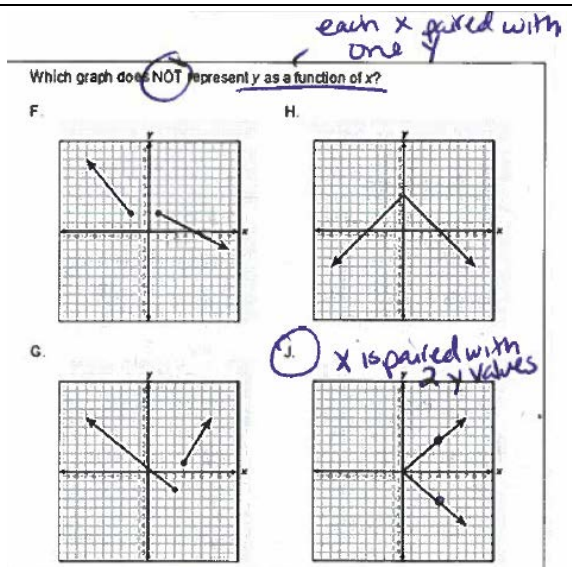
number of stamps at month 0 $= 250 - 50 = 200$

8.5G identify functions using sets of ordered pairs, tables, mappings, and graphs; *Readiness*	**What do I need to be able to do?** • Define a *function* as a relationship that maps each input to one and only one output • Determine if a relationship is a function from mappings, tables, graphs, and situations • Using the Vertical Line Test, determine if a graph represents a function	**Important Reminder:** • Check to see if the same x −value is getting mapped to different y-values

Key Information	Graphic Organizer
• A *relation* is any set of ordered pairs or the mapping between a set of inputs and a set of outputs. • The first coordinate of an ordered pair in a relation is the *input*, and the second coordinate is the *output.* • A *function* maps each input to one and only one output. In other words, a function has no input with more than one output. • The *domain* of a function is the set of all inputs of the function. • The *range* of a function is the set of all outputs of the function.	

Sample Problems



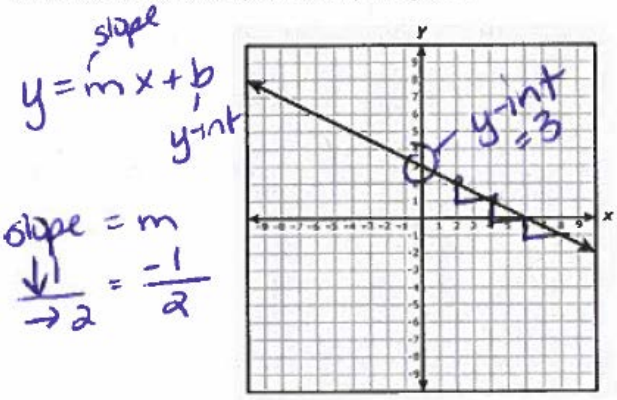


8.5l write an equation in the form $y = mx + b$ to model a linear relationship between two quantities using verbal, numerical, tabular, and graphical representations. *Readiness*	**What do I need to be able to do?** • Given any two points on the line, write the equation of the line in slope-intercept form: $y = mx + b$ • Use slope-intercept form to graph a line	**Important Reminder:** • Pay attention to your x −values and the y −values; don't get these confused. • When looking for the y −intercept, let $x = 0$ • When graphing an equation like $y = -3x + 2$, the rise is -3 and the run is +1 or you can say that the rise is +3 and the run is -1; only one of these values can be negative

Key Information	Helpful Visual
• The y −intercept can be found by identifying the y −coordinate value when $x = 0$. • The y −intercept can be found by first finding the slope, then plugging in the slope and a set of x and y −coordinates in the equation $y = mx + b$ to solve for b. • We can use the rate of change (slope) and y −intercept of a linear function to write an equation in slope-intercept form.	SLOPE INTERCEPT FORM $y = mx + b$ Slope y-intercept

Sample Problems

Which function is best represented by this graph?



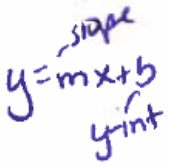
F. $y = \frac{1}{2}x + 6$

H. $y = 2x + 6$

G. $y = -2x + 3$

J. $y = -\frac{1}{2}x + 3$

Mr. Leonard is renting a car for one day. The table below shows the total amount he will be charged for the car based on the number of miles he drives



Car Rental

Number of Miles, m	Total Amount Charged, c
5	$30.50
10	$31.00
15	$31.50
20	$32.00

Which equation best represents c, the number of dollars Mr. Leonard should be charged for driving m miles?

A. $c = 0.50m + 30$

B. $c = 30m + 0.10$

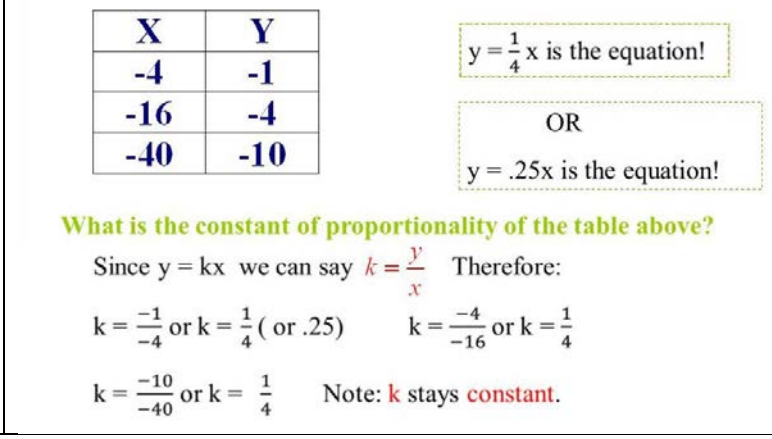
C. $c = 0.10m + 30$

D. $c = 30m + 0.50$

$m = \frac{31 - 30.50}{10 - 5} = \frac{0.5}{5} = 0.1$

Unit 4: Proportional and Non – Proportional Relationships

TEKS 8.5A represent linear proportional situations with tables, graphs, and equations in the form of $y = kx$; ***Supporting***	**What do I need to be able to do?** • Identify the rate of change as the constant of proportionality • Write linear equations to represent real-world and mathematical problem scenarios • Interpret data points of linear proportional relationships	**Important Reminder:** • When calculating the slope, use $\frac{\Delta y}{\Delta x}$ not $\frac{\Delta x}{\Delta y}$ • When calculating the slope from a table or a graph, be sure to find the change in y and the change in x • The constant of proportionality can be found using $k = \frac{y}{x}$

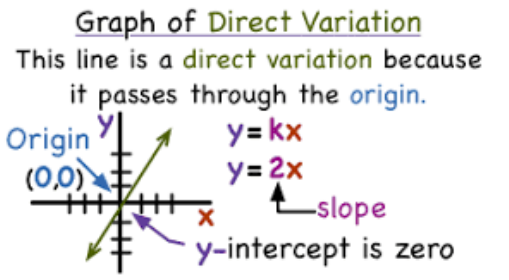
Important Information	**Visuals**
• No matter how the information is presented, the idea is the same; find the value of the ratio $\frac{\Delta y}{\Delta x}$ to determine the value of k, the constant of proportionality. • If you like working with graphs, and you are presented with a table of values, create a graph, then find the value of the constant of proportionality.	

TEKS 8.5B represent linear non-proportional situations with tables, graphs, and equations in the form of $y = mx + b$, where $b \neq 0$; ***Supporting***	**What do I need to be able to do?** • Identify the rate of change and y –intercept from a graph • Identify the rate of change and y –intercept from a table • Write linear equations to represent data from a table • Write linear equations to represent data from a graph • Interpret the rate of change and y –intercept from real-world scenarios	**Important Reminder:** • In a word problem, be careful with the independent variable (x –value) and the dependent variable (y –value) • The value of m is the slope • The value of b is the y –coordinate of the y –intercept

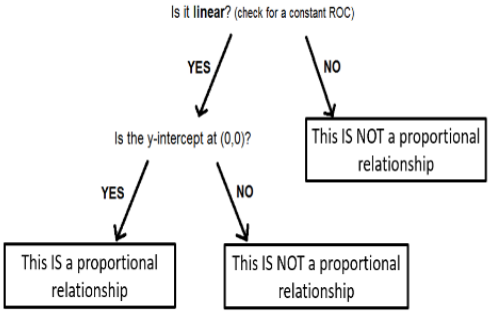
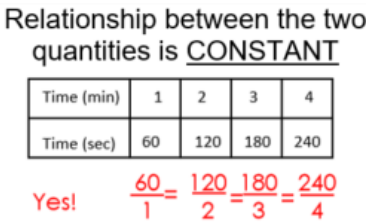
Important Information

- If you are given a table of values, but the table does not include the y –value when $x = 0$, you can use your patterning skills to work forward or backward in the table to determine the y –value when $x = 0$. There are almost always patterns that you can use!

TEKS 8.5E solve problems involving direct variation; ***Supporting***	**What do I need to be able to do?** • Define direct variation • Write direct variation equations in $y = kx$ form • Use the direct variation to solve problems • Find the constant of variation, k	**Important Reminder:** • In a word problem, be careful with the independent variable (x –value) and the dependent variable (y –value) • For direct variation questions, use $y = kx$ instead of $y = mx + b$

Important Information	Visual
• The statement "y varies directly as x," means that when x increases, y increases by the same factor. In other words, y and x always have the same ratio: $k = \frac{y}{x}$. We can also express the relationship between x and y as: $y = kx$, where k, is the constant of variation. • Since k is constant (the same for every point), we can find k when given any point by dividing the y -coordinate by the x -coordinate.	

TEKS 8.5F distinguish between proportional and non-proportional situations using tables, graphs, and equations in the form $y = kx$ or $y = mx + b$, where $b \neq 0$; ***Supporting*** **TEKS 8.5H** identify examples of proportional and non-proportional functions that arise from mathematical and real-world problems; and ***Supporting***	**What do I need to be able to do?** • Identify the rate of change and y –intercept of proportional relationships • Write linear equations to represent real-world and mathematical problem scenarios • Interpret the rate of change of linear non-proportional relationships • Interpret the y –intercept of linear proportional relationships	**Important Reminder:** • Only some straight lines represent a proportional relationship • When working with a table of values, be sure to determine the y –value when $x = 0$

Key Information	Visual
• A *proportional relationship* is one in which the ratio of $\frac{y}{x}$, is constant. A relationship that is not proportional is called *non-proportional*. • All proportional relationships can be written in the form $y = kx$ where k is constant. • Equations and graphs of the form $y = mx + b$ where $b \neq 0$ are always non-proportional relationships.	 

Sample Problems

TEKS 8.5F

The table below shows the values of a linear relationship.

x	3	4	6	10
y	13	17	25	41

Which statement is true?

A. This is a non-proportional situation which is represented by the equation $y = 3x + 4$.

B. This is a non-proportional situation which is represented by the equation $y = 4x + 1$.

C. This is a proportional situation which is represented by the equation $y = \frac{13}{3}x$

D. This is a proportional situation which is represented by the equation $y = 4x + 1$.

TEKS 8.5H

Which situation represents a proportional relationship?

A. The cost of purchasing a basket of oranges for $1.30 per pound plus $5.00 for the basket.

B. The cost of purchasing peaches for $7.00 per box of peaches with a delivery charge of $3.00.

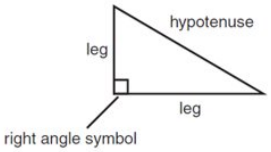
C. The cost of purchasing grapefruit for $1.80 per pound with a coupon for $1.00 off the total cost.

D. The cost of purchasing apples for $1.75 per pound plus a shipping fee of $0.16 per pound.

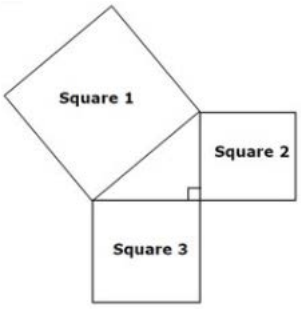
Unit 5: Pythagorean Theorem

TEKS 8.6C Use models and diagrams to explain the Pythagorean Theorem ***Supporting***	**What do I need to be able to do?** • Explain that for every right triangle, the sum of the squares of the legs is equal to the square of the hypotenuse	**Important Reminder:** • The Pythagorean Theorem is only for right triangles • When using the Pythagorean Theorem, be sure to square the lengths of the legs and the hypotenuse

Important Information and Visuals

PARTS OF A RIGHT TRIANGLE	
A **right triangle** is a triangle with a right angle.	
A **right angle** has a measure of 90° and is indicated by a square drawn at the corner formed by the angle.	
A **leg** of a right triangle is either of the two shorter sides. Together, the two legs form the right angle of a right triangle.	
The **hypotenuse** of a right triangle is the longest side. The hypotenuse is opposite the right angle.	

- For all right triangles, the area of the square made by the hypotenuse is equal to the sum of the areas of the squares made by the legs.



For the right triangle shown above, the following equation is true:

Area of Square 2 + Area of Square 3 = Area of Square 1

- The Pythagorean Theorem expresses this relationship in a formula:

$$\text{Leg}^2 + \text{Leg}^2 = \text{Hypotenuse}^2$$

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

TEKS 8.7C use the Pythagorean Theorem and its converse to solve problems; and *Readiness*	**What do I need to be able to do?** • Use the converse of the Pythagorean Theorem and Pythagorean triples to determine if a triangle is a right triangle • Given the lengths of two sides of a right triangle, find the third side	**Important Reminder:** • When using the Pythagorean Theorem to find the third side, be sure to take the square root at the end • When working with side lengths that involve square roots, remember: $\left(\sqrt{11}\right)^2 = \sqrt{121} = 11$. These need to be very easy for you!

Important Information and Visuals

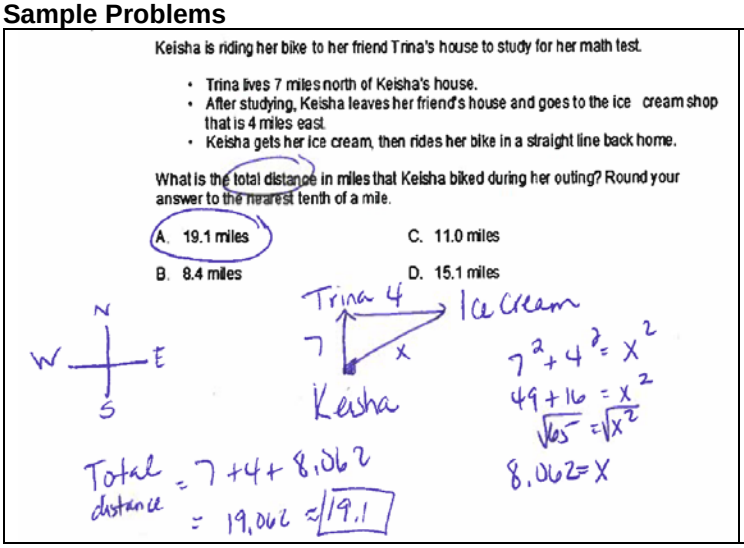
- The *converse of the Pythagorean Theorem* states that if the three sides of a triangle satisfy the relationship $a^2 + b^2 = c^2$, then the triangle is a right triangle. But, if the three side of triangle do not satisfy the relationship $a^2 + b^2 = c^2$, then the triangle is not a right triangle.

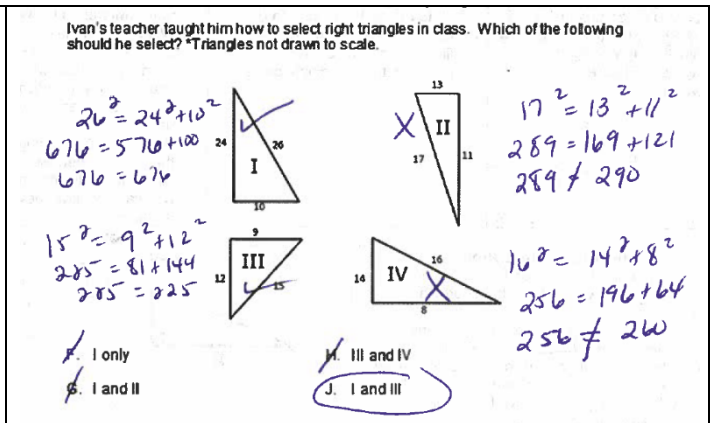
- Pythagorean triples and their multiples have side lengths that always belong to a right triangle. A *Pythagorean Triple* is a set of three positive integers $a, b, \text{and } c$ that satisfy the equation $a^2 + b^2 = c^2$. Common Pythagorean Triples are:

3, 4, 5
5, 12, 13
8, 15, 17

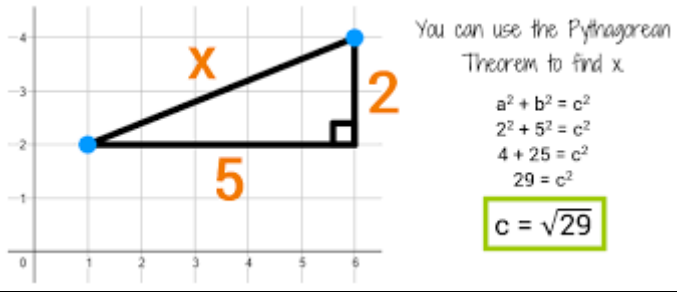
- The converse of the Pythagorean Theorem can be used to prove if measurements are accurate and if angles are 90° for triangles, rectangles, or squares

Sample Problems



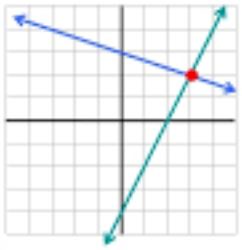


TEKS 8.7D determine the distance between two points on a coordinate plane using the Pythagorean Theorem. ***Supporting***	**What do I need to be able to do?** • Use the Pythagorean Theorem to find the distance between two points on the coordinate plane	**Important Reminders:** • When finding the distance between two points, unless the two points are on the same horizontal or vertical line, you need to use the Pythagorean Theorem to determine the distance between the two points • When you are working with the distance between two different points, the answer is always positive, never negative

Important Information	**Visual**
The Pythagorean Theorem can be used to find the distance between two points on the coordinate plane. • Plot the points on the coordinate plane. • Connect the points by drawing a line. • Draw a right triangle with the line connecting the points as the hypotenuse. • Use $a^2 + b^2 = c^2$ to solve for the distance between the two points.	

Unit 6: Systems of Equations

TEKS 8.9A identify and verify the values of x and y that simultaneously satisfy two linear equations in the form $y = mx + b$ from the intersections of the graphed equations. ***Supporting***	**What do I need to be able to do?** • Write a system of equations to represent a problem context • Solve a system of equations graphically • Graph a system of linear equations • Find the point of intersection of a system of linear equations • Interpret the solution to a system of equations in terms of the original problem's context • Solve systems of equations using a graphing calculator	**Important Reminders:** • Be precise when graphing lines to find the point of intersection. • When reading a word problem, make sure you are being consistent… if x represents the number of cans of paint, then this is the only variable you should be using when working with the number of cans of paints

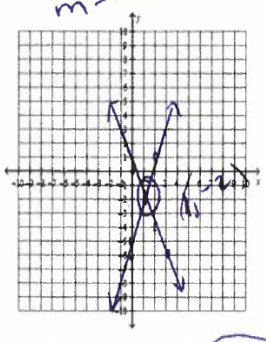
Important Information	Visuals
• A *system of equations* is a set of equations that you deal with all together at once with the same set of unknowns (variables). • *Solving a system of equations* is when you determine for what input (x) the output (y) will be the same for both equations. • The *point of intersection* is the point at which two lines cross on a coordinate plane. When one line represents the cost of an item, and the other line represents the income from selling the item, the point of intersection is called the *break-even point*. • To use a graphing calculator to solve a system of linear equations, each equation must have y by itself on one side of the equation. (Slope-intercept form)	**Solving Systems of Linear Equations by Graphing** $\begin{cases} y = 2x - 4 \\ y = -\frac{1}{3}x + 3 \end{cases}$ $Solution: (3, 2)$ $2 = 2(3) - 4 \quad 2 = -\frac{1}{3}(3) + 3$ $2 = 2 \quad 2 = 2$ 

Sample Problems

Kevin is solving the system of equations listed below.

$\begin{cases} y = -3x \\ y = 3x - 5 \end{cases}$

$y = mx + b$ (m = slope, b = y-int)



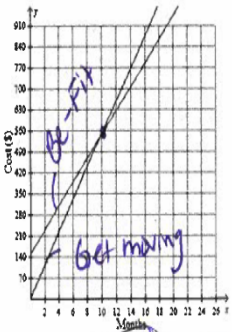
Use the coordinate grid to graph the linear equations. What is the y-coordinate of the point of intersection?

-2

Nicole wants to join a health club. She is considering Be-Fit Club, which charges a one-time initiation fee of $150 plus a $40 per month membership fee. She is also considering Get Moving, which charges $55 per month with no initiation fee. Below is a graph of the situation.

$y = 40x + 150$

$y = 55x$



For how many months of membership is Be-Fit a better deal?

F. More than 10 months

G. Less than 560 months

H. More than 560 months

J. Less than 10 months

cost less, when the graph is below the other line

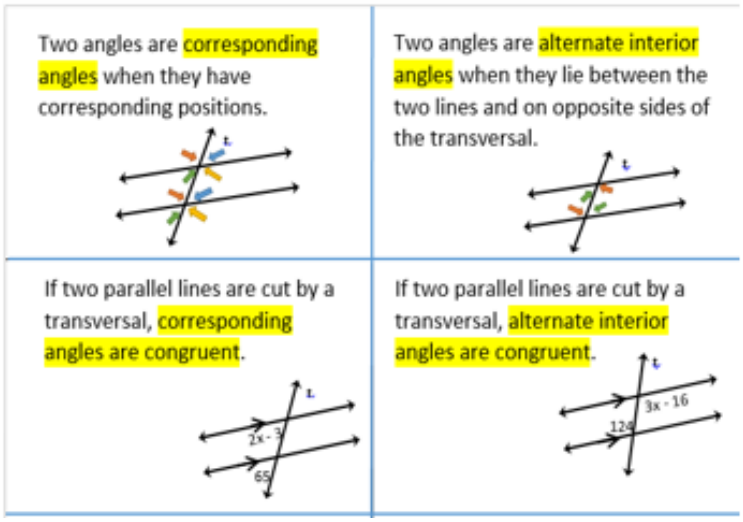
Unit 7: Angle Relationships and Similarity

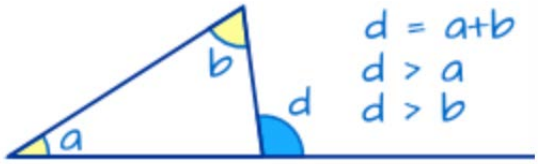
TEKS 8.3A generalize that the ratio of corresponding sides of similar shapes are proportional, including a shape and its dilation; ***Supporting***	**What do I need to be able to do?** • Understand that the lengths of corresponding sides are in proportion • Understand that similar figures are produced from dilations • Know prime notation to indicate the dilated figure from the original	**Important Reminders:** • Not matching corresponding parts • Feeling the need to use the name and not the figure • Not all images are drawn to scale

Important Information

- *Similar figures* are figures that have the same shape; with congruent corresponding angles and proportional corresponding sides.

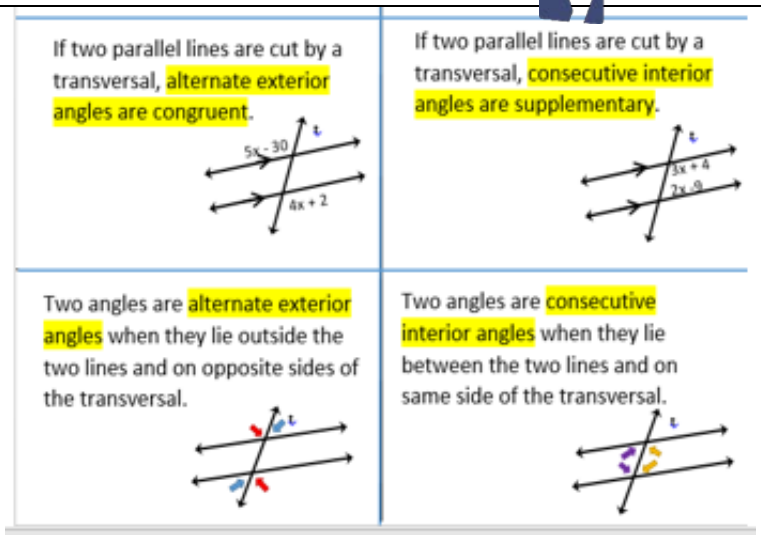
TEKS 8.8D use informal arguments to establish facts about the angle sum and exterior angle of triangles, the angles created when parallel lines are cut by a transversal, and the angle-angle criterion for similarity of triangles. ***Supporting***	**What do I need to be able to do?** • Construct various triangles and find the measures of the interior and exterior angles • Make conjectures about the relationship between the measure of an exterior angle and the other two angles of a triangle • Construct parallel lines and a transversal to examine the relationships between the created angles • Recognize vertical angles, adjacent angles and supplementary angles and build on these relationships to identify other pairs of congruent angles • Use these relationships and deductive reasoning to find the measure of missing angles	**Important Reminder:** • DO NOT assume that two lines are parallel or perpendicular because they look like they are

Key Information	Important Visuals
• When lines intersect, angles are formed. • Intersecting lines are lines in a plane that *intersect,* cross each other. • A *plane* extends infinitely in all directions in two dimensions and has no thickness. • *Perpendicular lines* are lines that intersect at a right angle. • The symbol ⊥ is how we indicate that two lines are perpendicular to one another. • *Parallel lines* are lines that lie in the same plane and do not intersect no matter how far they extend. • The symbol ∥ is how we indicate that two lines are parallel to one another. • The sum of a linear pair of angles is 180 degrees. • Vertical angles are congruent (have the same measure). • The measure of exterior angle, d, is equal to the sum of the measures of angles a and b.	

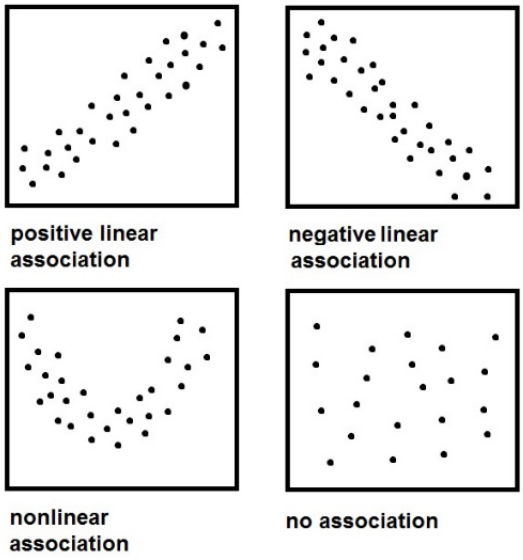
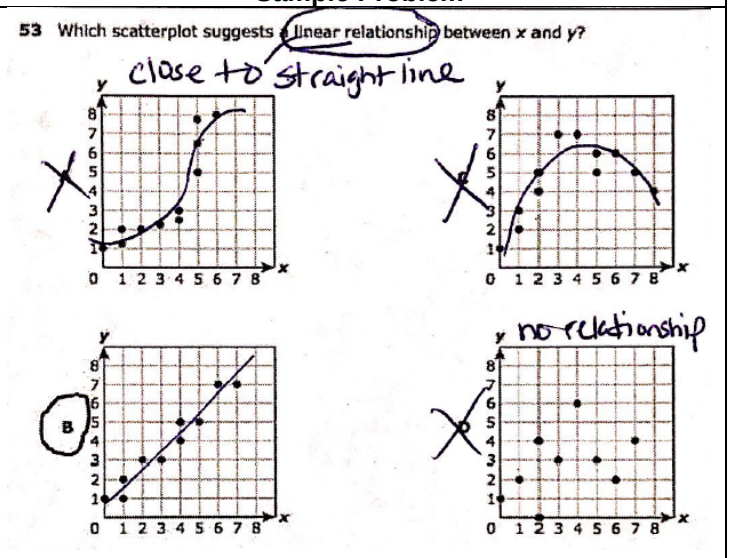


- Because the measures of the interior angles of a triangle add to 180°, and measures of angles c and d also add to 180°

- A line that intersects two parallel lines is a *transversal*; the transversal forms interior and exterior angles.
- A *transversal* is a line that intersects two or more lines.
- *Alternate interior angles* are formed when a line (transversal) intersects two other lines. These angles are on opposite sides of the transversal and are between the other two lines.
- *Alternate exterior angles* are angles formed when a line (transversal) intersects two other lines. These angles are on opposite sides of the transversal and are outside the other two lines.
- *Same-side interior angles* are angles formed when a line (transversal) intersects two other lines. These angles are on the same side of the transversal and are between the other two lines.
- *Same-side exterior angles* are angles formed when a line (transversal) intersects two other lines. These angles are on the same side of the transversal and are outside the other two lines.
- Same side angles are supplementary.
- Alternate angles are congruent.

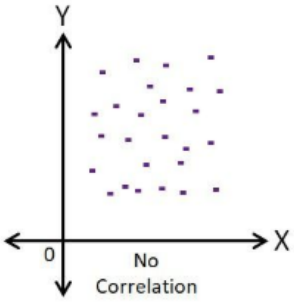


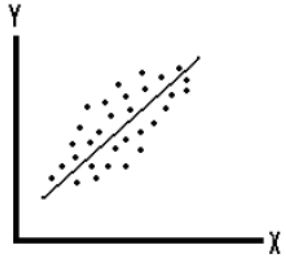
Unit 8: Data and Statistics		
TEKS 8.5C(S) **Contrast bivariate sets of data that suggest a linear relationship with bivariate sets of data that do not suggest a linear relationship from a graphical representation**	**What do I need to be able to do?** • Understand that bivariate means two variables or two types of data. • Look at a graph and determine whether it shows a linear relationship • Look at a graph and determine whether it shows proportionality	**Important Reminders:** • DO NOT assume that if a graph is nonlinear then there is no relationship • Not every graph of a straight line shows proportionality

Important Information and Visuals	Sample Problem
	

TEKS 8.5D(R) **Use a trend line that approximates the linear relationship between bivariate sets of data to make predictions**	**What do I need to be able to do?** • Understand that a trend line is equivalent to a line of best fit • A trend line closely follows the path of points passing through as many as possible with about half the points above the line and half the points below the line • Use a trend line to make a prediction	**Important Reminders:** • When drawing a trend line, try to hit every point rather than drawing a line that goes through the middle of the data • A trend line does not have to begin at the origin

Important Information and Visuals





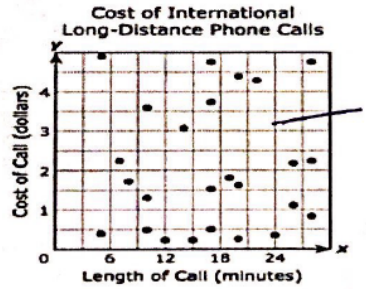
Positive Correlation

Negative Correlation

TEKS 8.11A(S) **Construct a scatterplot and describe the observed data to address questions of association such as linear, non-linear, and no association between bivariate data**	**What do I need to be able to do?** • Construct a scatterplot and describe the relationship between two variables • Trend and correlation are interchangeable terms	**Important Reminders:** • Do not assume that just because the points are not perfectly lined up there is no relationship • Do not assume that if both numbers in the data are decreasing, then it represents a negative trend • Do not assume that there is no correlation if x values are not in numeric order.

Sample Question

11 Julie made 25 international long-distance phone calls to London last month. The scatterplot below shows the length and cost of each phone call she made.



NO correlation/ association

Which conclusion is best supported by the scatterplot?

A As the length of a call increases, the cost of the call increases.

B As the length of a call increases, the cost of the call remains the same.

C As the length of a call increases, the cost of the call decreases.

D There is no relationship between the length of a call and the cost of a call.

TEKS 8.11B(S) **Determine the mean absolute deviation and use this quantity as a measure of the average distance data are from the mean using a data set of no more than 10 data points**	**What do I need to be able to do?** • Understand that the mean absolute deviation gives the average variation of the data from the mean. • MAD describes the spread of the data and how far on average, all values are from the middle of the data	**Important Reminders:** • You must calculate the absolute value of the difference between the data point and the mean of the data.

Important Information	Sample Question
How to calculate MAD Data set: 90, 75, 85, 100, 80 $mean = \frac{90+75+85+100+80}{5} = \frac{430}{5} = 86$ $90 - 86 = \lvert 4 \rvert = 4$ $75 - 86 = \lvert -11 \rvert = 11$ $85 - 86 = \lvert -1 \rvert = 1$ $100 - 86 = \lvert 14 \rvert = 14$ $80 - 86 = \lvert -6 \rvert = 6$ $\frac{4+11+1+14+6}{5} = \frac{36}{5} = 7.2$	**49** The list shows the number of songs that five students each downloaded last week. 32, 43, 38, 28, 51 What is the mean absolute deviation of the numbers in the list? **A** 34.4 **B** 6.88 **C** 38.4 **D** 7.68 $\frac{32+43+38+28+51}{5} = 38.4$ $32 - 38.4 = \lvert -6.4 \rvert = 6.4$ $43 - 38.4 = \lvert 4.6 \rvert = 4.6$ $38 - 38.4 = \lvert -0.4 \rvert = 0.4$ $28 - 38.4 = \lvert -10.4 \rvert = 10.4$ $51 - 38.4 = \lvert 12.6 \rvert = 12.6$ $\frac{6.4+4.6+0.4+10.4+12.6}{5} = 6.88$

Unit 9: Transformations

TEKS 8.3(B) compare and contrast the attributes of a shape and its dilation(s) on a coordinate plane *Supporting* **TEKS 8.3(C) use an algebraic representation to explain the effect of a given positive rational scale factor applied to two-dimensional figures on a coordinate plane with the origin as the center of dilation *Readiness***	**What do I need to be able to do?** • Understand that similar figures have congruent angles and sides that are proportional • Understand that similar figures are produced from dilations • Understand that a scale factor greater than one will produce an enlargement in the figure, while a scale factor less than one will produce a reduction in size • Define a *dilation* as a transformation that preserves shape, but not size

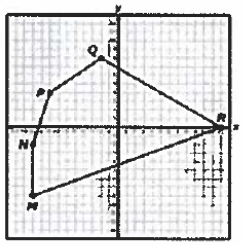
Key Information

- *Dilations* are transformations that produce images that are the same shape as the original image, but not the same size.
- Dilations do not preserve congruence; dilations preserve orientation
- When the scale factor is greater than 1, the figure is an *enlargement* or the original figure.
- When the scale factor is less than 1, the figure is a *reduction* of the original figure.
- To find the new coordinates of a figure, multiply the original coordinates by the scale factor.

Sample Problem

. Pentagon *MNPQR* is shown on the coordinate grid. Pentagon *MNPQR* is dilated with the origin as the center of dilation using the rule $(x, y) \rightarrow \left(\frac{1}{4}x, \frac{1}{4}y\right)$ to create pentagon *M'N'P'Q'R'*.

scale factor less than 1



Which statement is true?

F. Pentagon *M'N'P'Q'R'* is larger than pentagon *MNPQR*, because the scale factor is greater than 1.

G. Pentagon *M'N'P'Q'R'* is smaller than pentagon *MNPQR*, because the scale factor is less than 1.

H. Pentagon *M'N'P'Q'R'* is smaller than pentagon *MNPQR*, because the scale factor is greater than 1.

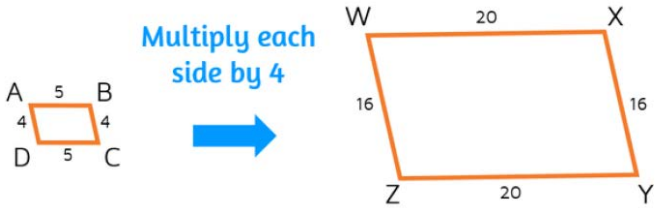
J. Pentagon *M'N'P'Q'R'* is larger than pentagon *MNPQR*, because the scale factor is less than 1.

TEKS 8.10(A) Generalize the properties of orientation and congruence of rotations, reflections, translations, and dilations of two-dimensional shapes on a coordinate plane *Supporting* **TEKS 8.10(B)** Differentiate between transformations that preserve congruence and those that do not *Supporting*	**What do I need to be able to do?** • Given two images, identify the image / pre-image • Identify the transformation based on given coordinates • Understand that rotations, reflections, and translations preserve congruence • Define a *translation* as a transformation that slides each point of a figure the same distance and direction • Determine that a translation preserves congruence and orientation • Define a *reflection* as a transformation that flips a figure across a reflection line

TEKS 8.10(C) Explain the effect of translations, reflections over the $x-$ or $y-$ axis, and rotations limited to 90°, 180°, 270°, and 360° as applied to two-dimensional shapes on a coordinate plane using an algebraic representation *Readiness*	• Define a *rotation* as a transformation that turns a figure about a fixed point for a given angle, called the angle of rotation, and a given direction • Use algebraic notation to describe translation, reflection, and a rotation

Key Information	Important Visuals
• The new figure created by the translation is called the *image*. The original figure is called the *pre-image*. • Two figures are considered *congruent* when they are the same size and the same shape. • Two figures are considered to have the same *orientation*, if they are facing the same direction. • A *reflection* is a transformation in which the figure is the mirror image of the other. The image and pre-image are always the same distance from the *line of reflection*. • A reflection always maintains the congruence of a figure. • Each quadrant represents a 90° rotation. • Rotations preserve congruence but do not preserve orientation, except when rotating 360°. **Reflection Rules** TYPE OF REFLECTION / Point of the pre-image (Before reflection) / Point of the image (After reflection) Reflection about the x- axis: (x, y) → (x, -y) Reflection about the y-axis: (x, y) → (-x, y)	**Rotation Rules** TYPE OF ROTATION / Point of the pre-image (Before reflection) / Point of the image (After reflection) Rotation of 90° (clock wise): (x, y) → (y, -x) Rotation of 90° (counter clock wise): (x, y) → (-y, x) Rotation of 180° (clock wise & counter clock wise): (x, y) → (-x, -y) Rotation of 270° (clock wise): (x, y) → (-y, x) Rotation of 270° (counter clock wise): (x, y) → (y, -x) **Translation Rules** Change in the Equation / Graph movement addition to x: → subtraction from x: ← addition to y: ↑ subtraction from y: ↓

TEKS 8.10(D) model the effect on linear and area measurements of dilated two-dimensional shapes *Supporting*	**What do I need to be able to do?** • Understand that when an image is dilated, the perimeter is multiplied by the scale factor • Understand that when an image is dilated, the area of the new image is the product of the area of the original figure and the scale factor squared Understand that a dilation with scale factor greater than 1 is an *enlargement* and a scale factor less than one is a *reduction*

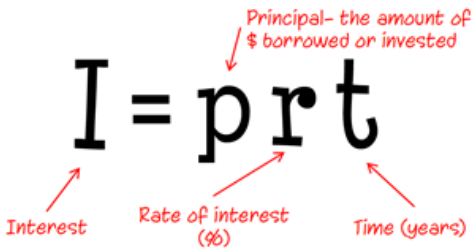
Key Information	Important Visuals
When a figure is being dilated, the scale factor of the area is the square of the original scale factor. That is, Area changes = $Scale\ Factor \times Scale\ Factor$ or $Scale\ Factor^{2}$ When a figure is being dilated, the scale factor of the perimeter is the same as the original scale factor. That is, Perimeter Changes = same as $Scale\ Factor$	The scale factor of ▱ ABCD to ▱ WXYZ is 4.  The perimeter of parallelogram $WXYZ$ is 4 times larger than the perimeter of parallelogram $ABCD$. The area of parallelogram $WXYZ$ is $4^2 = 16$ times larger than the area of parallelogram $ABCD$.

Unit 10: Financial Literacy

TEKS 8.12(D) calculate and compare simple interest and compound interest earnings ***Readiness***	**What do I need to be able to do?** • Calculate simple interest using $I = Prt$ • Calculate compound interest using $A = P(1 + r)^t$ • Compare earnings over time using the two types of interest	**Important Reminders:** • When calculating compound interest, the formula is used to calculate the total amount in the account at the end of the time period. You must remember to go back and subtract the principal from the total amount to find the interest only.

Important Information and Visuals

- The *terms* of an investment include the type of investment, amount of money invested, the interest rate, and the length of the investment. Investments can earn vastly different amounts of money depending on the amount of time and the way interest is growing.
- *Simple interest* is just that… simple! It is a percentage of the principle that is added to the investment over time. With simple interest, only the principle earns interest.
- Compound interest is a percentage of the principal and the interest that is added to the investment over time. The formula for compound interest is $A = P(1 + r)^t$, where A represents the total account balance, P represents the original principal amount invested, r represents the annual rate, and t represents the time in years.
- Simple interest accounts grow steadily over time because they increase at a constant rate. Compound interest accounts grow more rapidly because a percentage of the principal and interest is added to the balance each year.



$$A = P(1 + r)^t$$

I = Interest

P = Principle — The amount of money either being borrowed or saved

r = rate — A %, that will need to be converted into a decimal

t = time — The amount of time in years

Sample Problem

41 Nicolas has $650 to deposit into two different savings accounts.

- Nicolas will deposit $400 into Account I, which earns 3.5% annual simple interest.
- He will deposit $250 into Account II, which earns $3\frac{1}{4}$% interest compounded annually.

Nicolas will not make any additional deposits or withdrawals. Which amount is closest to the total balance of these two accounts at the end of 2 years?

A $672.13

B $695.00

C $694.25

D $694.51

P, r = 0.035, t, once a year

Account I: $I = prt$

Interest $= 400(.035)(2)$

$= 28$

$400 + 28 = \$428.00$

Account II: $A = P(1+r)^t$

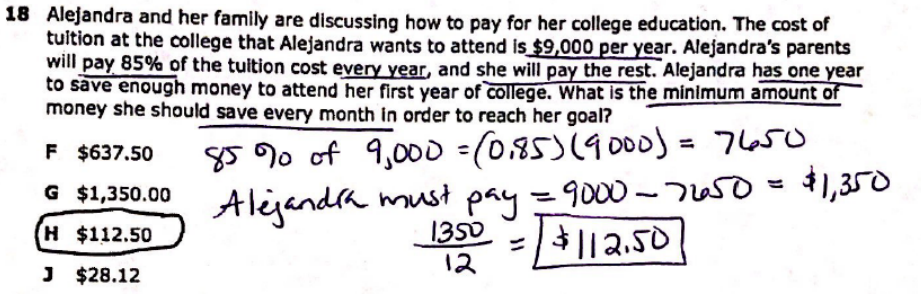
$= 250(1 + .0325)^2$

$= \$266.51$

$428 + 266.51 = \$694.51$

TEKS 8.12(G) estimate the cost of a two-year and four-year college education, including family contribution, and devise a periodic savings plan for accumulating the money needed to contribute to the total cost of attendance for at least the first year of college **Supporting**	**What do I need to be able to do?** • Estimate the cost of attending a two or four-year college • Create a savings plan to determine how much money would need to be saved each year and how many years would be needed to save enough money to pay for one full year of college	**Important Reminders:** • Tuition cost is calculated per year • You must take the total amount needed to be saved and dividing it by 12 to calculate how much is needed to be saved per month

Sample Problem



18 Alejandra and her family are discussing how to pay for her college education. The cost of tuition at the college that Alejandra wants to attend is $9,000 per year. Alejandra's parents will pay 85% of the tuition cost every year, and she will pay the rest. Alejandra has one year to save enough money to attend her first year of college. What is the minimum amount of money she should save every month in order to reach her goal?

F $637.50

G $1,350.00

H $112.50

J $28.12

85% of 9,000 = (0.85)(9000) = 7650

Alejandra must pay = 9000 − 7650 = $1,350

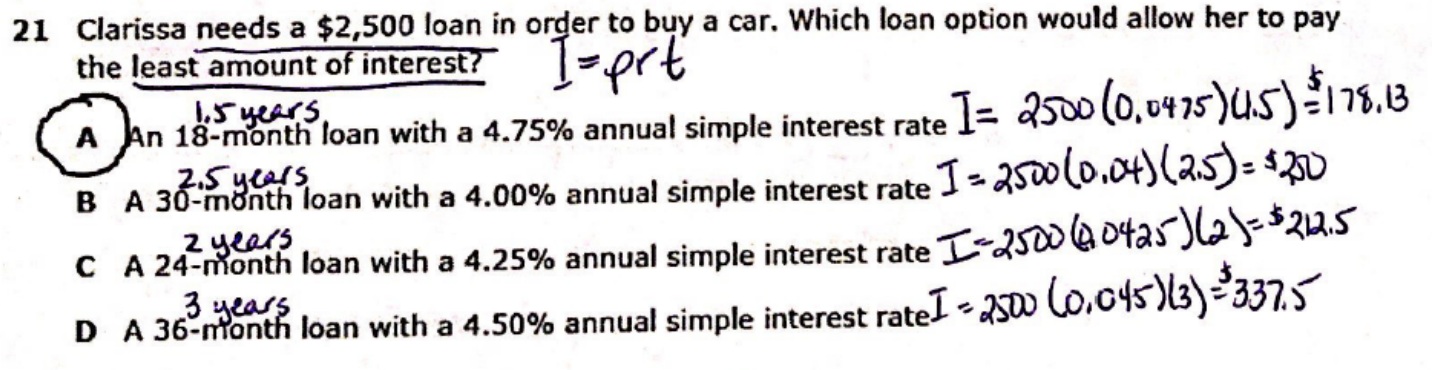
$\frac{1350}{12} = \$112.50$

TEKS 8.12(A) solve real – world problems comparing how interest rate and loan length affect the cost of credit ***Supporting***	**What do I need to be able to do?** • Find interest loans using several different interest rates • Compare the rates and how it effects the total cost of the loan • Compare the length of time of a loan and determine how that affects the total cost of the loan	**Important Reminders:** • You must use the rate as a decimal in the formula

Important Information

- When applying for a loan, a person should try to get the best terms he or she can. A lower interest rate and shorter time may lead to higher monthly payments but will cost the person less over time.
- The interest rate, length of time and amount of a loan are the biggest factors in determining the best financially responsible lender.

Sample Problem



21 Clarissa needs a $2,500 loan in order to buy a car. Which loan option would allow her to pay the least amount of interest? I = prt

A An 18-month (1.5 years) loan with a 4.75% annual simple interest rate I = 2500(0.0475)(1.5) = $178.13

B A 30-month (2.5 years) loan with a 4.00% annual simple interest rate I = 2500(0.04)(2.5) = $250

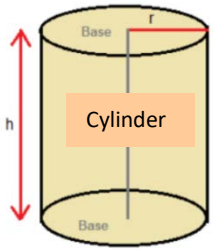
C A 24-month (2 years) loan with a 4.25% annual simple interest rate I = 2500(0.0425)(2) = $212.5

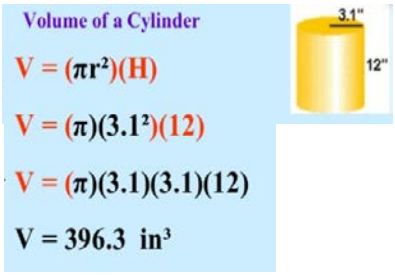
D A 36-month (3 years) loan with a 4.50% annual simple interest rate I = 2500(0.045)(3) = $337.5

Unit 11: 3D Geometry

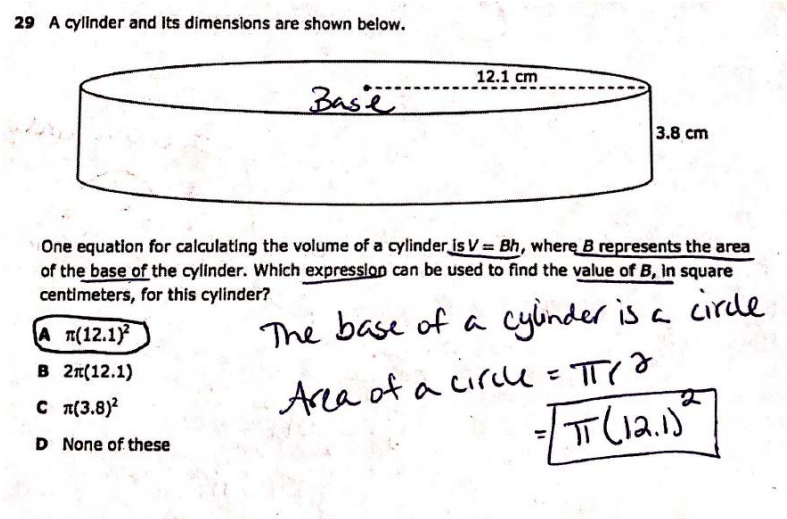
TEKS 8.6(A) describe the volume formula $V = Bh$ of cylinder in terms of its base area and its height ***Supporting***	**What do I need to be able to do?** • Understand that the base of a cylinder is a circle • Calculate the value of B, the area of the base of the base of a cylinder • Understand that the volume of a cylinder is three times the volume of a cone having the same base area and height	**Important Reminders:** • B and b are not interchangeable • r^2 does not equal $2r$

Important Information and Visuals



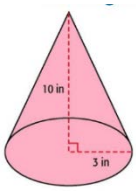


Sample Problem



TEKS 8.7(A) solve problems involving the volume of cylinders, cones, and spheres ***Readiness***	**What do I need to be able to do?** • Identify attributes of cylinder, cones, and spheres including: base, height, and radius • Use formulas for the volume of cylinder, cones, and spheres	**Important Reminders:** • You must use the radius in calculations. • You must use $\frac{1}{3}$ and not 0.3 in calculations.

Important Information and Visuals



$V = \frac{1}{3}Bh$ The base of a cone is a circle

$B = \pi(3^2) \rightarrow 9\pi$ $B = \pi r^2$

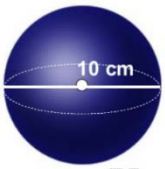
$V = \frac{1}{3}Bh$

$V = \frac{1}{3} \bullet 9\pi \bullet 10$

$V = 30\pi$

94.2 in^3

Volume of a Sphere



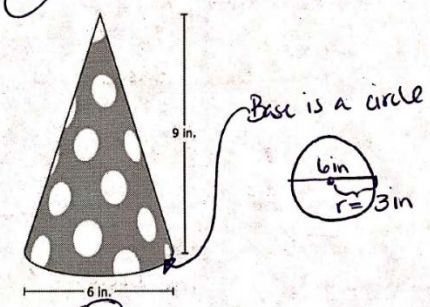
$V = \frac{4}{3}\pi r^3$

$V = \frac{4}{3}\pi \bullet 5^3$

$V \approx 523.60 \text{ cm}^3$

Sample Problems

55 A party hat is shaped like a cone. The dimensions of the party hat are shown in the diagram.



Which measurement is closest to the volume of the party hat in cubic inches?

A 84.82 in.^{3}

B 339.29 in.^{3}

C 254.47 in.^{3}

D 1,017.88 in.^{3}

$V = \frac{1}{3}Bh$

$= \frac{1}{3}\pi r^2 h$

$= \frac{1}{3}\pi (3)^2 (9)$

$= \boxed{84.82\ in^3}$

17 A ball shaped like a sphere has a radius of 2.7 centimeters. Which measurement is closest to the volume of the ball in cubic centimeters?

$r = 2.7$

A 46.38 cm^3

B 33.93 cm^3

C 122.15 cm^3

D 82.45 cm^3

$V = \frac{4}{3}\pi r^3$

$= \frac{4}{3}\pi (2.7)^3$

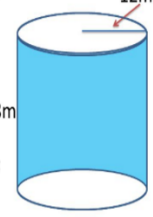
$= \boxed{82.45\ cm^3}$

TEKS 8.7(B) use previous knowledge of surface area to make connections to the formulas for lateral and total surface area and determine solutions for problems involving rectangular prisms, triangular prisms, and cylinders ***Readiness***	**What do I need to be able to do?** • Identify the base of a prism • $P = perimeter\ of\ the\ base$ • Substitute the correct formula for B • Understand lateral surface area does not include the area of the bases • Total surface area includes the area of the sides and the bases	**Important Reminders:** • Substitute the appropriate area formula for B • Carefully identify the shape of the base • The bottom of the figure is not always the base

Important Information and Visuals

Lateral Surface Area of a Cylinder

a cylinder



$SA = 2\pi rh$

$= 2 \cdot \pi \cdot 12 \cdot 28$

$= 2 \cdot 12 \cdot 28 \cdot \pi$

$= 672 \cdot \pi$ Use 3.14 for π

$= 672 \cdot 3.14$

$= 2110.08\ m^2$

Finding the lateral surface area of a cylinder is like finding the AREA of a LABEL on a can

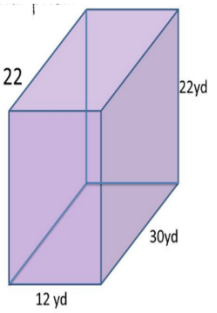
Lateral Surface Area of a Rectangular Prism

$SA = Ph$

$= (12 + 30 + 12 + 30) \cdot 22$

$= (84) \cdot 22$

$= 1848\ yd^2$



P= the perimeter of the base h= the height of the prism

Total Surface Area of a Prism

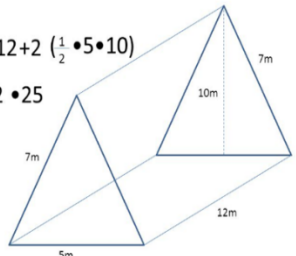
$SA = Ph + 2B$

$= (7+7+5) \cdot 12 + 2\left(\frac{1}{2} \cdot 5 \cdot 10\right)$

$= 19 \cdot 12 + 2 \cdot 25$

$= 228 + 50$

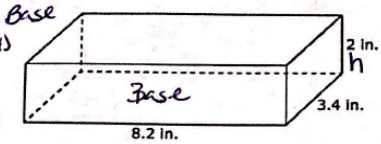
$= 278\ m^2$



P = perimeter of the base (the triangle)
h = the height of the prism
B = area of the base

Sample Problem

45 A rectangular prism and its dimensions are shown in the diagram.



P = Perimeter of Base
$= 2(8.2) + 2(3.4)$
$= 16.4 + 6.8$
$= 23.2\ in$

B = Area of Base
$= lw$
$= (8.2)(3.4)$
$= 27.88\ in^2$

What is the total surface area of this rectangular prism in square inches?

Record your answer and fill in the bubbles on your answer document. Be sure to use the correct place value.

Total Surface Area $= Ph + 2B$
$= (23.2)(2) + 2(27.88)$
$= \boxed{102.16\ in^2}$

Total Surface area $= 102.16\ in^2$

Science Resources

STAAR Blueprint

STAAR Grade 8 Science Blueprint

Scientific Investigation and Reasoning Skills is not a separate reporting category. These skills will be incorporated into at least 40% of the test questions from reporting categories 1-4 and will be identified along with the content standards.				
Reporting Categories	**Number of Standards**		**Number of Questions**	
Reporting Category 1: Matter and Energy	Readiness Standards	5	**11**	
	Supporting Standards	4		
	Total	9		
Reporting Category 2: Force, Motion, and Energy	Readiness Standards	2	**9**	
	Supporting Standards	5		
	Total	7		
Reporting Category 3: Earth and Space	Readiness Standards	5	**11**	
	Supporting Standards	9		
	Total	14		
Reporting Category 4: Organisms and Environments	Readiness Standards	2	**11**	
	Supporting Standards	11		
	Total	13		
Readiness Standards	**Total Number of Standards**	**14**	**60%–65%**	**25–27**
Supporting Standards	**Total Number of Standards**	**29**	**35%–40%**	**15–17**
Total Number of Questions on Test			**40 Multiple Choice 2 Griddable 42 Total**	

Texas Education Agency
Student Assessment Division
May 2018

Hi Science 8!

In the following pages, you will find the most essential vocabulary terms and their corresponding definitions broken down by reporting categories (see chart above). In addition to your study guide, you can use the following resources to aid you in your preparation for the Science 8 STAAR exam within the science supplemental resources provided by your teacher.

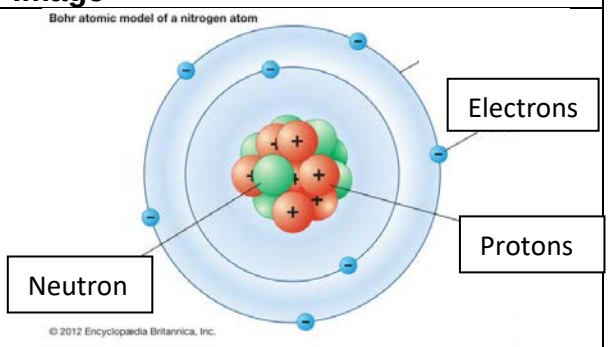
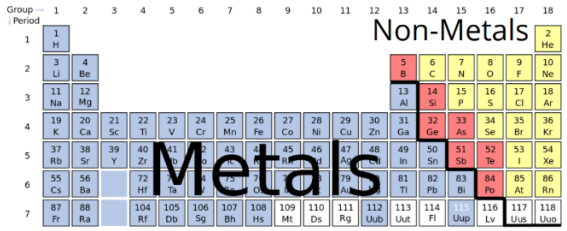
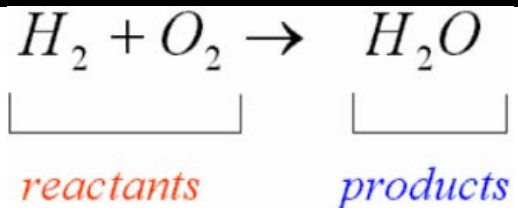
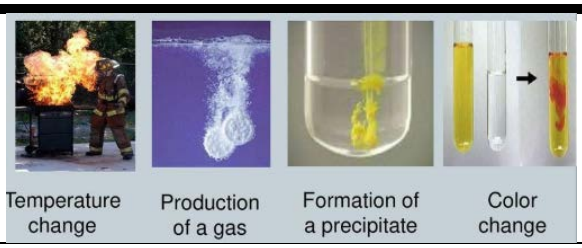
- Pre-made Science ***flashcards*** with all essential definitions.
- ***Supplemental packet*** of practice problems & misconception answer key.
- ***YouTube videos*** walking you through how to annotate your periodic table.

Reporting Category 1: Matter & Energy

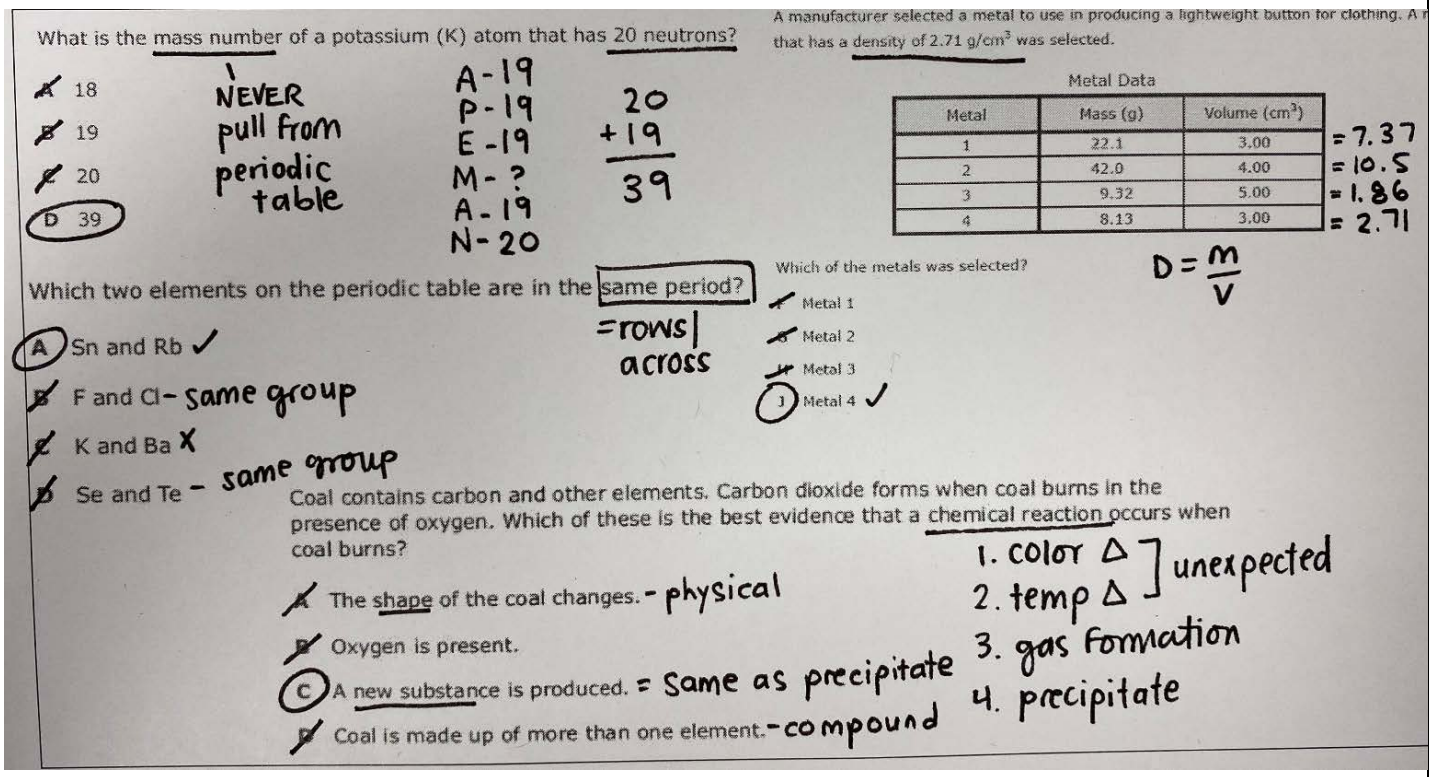
YES Prep Units:
Unit 1: Properties of Matter
Unit 2: Atoms & Periodic Table
Unit 3: Changes in Matter

Big Topics Covered:
- Parts of an atom
- Periodic Table
- Chemical Formulas
- Signs of a Chemical Reaction

Common Terms & Definitions (Memorize This)!

Word/Concept	Definition	Image
Nucleus of an Atom	Includes both protons (+) and neutrons (no charge); both have mass of 1 AMU	
Electron Cloud	Includes electrons (-); ~0 AMU	
Protons	Determine the identity of an atom; same as the atomic number, positive, inside the nucleus	
Electrons	Negative charge, ~0 AMU	
Reactivity in an atom	Determined by the valence electrons (last shell) in an atom which are the same as **group number**; 1 + 7= highly reactive and 8= not reactive at all	
Characteristics of a metal	Shiny solid, conducts electricity/heat, malleable (able to bend/flatten)	
Characteristics of a non-metal	Dull/pale, does not conduct electricity, brittle	
Noble Gases (Group 18)	Gaseous at room temperature, chemically stable (8 valence electrons)	
# of atoms in a formula	Formula= $Sr_3(PO_4)_2$? = 3 Sr atoms; 2 P atoms; 8 O atoms	
Chemical Reactions	Reactants= what goes in to the reaction (left side) Products= what comes out of a reaction (right side	
Law of Conservation of Mass	Matter cannot be created or destroyed; the reactant's mass is the same as the product's mass	
Signs of a Chemical Reaction	1. Unexpected color change 2. Unexpected temperature change 3. Gas formation (bubbles) 4. New substance formed (precipitate)	

Essential STAAR Questions (Review this)!



What is the mass number of a potassium (K) atom that has 20 neutrons?

A 18
B 19
C 20
D 39

NEVER pull from periodic table

A-19
P-19
E-19
M-?
A-19
N-20

20
+19
39

Which two elements on the periodic table are in the same period?

A Sn and Rb ✓
B F and Cl – same group
C K and Ba ✗
D Se and Te – same group

= rows across

A manufacturer selected a metal to use in producing a lightweight button for clothing. A r
that has a density of 2.71 g/cm³ was selected.

Metal Data

Metal	Mass (g)	Volume (cm³)	
1	22.1	3.00	= 7.37
2	42.0	4.00	= 10.5
3	9.32	5.00	= 1.86
4	8.13	3.00	= 2.71

Which of the metals was selected?

A Metal 1
B Metal 2
C Metal 3
D Metal 4 ✓

$D = \frac{m}{V}$

Coal contains carbon and other elements. Carbon dioxide forms when coal burns in the presence of oxygen. Which of these is the best evidence that a chemical reaction occurs when coal burns?

A The shape of the coal changes. – physical
B Oxygen is present.
C A new substance is produced. = Same as precipitate
D Coal is made up of more than one element. – compound

1. color Δ
2. temp Δ
] unexpected
3. gas formation
4. precipitate

Common Mistakes on these types of Reporting Category 1 Questions

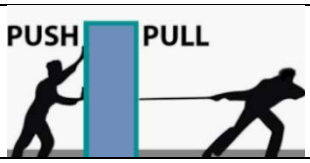
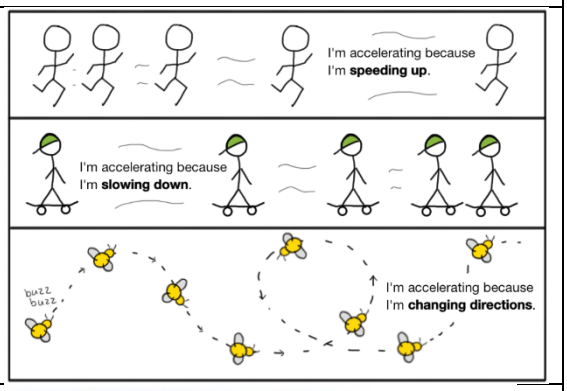
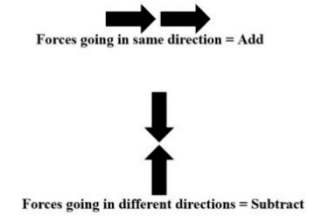
- **NEVER** use the atomic mass that is given on the periodic table. It will always be given OR you can calculate it by adding protons (atomic number) + number of neutrons.

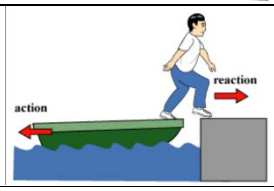
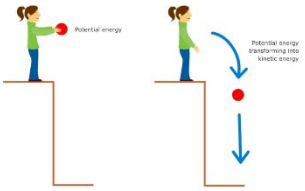
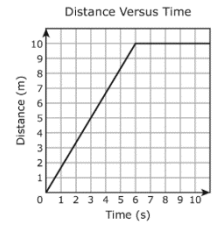
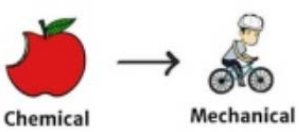
Reporting Category 2: Force, Motion, and Energy

YES Prep Units:
Unit 4: Force, Motion, and Energy

Big Topics Covered:
- Balanced and Unbalanced Forces
- Newton's Laws of Motion
- Energy

Common Terms & Definitions (Memorize This)!

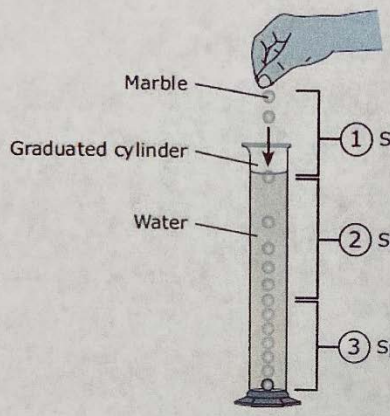
Word/Concept	Definition	Image
Force	A push or pull; has both direction and magnitude	
Mass	The amount of matter in an object	
Acceleration	A change in an object's velocity, such as a change in its speed or direction of motion (speeding up, slowing down, or changing direction)	
Unbalanced Forces	Forces on an object whose sum (net force) is equal to any nonzero number; will cause a change in an object's motion	
Balanced Forces	Forces on an object whose sum (net force) is equal to zero; will cause no change in an object's motion / constant motion	
Calculating Net Force	Add=when forces are moving in the same direction Subtract=when forces are moving in the opposite direction	
Speed	A measure of how fast an object is moving; distance an object travels divided by travel time	**30 m/s**
Velocity	A measure of the speed of an object and the direction of its motion	**30 m/s east**

Newton's Laws of Action-Reaction (3rd Law)	States that when two objects interact, the forces they apply on each other are always equal in magnitude and opposite in direction; forces always act in pairs	
Potential Energy	Energy stored in an object due to its position	
Kinetic Energy	Energy of motion or movement	
Changes in Motion on a Graph	Horizontal line=object has stopped!	 Texas Education Agency
Energy Transformations	A process in which energy changes from one form to another	
Chemical energy	Energy stored in the chemical bonds of compounds; released through a chemical reaction	
Electrical energy	Energy that comes from the flow of electrons	
Radiant energy	Energy that travels through waves of light	

Essential STAAR Questions (Review this)!

A student used a video camera to record another student dropping a marble through water in a graduated cylinder. The students watched the video in slow motion and made the observations shown below.

Marble Drop Experiment

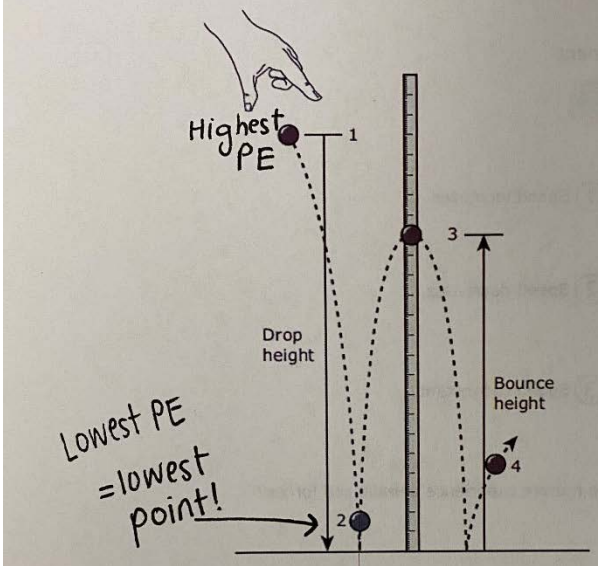


During which part or parts of the marble's fall did the marble experience unbalanced forces?

- A Part 1 only -doesn't include #2
- (B) Parts 1 and 2 only
- C Part 3 only -balanced
- D Parts 2 and 3 only -unbalanced + balanced

-direction change
-speeds up
-slows down

In the classroom demonstration shown below, a rubber ball is dropped from Position 1. The ball bounces as shown.



At which of these positions does the ball have both the greatest kinetic energy and the least potential energy?

stored energy/ lowest point

energy of motion/ movement

- X Position 1
- (B) Position 2
- X Position 3
- X Position 4

Common Mistakes on these types of RC 2 Questions

- 30 m/s^2 is NOT a speed; it is acceleration!

Reporting Category 3: Characteristics of the Universe

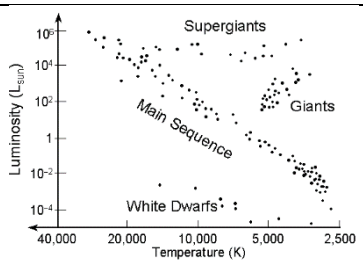
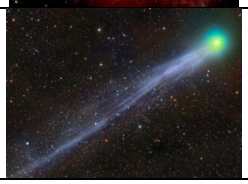
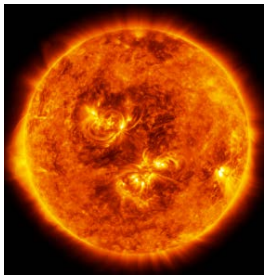
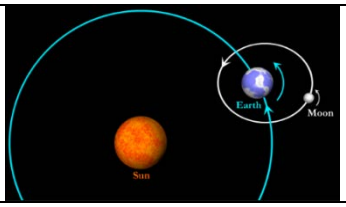
YES Prep Units:

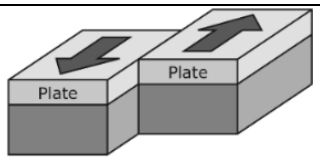
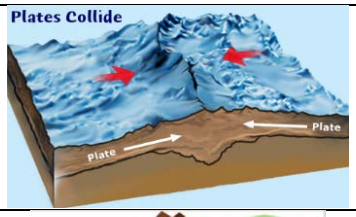
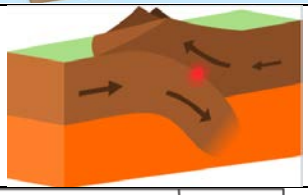
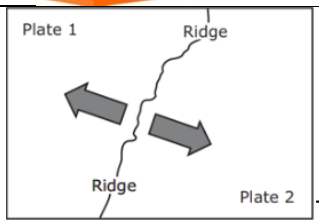
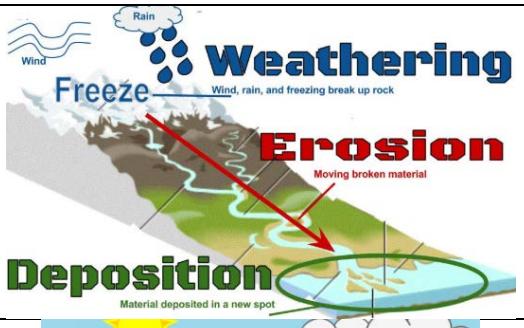
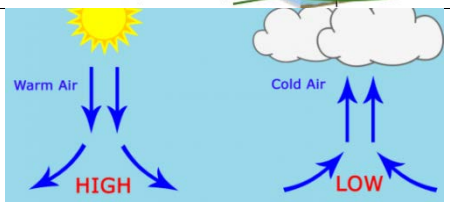
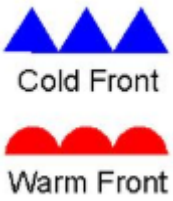
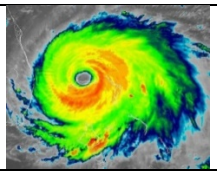
- Unit 5: Beyond Our Solar System
- Unit 6: Interactions of Earth, Moon, and Sun
- Unit 7: Earth Science

Big Topics Covered:

- HR Diagrams
- Components of the Universe
- Tectonic Plates
- Topographic Maps
- Weather Maps

Common Terms & Definitions (Memorize This)!

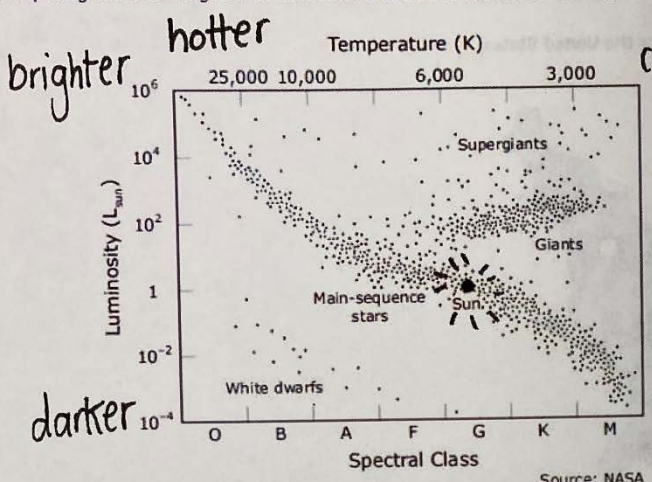
Word/Concept	Definition	Image
Luminosity*	Brightness of a star *See essential STAAR questions section on how to analyze an HR diagram	
Galaxy	A system of billions of stars, gas, and dust held together by gravity	
Nebula	A cloud of gas and dust that is the birthplace of stars, and results from dying stars	
Comet	A mass of dust and ice that orbits a star in an elliptical pattern	
Stars	Formed inside a nebula; less mass than a galaxy and more mass than a planet; a sphere of matter with a density and temperature great enough to cause a nuclear reaction at its center	
Sun	Medium-sized star, within our solar system so it appears bright even though it has average luminosity	
Sun-Earth relationship	Earth moves in an elliptical orbit around the sun because of gravitational force	

Transform Boundary	Two tectonic plates slide past one another, earthquakes commonly occur here	 TEA
Convergent Collision	Two plates collide; Causes mountains, uplifts, and sleep slopes	
Convergent Subduction	Two plates converge, and one sinks under another	
Divergent Boundary	Two plates move apart; Causes mid-ocean ridges and rift valleys	 TEA
Contour Intervals	The change in elevation between each contour line on a topographic map	
Weathering	The process where rock is broken down into sediment	
Erosion	The process by which pieces of rock, sediment, and soil are carried from one place to another by wind, water, or ice	
Deposition	The process in which transported sediment is laid down in a new location	
High Pressure	A weather system caused by cool air sinking. Brings cool, clear, and sunny weather	
Low Pressure	A weather system caused by warm air rising that brings storms, wind, and rain	
Cold front	A weather front where a cold air mass replaces a warm air mass bringing cooler temperatures. Storms are often along the front	
Warm front	A weather front where a warm air mass replaces a cold air mass bringing warmer temperatures	
Hurricanes	A strong low-pressure system that forms over warm water and spins in a counterclockwise direction around a center eye	

Essential STAAR Questions (Review this)!

*

The Hertzsprung-Russell diagram shows how the sun is classified among the stars.



Source: NASA

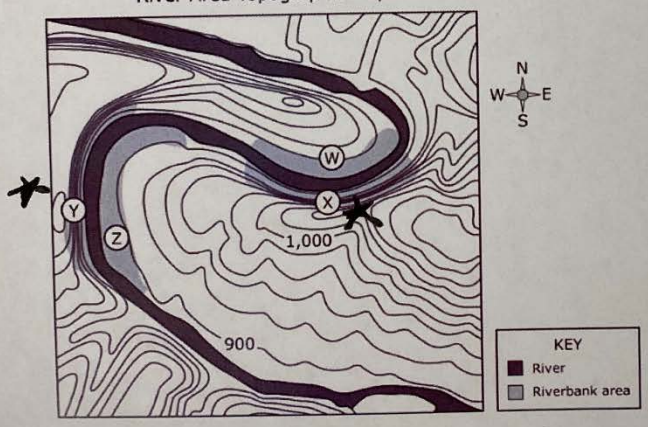
A star that is several thousand times brighter than the sun with a temperature lower than 4,000 K would be classified as —

- A a main-sequence star in spectral class B (that's hotter)
- (B) a supergiant in spectral class K (colder + brighter!)
- C a main-sequence star in spectral class K or M (less bright)
- D a white dwarf in spectral class B (less bright)

sun = medium brightness + temperature; in main sequence

A river area is shown on the topographic map. Four riverbank areas are labeled on the map.

River Area Topographic Map



Which two riverbanks are the steepest? = when the lines are closer together!

- A W and X
- B Y and Z
- (C) X and Y
- D W and Z

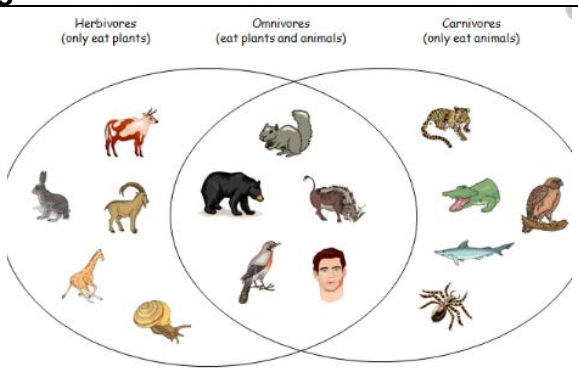
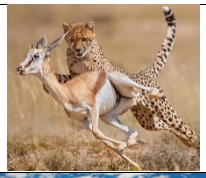
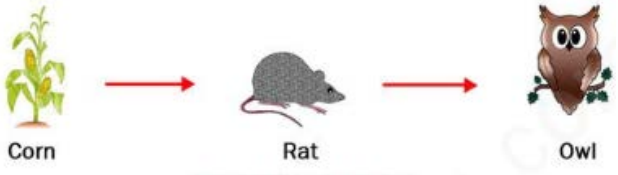
W/Z = lines are further apart = less steep

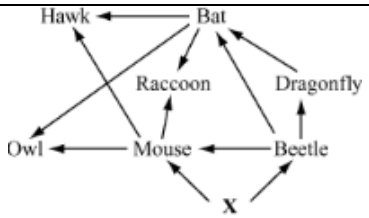
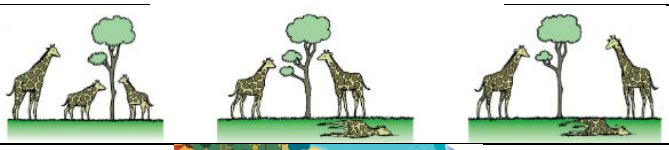
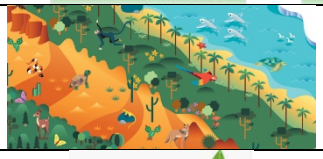
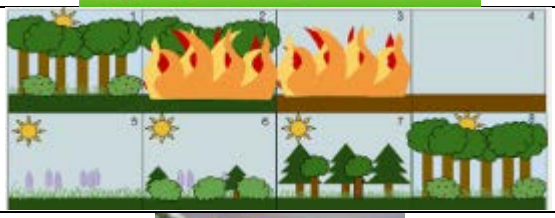
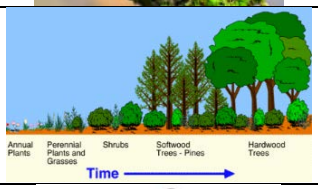
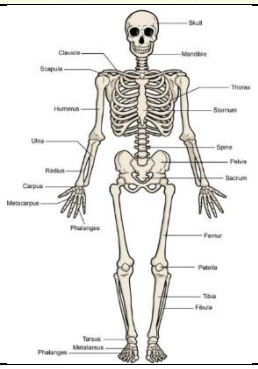
Reporting Category 4: Interdependence of Living Things

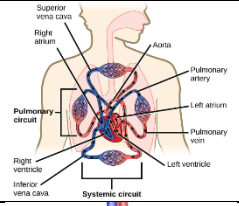
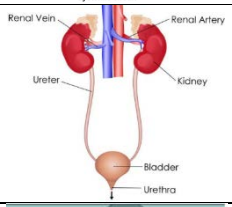
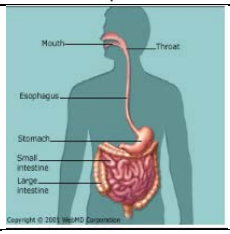
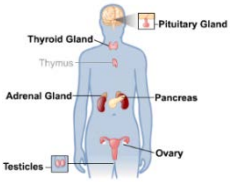
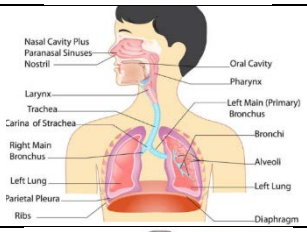
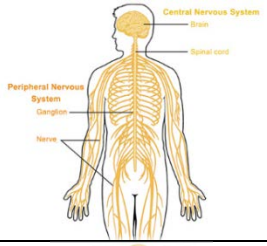
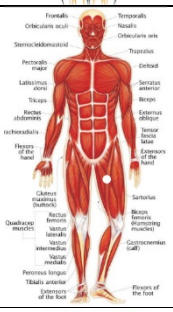
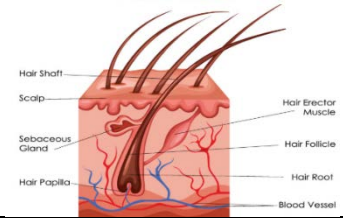
YES Prep Units:
- Unit 8: Life Science

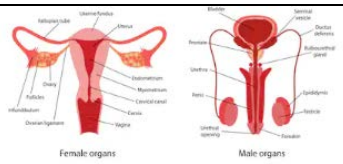
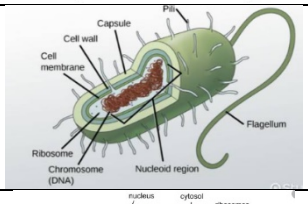
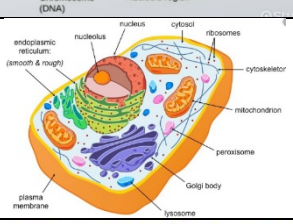
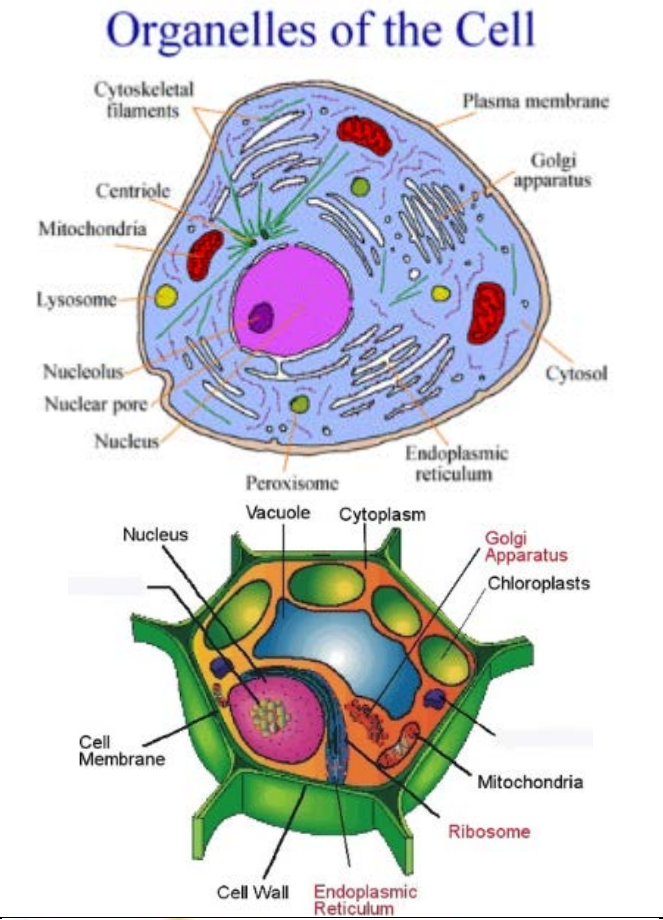
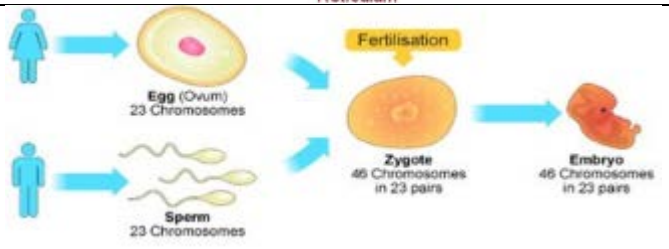
Big Topics Covered:
- Food Chains/Webs
- Body Systems
- Cell Organelles

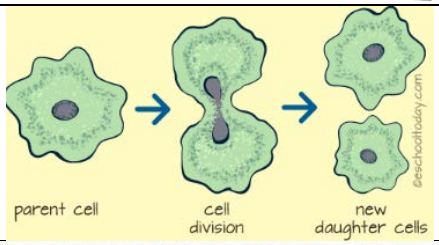
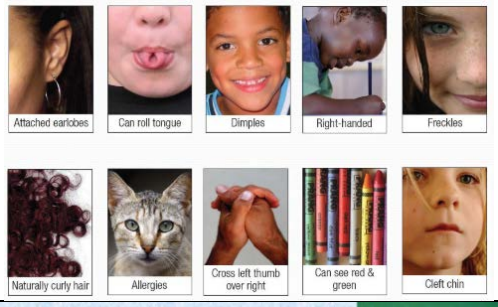
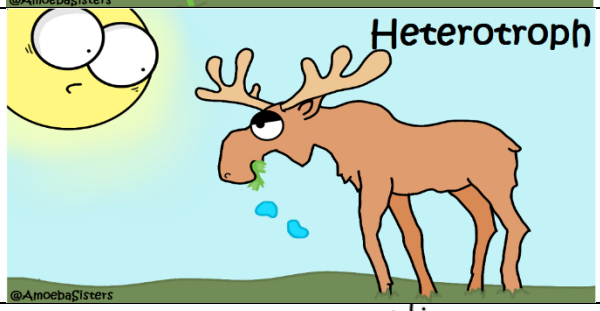
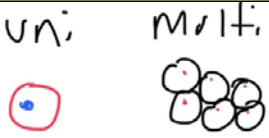
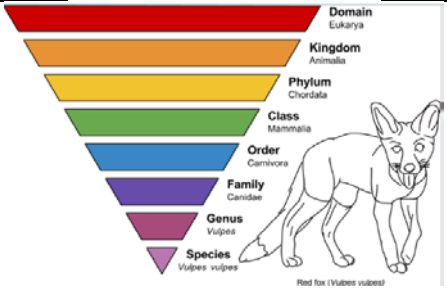
Common Terms & Definitions (Memorize This)!

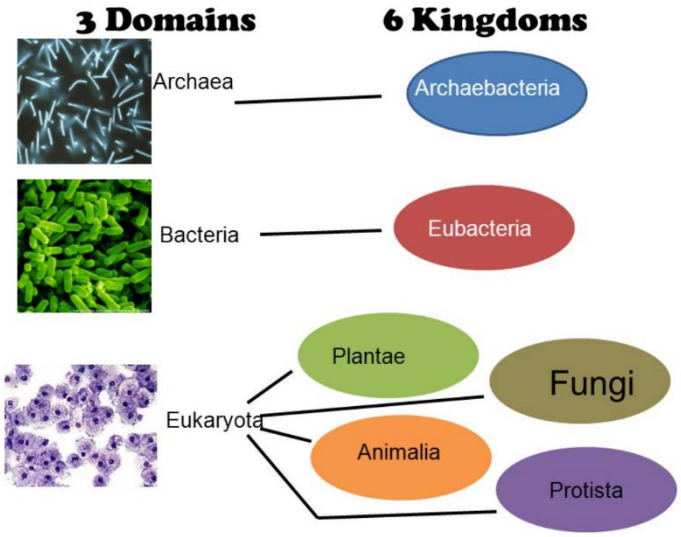
Word/Concept	Definition	Image
Carnivores	A consumer (secondary, tertiary or higher) that eats only other animals or consumers	
Herbivores	A consumer (primary consumer) that eats only plants	
Omnivores	A consumer that eats both plants and animals	
Decomposers	An organism that breaks down other organisms for energy	 Worm Mushroom
Producers	An organism that makes its own food through a chemical process like photosynthesis	
Consumers	An organism that gets its energy by consuming or eating other living things	
Predator	An organism that hunts, kills and consumes another organism	
Prey	An organism that is eaten by a predator	
Competition	When two or more individuals or populations try to use the same limited resources such as food, water, shelter, space, or sunlight	
Food chain	A diagram that uses arrows to show how energy in food is passed from one organism to another in an ecosystem; food chains only model one path that energy takes as one organism eats another	 Corn Rat Owl

Food web	A diagram that uses arrows to show how energy in food is passed from one organism to another in an ecosystem, models many paths that energy can take as one organism eats another	
Adaptation	A trait that helps an organisms survive in a specific environment	
Biodiversity	The measure of how many species are in an area or the genetic variation within a species or population	
Sustainability	The ability to survive over long periods of time despite changes in the environment	
Primary succession	Life is coming to area with no soil, a newly formed ecosystem	
Secondary succession	Life is returning to an ecosystem after a disturbance; soil already present	
Pioneer species	The first living things to arrive after a large ecological disturbance or when new land forms	
Ecological succession	The gradual change in an ecosystem from an unoccupied habitat (after a disturbance or new land formation) to a climax community	
Skeletal system	The body system that consists of bones and provides shape, structure and protection	

Circulatory system	The body system that transports gases, hormones, and nutrients throughout the body using blood	
Excretory System	A body system that filters the blood to remove waste and maintains a water balance; removes liquid waste	
Digestive system	The body system responsible for breaking down nutrients to be absorbed into the bloodstream and for removing solid waste	
Endocrine system	The body system that releases hormones	
Respiratory system	The body system responsible for exchanging gases (oxygen and carbon dioxide) with the environment	
Nervous system	The body system responsible for sensing and responding to the environment	
Muscular system	The body system that consists of muscles that generate movement and heat	
Integumentary system	The body system that comprises the skin; protects the body from damage, and loss of water or damages from the outside	

Reproductive system	The body system that consists of sex organs and work together for sexual reproduction	
Prokaryotic	A cell that does not contain a nucleus or membrane-bound organelles	
Eukaryotic	A cell that has DNA stored in an nucleus and membrane-bound organelles	
Organelle	A structure inside a cell that carries out a specific activity; most organelles have a membrane that surrounds them	
Cell membrane	The thin, flexible outside layer of the cell that contains everything inside of the cell and allows materials in and out	
Cell wall	The structure outside of the cell membrane that is used to provide support and protection	
Nucleus	The organelle that contains DNA/genetic material and serves as the control center for the cell	
Cytoplasm	The jelly-like fluid between the cell membrane, holds organelles in place	
Mitochondria	The organelle responsible for converting nutrients into energy that can be used by the cell	
Chloroplast	The organelle containing chlorophyll that is responsible for converting light energy into chemical energy through photosynthesis	
Vacuole	The organelle that stores water, nutrients, and sometimes waste	
Sexual reproduction	A process where two parents each provide 50% of the genetic material to produce offspring	

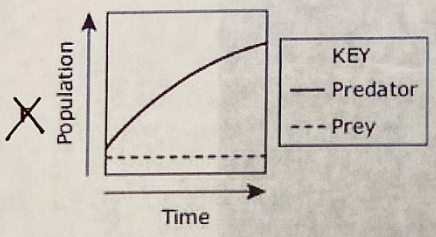
Asexual reproduction	A process where identical copies of one parent are produced to create offspring	
Inherited trait	Traits that are coded in DNA and are passed from parents' genes to the child/offspring and are passed down from generation to generation	
Acquired trait	Traits that cannot be inherited or passed down from parent to offspring as they are not coded in DNA. They are acquired or learned over time as one ages	
Autotroph	An organism that gets energy it needs by making its own food through a chemical process	
Heterotroph	An organism that gets energy by eating other living things as food	
Unicellular	An organism that is only made up of one cell	
Multicellular	An organism that has a body made up of many cells	
Domain	The broadest classification of living things and includes eukarya, bacteria, and archaea and is subdivided into kingdoms	
Kingdom	A major group into which scientists classify organisms based on key characteristics including uni/multicellular, auto/heterotrophic, and pro/eukaryotic	

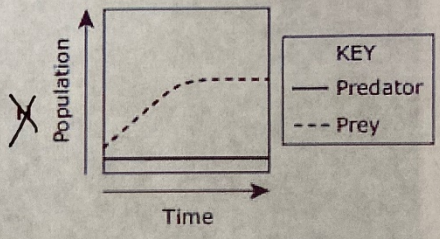
Archaebacteria	The kingdom that includes organisms that are single-celled prokaryotes that live in extreme environments	
Eubacteria	The kingdom that includes are single-celled prokaryotes	
Protists	The kingdom that includes organisms that are single-celled, eukaryotic organism and can be auto or heterotrophic	
Plants	The kingdom that includes organisms that are multicellular, autotrophic, eukaryotic organism with chloroplasts	
Animals	The kingdom that includes organisms that are multicellular, heterotrophic, eukaryotic organisms that have complex body systems	
Fungi	The kingdom that includes organisms that are eukaryotic, heterotrophic, and can be uni or multicellular. They are non-mobile	

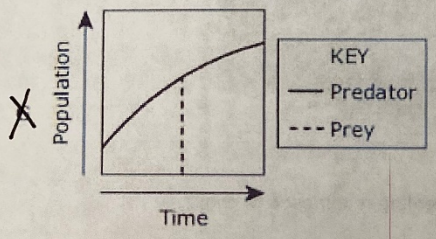
Essential STAAR Questions (Review this)!

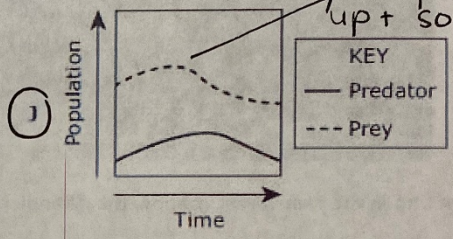
·predators eat prey

Four students were asked to create a graph representing a typical predator–prey relationship. Which graph shows a situation in which the number of predators in a population depends on the number of prey? = prediction → there are more prey than predators!





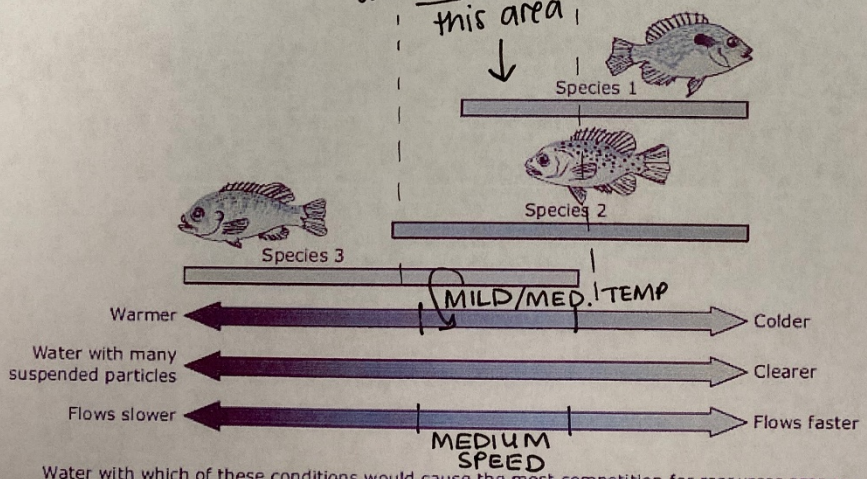




# of prey goes up + so does the # of predators

23 The graph below shows the range of water conditions preferred by three species of fish in an Ozark stream.

all three in this area



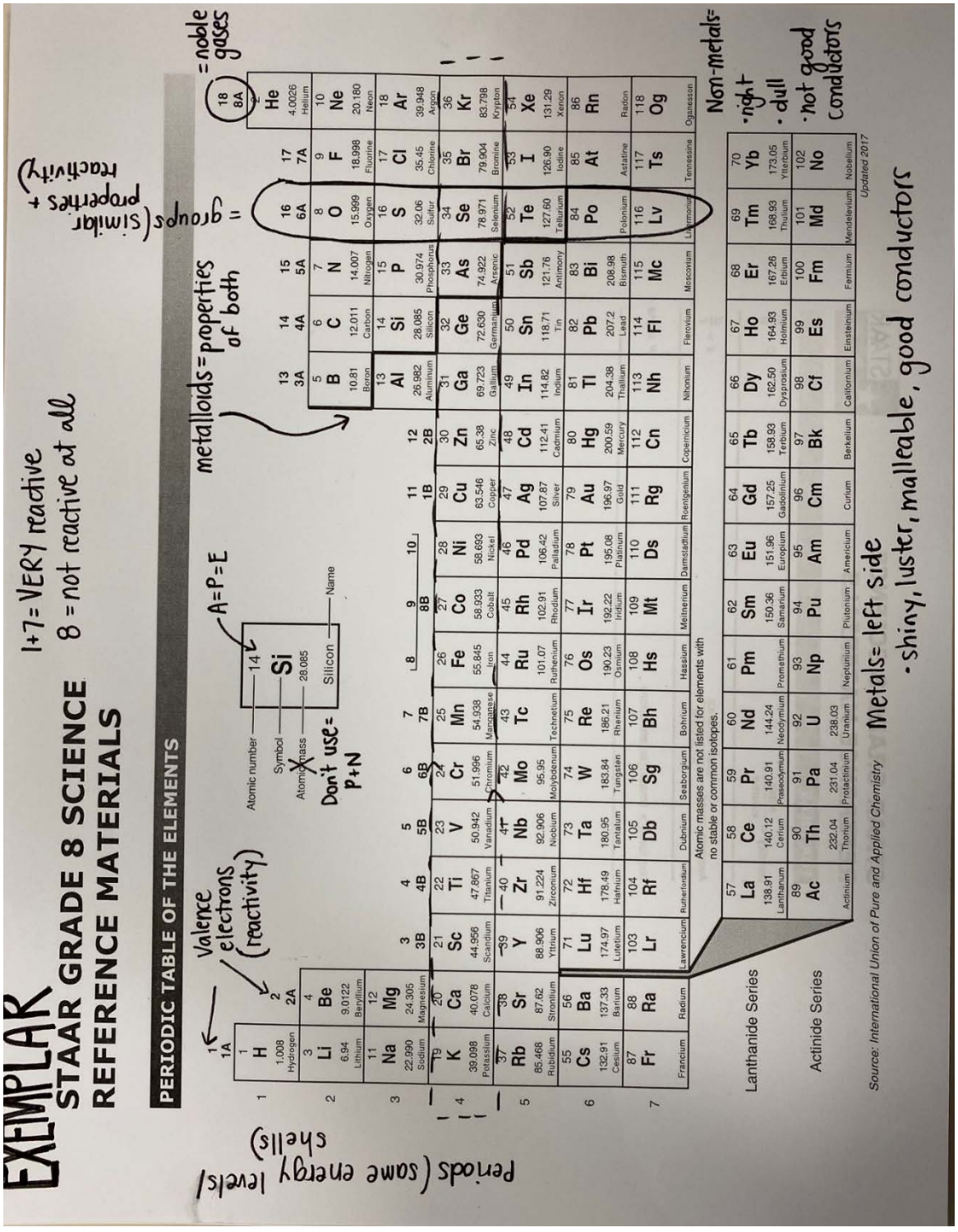
Water with which of these conditions would cause the most competition for resources among all three species of fish?

=when 2 or more individuals try to use the same resource

- Very cold, very clear, and very fast
- Very warm, very clear, and very slow
- Mild temperatures, some suspended particles, flows very fast
- (D) Mild temperatures, some suspended particles, flows at a medium speed

STAAR Reference Materials

- During the STAAR exam, every student will receive a ***blank copy*** of these reference materials.
- Your job is to memorize the information and make your reference sheet look like the exemplar below.
- One blank copy is provided here, and there are ***additional practice sets in your science supplemental guide.***
- ***Pro-tip:*** Copy everything down during the first ten minutes of the STAAR exam before starting the test!



STAAR GRADE 8 SCIENCE REFERENCE MATERIALS

STAAR State of Texas Assessments of Academic Readiness

FORMULAS

Density = $\frac{\text{mass}}{\text{volume}}$ $D = \frac{m}{V}$

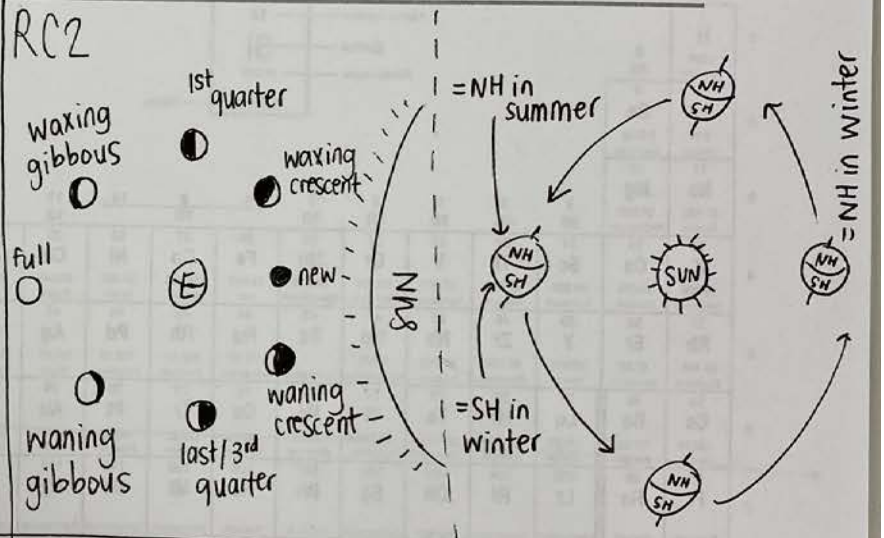
Average speed = $\frac{\text{total distance}}{\text{total time}}$ $s = \frac{d}{t}$

Net force = (mass)(acceleration) $F = ma$

RC1

- protons = + = inside = 1 AMU
- neutrons = ∅ = inside = 1 AMU
- electrons = − = outside = 0 AMU

RC2



RC3

convergent collision = → ←
- mountains

convergent subduction = ← ↘
- trenches + volcanoes

divergent = ← →
- rift valley / mid-ocean ridges

transform = ⇉ ⇇
- earthquakes

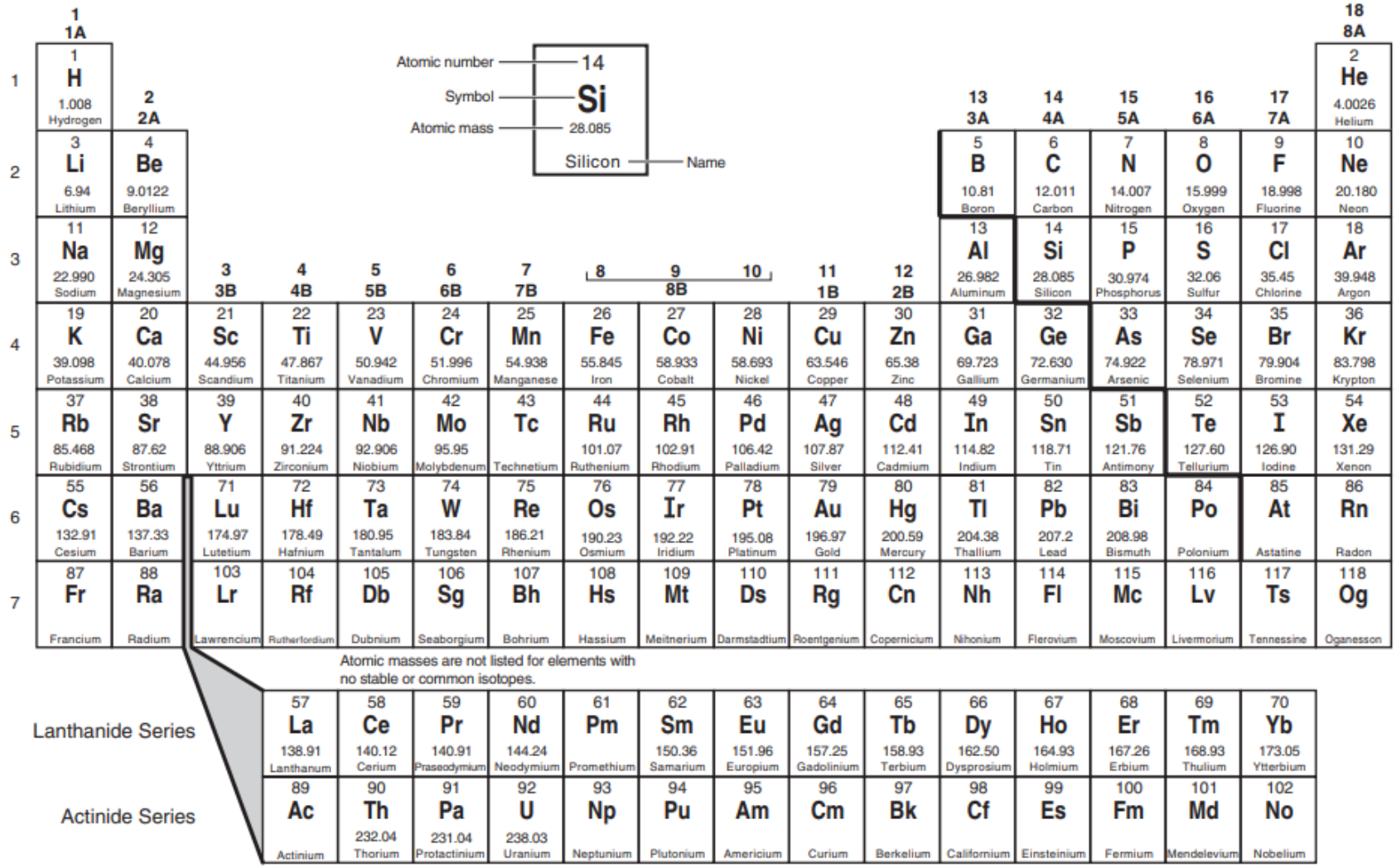
RC4

- Biotic = living
- Abiotic = non-living
- ProKaryotic = no nucleus
- Autotroph = make own food
- Heterotroph = hunts for food

- Include any other facts you want to remember HERE! ☺

STAAR GRADE 8 SCIENCE REFERENCE MATERIALS

PERIODIC TABLE OF THE ELEMENTS



Updated 2017

Source: International Union of Pure and Applied Chemistry

STAAR GRADE 8 SCIENCE REFERENCE MATERIALS

FORMULAS

$\text{Density} = \frac{\text{mass}}{\text{volume}}$	$D = \frac{m}{V}$
$\text{Average speed} = \frac{\text{total distance}}{\text{total time}}$	$s = \frac{d}{t}$
Net force = (mass)(acceleration)	$F = ma$

Unit 1: Exploration and Colonization

Reasons for Exploration

Religion (God):	Wealth (Gold):	Fame and International Recognition (Glory):
to spread Christianity	to gain natural resources and treasure	To expand empires and territory

*Leads to discovery and eventually colonization of North America

European Colonization of the New World

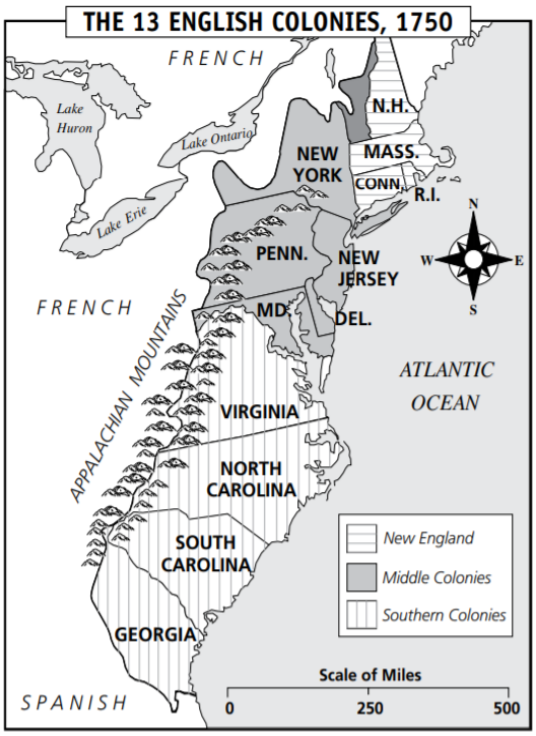
Spanish	French	British
Where: Florida and the Southwest Motivation: spread the Catholic religion and to search for gold Impact: enslaved native peoples and established Catholic Missions	Where: along the Mississippi River and in Canada Motivation: gaining money through fur trading Impact: maintained relatively good relations with the Native American tribes	Where: Along the Atlantic Coast Motivation: for economic gain (Ex: Jamestown) and to offer settlers religious freedom (Ex: Maryland, Connecticut, and Rhode Island) Impact: As colonists began to occupy more land, Native American tribes were forced off their land

Colonial Regions

New England: Massachusetts, New Hampshire, Rhode Island, Connecticut
- People: Mostly Puritans from England wanting to practice their religion freely
- Climate: Long cold winters, rocky soil, vast forests, natural harbors
- Economy: Shipbuilding, timber, fishing, whaling, merchant trade

Middle Colonies: Pennsylvania, New York, New Jersey, Delaware
- People: Diverse population from different European countries, Quakers
- Climate: milder/moderate winters, longer growing season, good soil for crops
- Economy: Cash crops of wheat and other grains ("Bread Basket"), fruits, vegetables, artisans

Southern Colonies: Maryland, Virginia, North Carolina, South Carolina, Georgia
- People: English Anglicans, Catholics escaping persecution, enslaved Africans
- Climate: Warm, rainy, year-round growing season, rich soil for cash crops
- Economy: dominated by plantations, cash crops of tobacco, rice, indigo, and cotton



Early Self-Government

*Due to distance from Great Britain, a need for lawmaking structure, salutary neglect, and traditional rights of Englishmen- American colonists established their own governments in the colonies. Many of these governments included the election of representatives.

Mayflower Compact	Signed by many pilgrims, helped establish the idea of self -government based on a social contract.
Virginia House of Burgesses	1st representative assembly in North America; served as a model for other colonial legislatures
Fundamental Orders of Connecticut	first example of a constitution (formal written plan of government) in the colonies; based free consent of the people (voting)

Economic Systems in the Colonies

Mercantilism	Triangle Trade
• British government imposes strict control of colonial economy • Colonies discouraged from producing manufactured goods • Colonies encouraged to buy British goods • Prevented colonists from trading with most other foreign countries	• Moved slaves, cash crops, and manufactured goods among European, West African and colonial ports • Demand for labor in plantation systems in the southern colonies increased the need for slaves • Southern plantations (large farms) produced "cash crops" for export, including tobacco, indigo, and rice • The need for cheap laborers to grow cash crops encouraged white settlers to use African slaves

Unit 2: The American Revolution

French and Indian War (1754-1763)

- British colonists wanted to take over French land in North America in the Ohio River Valley.
- British soldiers fought against French soldiers and Native Americans.
- Native Americans joined against the British because they were afraid the British would take over their land.
- Treaty of Paris (1763)- Ended the French and Indian War
- As a result of the war, the British began **taxing the colonists to pay for the war** and the **Proclamation Line of 1763** was established to keep colonists from settling west of the Appalachian Mountains.

Causes of the American Revolution

Date	Event	Description
1763	Proclamation of 1763	Law passed by the King of England forbidding the colonists to settle west of the Appalachian Mountains
1764	Sugar Act	Tax on molasses. Britain used funds from tax to recover the cost of defending the colonies during the French and Indian War; angered the colonists
1765	Stamp Act	Tax on legal documents, newspapers, licenses, diplomas, dice, and playing cards. In reaction colonists organized boycotts against British goods.
1765	Quartering Act	British soldiers could stay in colonists' homes; angered colonists.
1770	Boston Massacre	First civilians killed by British soldiers
1770	Townshend Acts	Taxed goods such as glass, paper, lead, silk, and tea; angered colonists.
1773	Tea Act	Tax on tea; led to the Boston Tea Party (protest using civil disobedience)
1774	Boston Tea Party	An act of civil disobedience; colonists dumped British tea into Boston Harbor protesting the Tea Act.
1774	Intolerable Acts	A series of severe laws (cancelled town meetings, closed Boston Harbor) passed to punish the colonists for the Boston Tea Party.
"Taxation without Representation"		British acts such as Sugar Act, Quartering Act, and Stamp Act angered colonists who believed that their civil liberties had been violated. Colonists were not represented in Parliament, the British law-making body that created these colonial laws.

Events of the Revolutionary War

Lexington and Concord (1775)	• **First battles** of the Revolution
Declaration of Independence (1776)	• Document written by Thomas Jefferson and approved by the Continental Congress, listed colonial grievances and claimed independence from Great Britain. • "When in the course of human events…, government should protect life, liberty, and the pursuit of happiness (**unalienable rights**)."
Saratoga (1777)	• **Turning point** of the war • Important victory because it influenced foreign nations (France) to support America in its war against England.
Yorktown 1781	• **Last major battle** of the war • French ships prevented British supplies to reach Yorktown British surrender because of lack of supplies • British lost hope of winning war and began negotiating the Treaty of Paris 1783
Treaty of Paris 1783	• **Ended** the American Revolution • The 13 colonies became independent from England • The boundaries of the new nation were the Mississippi river to the west, Canada to the North, and Spanish Florida to the south.

Unit 3- The Constitution

Articles of Confederation (1781): First form of government established by the 13 states. Replaced by the US Constitution because it created a weak form of central government.

Strengths of Articles of Confederation	**Weaknesses of Articles of Confederation**
• States' rights (result of strong fear of a tyrannical leader) • Confederation of states with equal voice in Congress • Congress had power to make war and peace, sign treaties; raise an army and navy; print money, and set up a postal system	• No national taxes (no ability to gain national revenue to pay for army, navy, or other national interests; had to ask the states for money which they often ignored) • No federal court system (no ability to settle disputes between states) • Lack of strong federal government • No power to regulate commerce (quarrels about taxes on goods that crossed state borders) • No federal leader (no "Executive" to lead the country) • Limited military = no protection • More populous states wanted more representation • Most congressional decisions required the approval of at least nine states

The Northwest Ordinance: established by the Articles of Confederation, outlined the process for admitting a new state to the Union once they had a population of sixty thousand, guaranteed that newly created states would be equal to the original thirteen states, protected civil liberties and outlawed slavery in the new territories.

7 Principles of the Constitution

Separation of Powers	Divides the powers of government into 3 branches. *Example: Legislative Branch – makes the laws; Executive Branch – executes the laws; Judicial Branch – interprets the laws*
Checks and Balances	Each branch has some power over the other two; makes sure no branch of the government becomes too powerful *Example: The President can veto a bill, Congress can impeach a president, and the Supreme Court can rule a law unconstitutional.*
Federalism	Power is shared between the states and national government. *Example: US makes some laws and TX makes others*
Limited government	the power of the government is restricted by the U.S. Constitution. *Example: "No one is above the law."*
Republicanism	A system where people vote for elected representatives to run the government. *Example: voting for representatives and Senators in Congress*
Popular Sovereignty	The people hold the ultimate power. *Example: "We the people…"*
Individual Rights:	Awe have rights the government cannot take away; Bill of Rights *Example: Protect individual rights and liberties*

Bill of Rights	
Amendment	
1st	Freedom of speech, religion and press; right to assemble; right to petition
2nd	Right to bear arms
3rd	No quartering of troops during peace time
4th	No unlawful search and seizure
5th	Right to Due Process, no double jeopardy, do not have to testify against yourself.
6th	The right to a fast and public trial, right to have a lawyer
7th	Trial by jury in civil cases
8th	No cruel or unusual punishment or excessive fines or bail
9th	Rights reserved to the people
10th	Powers reserved to the states

Amending the Constitution

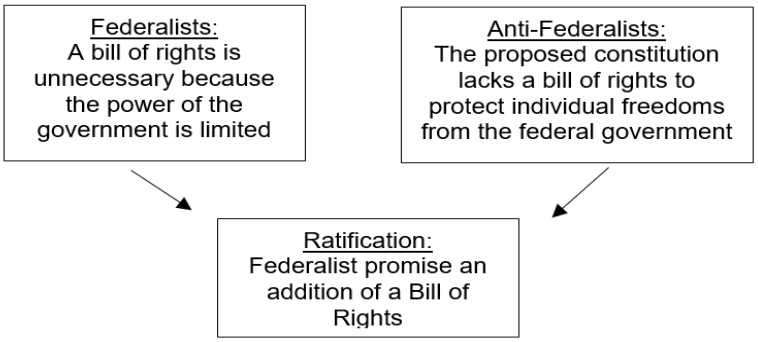
Purpose: The Constitution can be changed or amended when it is deemed necessary by the people to adjust to changing times and to maintain a "living" document.

Ratification of the Constitution

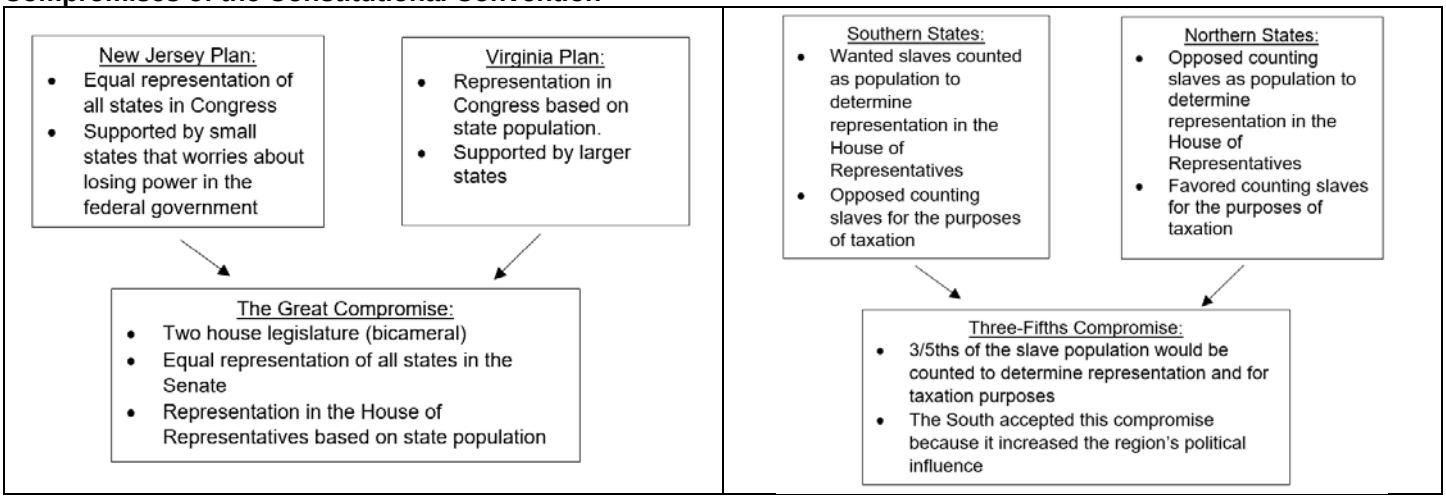
Ratification – approval of a document or policy

Federalist:	Anti-Federalist:
Believed a strong central government will provide order and stability	Wanted a weak federal government and strong state governments
Supported the ratification of the US Constitution	Opposed the ratification of the US Constitution
Alexander Hamilton, John Jay, and James Madison.	Patrick Henry, George Mason

- Federalist Papers (1787-1788) – Essays written to encourage ratification of the constitution.



Compromises of the Constitutional Convention



Grievance in the Declaration of Independence	Addressed in the Constitution
Taxation without representation *"For imposing taxes on us without our consent"*	All states have representation in Congress which sets taxes
King has absolute power *"For abolishing the free system of English laws"*	Congress has the power to override Presidential veto with 2/3's vote and president can be impeached
Colonists not allowed to speak out against the King *"his invasions on the rights of the people"*	1st Amendment – Freedom of speech, press, and assembly
Quartering Act forced colonists to house troops *"For quartering large bodies of armed troops among us"*	3rd Amendment – No quartering of troops
Colonists' homes could be searched without a warrant	4th Amendment – No unwarranted search & seizure
No trial by jury of peers *"For depriving us, in many cases, of the benefits of trial by jury"*	6th Amendment – Speedy and public trial, by an impartial jury 7th Amendment – Right of trial by jury

Unit 4: The Early Republic 1789-1836

Early U.S. Presidents

George Washington	John Adams	Thomas Jefferson	James Madison	James Monroe	John Quincy Adams	Andrew Jackson
(1789-1797)	(1797-1801)	(1801-1809)	(1809-1817)	(1817-1825)	(1825-1829)	(1829-1837)
	Federalist	Democratic-Republican	Democratic-Republican	Democratic-Republican	Democratic-Republican	Democratic
• National Bank • Whiskey Rebellion • Proclamation of Neutrality • Farewell Address	• Alien and Sedition Acts	• *Marbury v. Madison* • Louisiana Purchase • Embargo Act of 1807	• War of 1812	• Missouri Compromise • Monroe Doctrine	• Election of 1824= "Corrupt Bargain"	• Nullification Crisis • Indian Removal Act

Washington's Presidency

The United States had l**arge debts from the American Revolution.** Alexander Hamilton, Secretary of the Treasury, created a plan to improve (ensure the stability of) the U.S. economy. In this plan the federal government assumed state debts (from the war), **established a national bank**, and placed a tax on whiskey.	**The Whiskey Rebellion challenged the idea that the federal government had the power to pass and enforce tax laws**. The U.S. central government struggled to define its domestic authority, but ultimately used the strength of the new government (under the U.S. Constitution) to send in the army to stop farmers rebelling over the federal tax.	**The Proclamation of Neutrality** declared that the United States would remain neutral (not choose a side) in conflicts between Great Britain and France.	Washington's **Farewell Address** warned that the United States should **"steer clear of permanent alliances"** in order to avoid becoming involved in the **political affairs of other countries**. It also warned against the formation of political parties, national debt, and a large military.

Formation of Political Parties

The first political parties in the United States formed mainly in response to disagreements over the extent of political power and how the nation should develop economically, this include whether the federal government had the power to establish the First Bank of the United States.

First Political Parties	
Federalists	Democratic- Republicans
• Alexander Hamilton • Loose interpretation of the Constitution • Wanted a strong national government • **Supported national bank**	• Thomas Jefferson • Strict interpretation of the Constitution • Wanted a weak federal government and strong state governments • **Against national bank**

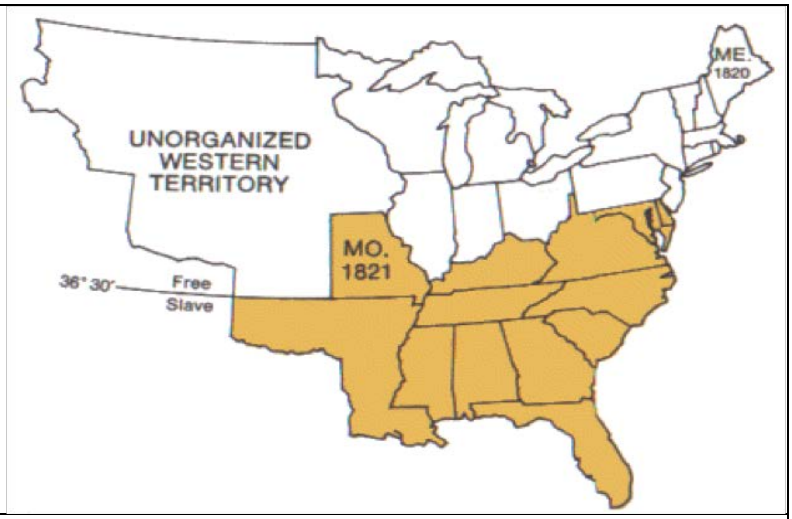
Adams- Jefferson Key Events:

Alien and Sedition Acts	Domestic issue; made it difficult for immigrants (who generally supported the Democratic-Republican Party) to become citizens. Made it unlawful to criticize the government. Led to Virginia and Kentucky Resolutions- based on the theory of states' rights- the idea that each state has the right to determine whether an act of Congress is unconstitutional.
Marbury v. Madison	The Supreme Court decision in this case, written by Chief Justice John Marshall (a Federalist), established the principle of judicial review. Eventually this principle would be used by all federal courts to strike down any law that the court deems unconstitutional. The principle of judicial review established that judges had the authority to decide the constitutionality of a law.
Louisiana Purchase	Acquired from France in 1803. This acquisition doubled the territory of the United States and gave the U.S. control of the Mississippi River and the port city of New Orleans.
Building a Military	Due to American Indian attacks on the frontier, conflicts with Barbary pirates in North Africa, and the British impressment of Sailors, the United States started to build up its military, including creating a navy.
Embargo Act of 1807	**What:** This law cut off U.S. trade with Britain and France **Why:** Was meant to serve as a punishment to Britain and France because those countries were seizing U.S. **Impact:** New England suffered due to a decline in foreign trade which damaged the commercial shipping industry and the South suffered financial losses because they could not sell surplus cash crops.

Causes	Events	Effects
• British **impressment of U.S. sailors** • British support of American Indians in the Northwest Territory • War Hawks wanted to expand into Canada	• The British captured and burned the White House • Francis Scott Key wrote a poem titled "The Defence of Fort McHenry" which celebrated the patriotic act of defending an American fort against the British. The poem was combined with music and became a popular song known as "**The Star-Spangled Banner**." • Both sides claimed victory and the war ended with the signing of the **Treaty of Ghent** in 1814.	• **Domestic Industrial Growth:** Disruptions in European trade prior to and during the War of 1812 decreased the U.S. supply of foreign goods. This significantly affected the U.S. economy as American industries expanded, by increasing manufacturing, to provide replacements for foreign goods. • **Growing Nationalism:** After defending themselves from Britain, the U.S. experienced a renewed sense of nationalism (pride for one's country). This period of time became known as the **Era of Good Feelings**. • **Loss of Native American Land:** Native Americans had aligned with the British and after the defeat were mostly driven out of the Northwest Territories. • **Worldwide Respect:** America had proved it could protect itself • **Andrew Jackson, a national hero:** due to victory in the Battle of New Orleans

Monroe Key Events:

Missouri Compromise	**Why:** Addressed the fundamental issue of whether slave labor should be allowed to expand into new states in the western territories. **What:** Missouri admitted to the Union as a slave state, Maine admitted as a free state. Prohibited slavery in future states north of the x line of latitude. **Result:** Temporarily relieved sectional tensions as power between slave and free states remained balanced in Congress
Monroe Doctrine	**Who:** Issued by President Monroe **What:** Established that the American continents (including South America) were free and independent and therefore further colonization of the Americas by European countries was prohibited **Why:** To prevent European intervention in countries near the United States/prevent further European colonization in the Western Hemisphere

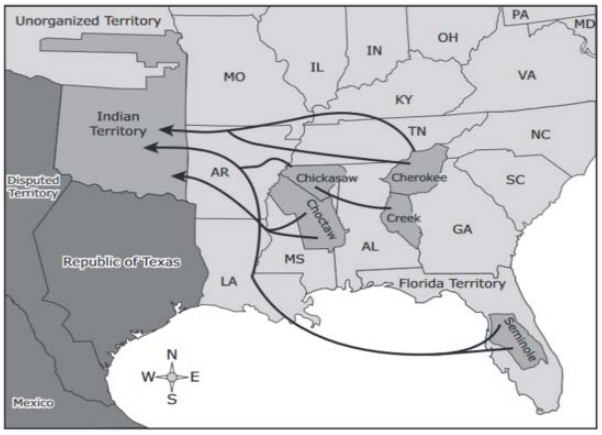


Jackson Key Events:

Elections of 1824 and 1828	• During the 1824 election, Andrew Jackson's supporters claimed a "corrupt bargain" had occurred when The House of Representatives elected John Quincy Adams over Andrew Jackson, despite Jackson having won the most votes in the Electoral College. Motivated by this decision, Jackson's supporters increased voter participation during the 1828 election and won the presidency. • The election of Andrew Jackson as president is associated with the formation of the Democratic Party.
Spoils System	During the 1830s public servants and officials were widely perceived to be unqualified due Jackson's practice of rewarding political supporters with appointments to desirable government positions.
Nullification Crisis of 1832	**Issue:** Do states have the right to declare a federal law unconstitutional? **What:** South Carolina attempted to nullify (cancel) a federal law and threatened to secede (leave) the Union. **Why:** Conflicting interpretations of the Tenth Amendment: • President Andrew Jackson proclaimed that the power of a state to annul a law of the United States was "incompatible with the existence of the Union, [and] contradicted …the Constitution." • South Carolina claimed states' rights- the theory that states have all the powers that the Constitution does not specifically give to the federal government nor forbid the states.

Jackson Key Events Continued	
Indian Removal Act	During the 1830s, the federal government relocated American Indians off their ancestral land to acquire the valuable agricultural land and natural resources located there. • The Cherokees in Georgia: **Gold was discovered** on Cherokee land. **Georgia** annexed the Cherokee land and **abolished the Cherokee government** and its laws. The Cherokee Nation challenged Georgia before the Supreme Court. In the 1832 Supreme Court case ***Worcester v. Georgia***, the court ruled that Georgia did not have legal authority over the Cherokees living in the state. **President Jackson ignored the ruling** and allowed Georgia to evict the Cherokee Nation and distribute the land to white settlers. Members of the Cherokee nation refused to leave, but troops eventually forced them to walk the **Trail of Tears to Indian Territory (present-day Oklahoma)**. Thousands died on the Trail of Tears due to cold, hunger, and disease. • The Seminoles in Florida: The adoption of Indian Removal policies led to warfare between the US government and Seminoles living in southwest Florida. After 7 years, an agreement was reached that allowed the Seminoles to remain on their land.

Relocation of American Indians in the 1830s



Unit 5- Industrial Revolution and Westward Expansion

Industrial Revolution

Causes		Effects
• New means of transportation • technological innovations (including the creation of the factory system) • a large labor force (expanded by immigration) • a decrease in the availability of imported goods due to the War of 1812	Rapid industrialization of the United States known as the **Industrial Revolution** • period during the 1800s when production of goods transitioned from homes to factories. • primarily impacting the North, as the South continued its economy based on the plantation system • Businesses experienced a free enterprise economy with limited government interference (rules/laws), prices determined by supply and demand, and private ownership of profits.	• Factories produced goods more efficiently -> increased production levels and a decrease in the price of goods for consumers • Factories were located in cities. There was a decrease in rural population and an increase in urban populations as people moved to cities in search of economic opportunities. • Rapidly growing cities led to overcrowding, pollution, and widespread crime. • Impacted women, as many were recruited and migrated to cities to work as cloth weavers in textile mills(factories).

Innovations in Transportation and Technology

Innovation	Description	Effects
Railroads (and the Trans-continental Railroad)	• Made possible by the invention of the steam engine, the availability of cheaper, ad stronger steel created by Bessemer process • Irish and Chinese immigrants were often employed to build railroads in the western territories	• Construction resulted in environmental modifications including: blasting tunnels through mountains and building bridges across rivers • Contributed to westward expansion as it helped to carry people west and opened new markets for goods
Erie Canal	• Factory owners and farmers needed a way to transport their goods so canals were constructed to meet this need. • The Erie Canal connected the Great Lakes to the Atlantic Ocean.	• Rapid growth of cities in the Northeast (including New York as country's busiest seaport) • A decrease in the cost of shipping goods from the Midwest
Steamboats	• allowed for travel against river currents and along canals	• a decrease in the price of boat fares • the development of the tourist industry • more efficient movement (lower cost) of goods
Telegraph	• Invented by Samuel Morse • Used wire lines to instantaneously transmit messages to distant locations	• became a major method of long-distance communication for years to come
Cotton gin	• Invented by Eli Whitney • Quickly "cleaned" raw cotton by removing cotton seeds • cotton was used in northern mills to produce cloth and textiles.	• increased the profitability of cotton led to expanded cotton production and the need for agricultural labor • Slavery then expanded into newly acquired territories and throughout the South to meet the demand • Large-scale cultivation resulted in widespread soil exhaustion caused by decades of farming
Interchangeable parts	• Identical parts that could be fit together to create various products like guns and clocks	• led directly to the use of mass-production techniques, making large numbers of an item at a time.

Immigration

- During the mid-nineteenth century, the population of foreign-born (immigrants) dramatically increased. Immigrants mostly settled in northern states because northern factories had a greater demand for workers and immigrants needed jobs.

Irish Immigration	Chinese Immigration	German Immigration
• Between 1846 and 1855 approximately 1.5 million immigrants left Ireland for the United States due to a famine caused by the failure of the potato crop. • Irish immigrants worked in factories and helped to build railroads. Some nativist groups blamed Irish immigrants for taking away jobs.	• In the early 1850s, seeking gold was the primary pull factor that caused Chinese immigrants to come to the United States. • During the nineteenth-century, immigrants from China worked in California goldfields, helped build the western section of the Transcontinental railroad, established distinct communities in California cities, and faced intense nativism.	• German immigrants contributed to American culture in many ways including: the introduction of kindergarten, the Grimm Brothers' fairy tale stories, meat curing and sausage making, and polka music.

Manifest Destiny

Manifest Destiny: The idea that America should occupying all of North America (all the way to the Pacific Ocean)

<u>During the 1840s:</u>

- rapid population growth and overcrowding
- the prospect of inexpensive land
- the potential for new markets
- the discovery of gold

Political support of Manifest Destiny

One reason James K. Polk won the presidential election in 1844 was that he was committed to fulfilling the goals of Manifest Destiny (which was a popular belief at the time). Polk campaigned about adding Texas and Oregon to the Union.

Westward Expansion

Source: Robert A. Divine et al., *America: Past and Present,* Scott, Foresman (adapted)

U.S. Territorial Acquisitions		
Louisiana Purchase	1803, Purchased from France	• Doubled the size of the United States • US gained control of the Mississippi River and the port of New Orleans • The Missouri River played a major role in the exploration this area
Florida	1819, Acquired from Spain	• Former Spanish colony
Texas	1845, Annexed	• Formerly part of Mexico. Mexico is a former Spanish colony. • The admittance of Texas to the United States would directly lead to the outbreak of the U.S. Mexican War. In 1846, James K Polk asked Congress to declare war against Mexico in order to defend U.S. territory(Texas) from Mexican aggression.
Oregon Territory	1846, treaty signed with Great Britain	• Oregon Treat divided U.S. and British claims to the land • After acquiring the Oregon Territory, the United States achieved its goal of expanding westward to the Pacific Ocean.
Mexican Cession (California and the Southwest)	1848. Treaty of Guadalupe Hidalgo signed at end of U.S.-Mexican War	• former Spanish colony and formerly a part of Mexico • The discovery of gold at Sutter's Mill contributed to population growth in California from 1850-1860. • The mining techniques used during the California Gold Rush impacted the environment by filling rivers with sediment.
Gadsden Purchase	1853, Purchased from Mexico	• intended to support settlement of the U.S. territory gained through the U.S.-Mexican War (California and the southwest) as it would allow for the construction of a southern transcontinental railroad.

Reform Movements

Second Great Awakening	• A period that promoted spiritual revival and inspired people to join reform movements to address social problems. • Several new kinds of activities were developed that expressed religious commitment. These activities included social activism and "camp meetings" (revivals). • During the Second Great Awakening communities were established that were devoted to creating ideal (utopian) societies. Some of these communities were based on the beliefs of transcendentalism.	
Reform Movement	**Leaders**	**Description and Goals**
Transcendentalism	• Ralph Waldo Emerson • Henry Thoreau	• promoted individualism, self-reliance, and a focus on nature
Hudson River School	• Thomas Cole	• Artists that were influenced by the natural landscape of the United States and therefore created paintings that focused on these landscapes and the beauty of nature.
Temperance	• Many organizations were led by women	• The goal was to decrease consumption of alcoholic beverages. • "The Daughters of Temperance" and "Women's Temperance Union" helped to expand the participation of women in social reform.
Women's Rights	• Elizabeth Cady Stanton • Lucretia Mott • Susan B. Anthony	• Lucretia Mott and Elizabeth Cady Stanton led the first Women's Rights convention in Seneca Falls, NY in 1848. • At this gathering, the Declaration of Sentiments was presented. The declaration demanded political and social equality for all women, including the right to vote (suffrage). • Susan B. Anthony later fought for women's suffrage.
Abolitionists	• Fredrick Douglas • Harriet Tubman • Harriet Beecher Stowe	• The goal was to end slavery. • Fredrick Douglas inspired followers by publishing the anti-slavery newspaper *The North Star*. • The publishing of the novel *Uncle Tom's Cabin,* by Harriet Beecher Stowe*,* caused support for the abolitionist movement to grow. • Harriet Tubman was a conductor for the Underground Railroad and helped slaves escape to free states in the north or Canada.

**Other Movements: During the mid-nineteenth century, Dorothea Dix was part of a reform movement that improved facilities for the mentally ill and disabled.

Unit 6: The Civil War

Growing Sectionalism

North	South	West
The North's economy was based on factories due to the numerous fast-flowing rivers.	The South's economy was based on plantations, due to the region's fertile soil for growing crops. By 1861, the primary economic activity was the cultivation of cotton. Lower South states, such as Alabama, Georgia, and Mississippi, had more land devoted to plantations than those in the Upper South. Slave labor was used on plantations.	Western territories had inexpensive land and abundant natural resources, such as deposits of metal ores and minerals. Therefore, the West's economy was based on mining and agriculture.

Continuing Sectional Conflicts Over Slavery

Compromise of 1850	
Why:	Addressed the fundamental issue of whether slave labor should be allowed in the land gained by the U.S.-Mexican War.
What:	• California was admitted as a free state • A new, strict, **Fugitive Slave Law** was passed. This law allowed for the arrest and return of fugitive (escaped) enslaved persons to the South. • In the rest of the Mexican Cession, the issue of slavery would be decided by popular sovereignty (allowing people of the territory to vote on the issue)
Result:	• The Fugitive Slave Law increased tensions among the populations of northern and southern states. • Impacted escaped slaves and freedmen because members of both groups were captured under the Fugitive Slave Law. • Northerners who believed the law was unfair began to support the abolitionists movement.
Kansas-Nebraska Act of 1854	
Why:	Addressed the fundamental issue of whether slave labor should be allowed in new states.
What:	• Nebraska Territory was divide into two territories. • Slavery in each territory was to be decided by popular sovereignty (vote by the people).
Result:	• Anti-slavery and pro-slavery forces rushed into the territories in order to vote. • "Bleeding Kansas": the name given to the fighting that broke out between the two groups.
Dred Scott v. Sandford	
Issue:	Dred Scott, an enslaved man, sued for his freedom since he had lived in places where slavery was banned.
Decision:	• The Supreme Court exercised judicial review and checked the power of Congress: o Slaves were non-citizens and therefore could not bring a lawsuit to court. o Slaves were property and therefore Congress had no power to ban slavery in federal territories.
Result:	• The **Missouri Compromise was unconstitutional** and slavery could spread.

Secession (withdrawal of Southern States from the Union)

Election of Abraham Lincoln in 1860 →	• Southerners did not trust that Lincoln would not interfere with southern slavery • Actions based on the idea of state's rights: they believed that they had voluntarily joined the union and therefore had the right to leave. • December 20, 1860– South Carolina becomes the first state to secede and other southern states soon followed. →	These southern states **formed the Confederate States of America**. However, President Lincoln did not believe that the constitution allowed for states to legally secede from the Union.
Sectionalism, **states' rights**, and **slavery** were all causes of the Civil War**		

North vs. South

Union	Confederacy
President: Abraham Lincoln **General:** Ulysses S. Grant **Strategy:** The "Anaconda Plan": a blockade of Confederate ports to prevent the Confederacy from using agricultural exports as a source of revenue. • More people, factories, and railroads (important economic advantages) • Lincoln as strong leader	**President:** Jefferson Davis **General:** Robert E. Lee **Strategy:** Defend its land from Northern troops and hope the North would tire of the war and give up • Lacked weapons, supplies, factories, and had fewer railroads • Had strong military leaders and people willing to fight to defend their way of life

Events of the Civil War

Fort Sumter	This Confederate attack upon a Union fort initiated (started) the war.
Battle of Antietam	Bloodiest one-day battle of the Civil War.
Emancipation Proclamation	Order issued by Abraham Lincoln that declared enslaved people in Confederate territory to be free. It encouraged African Americans to fight for the Union, strengthened the union militarily and politically, and shifted the focus of the war to freedom for all.
Battle of Gettysburg	The only time the Confederate Army tried to win a battle in Northern Territory. Lincoln gave the Gettysburg Address here in honor of the dead Union soldiers stating the Union was worth fighting for and included ideas about liberty and equality.
Siege of Vicksburg	Turning Point: Union victory that cut the Confederate territory in half. Confederacy lost control of the Mississippi River and was cut off from its supplies.
Appomattox Courthouse	General E Lee surrendered to Ulysses S. Grant at a private home in Appomattox County, Virginia and ended the Civil War.
Lincoln Assassinated	Lincoln was shot and killed in Ford's Theater by John Wilkes Booth 5 days after Lee's surrender.

Reconstruction (1865-1877)

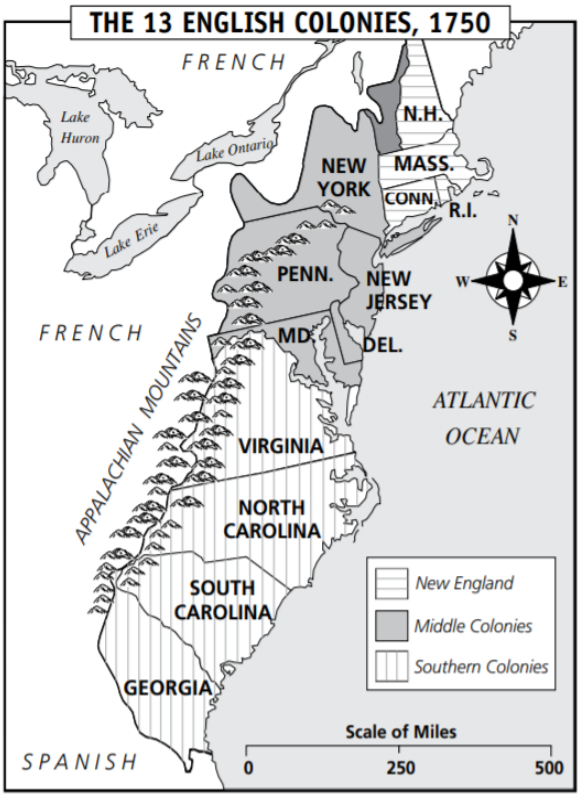
Priority:	Implement a plan to **bring Confederate states back into the Union**
Challenges:	Southern states at the beginning of Reconstruction dealt with conditions such as bank failures and bankrupt businesses, destroyed railroads, farms, and homes, and high food prices and widespread crop failures.
President:	Andrew Johnson became president after Lincoln's death. He followed Lincoln's goals for reconstruction and pushed for the ratification of the thirteenth amendment, which prohibited slavery.
Freedman's Bureau:	Assisted in the reconstruction of the South by providing shelter, food, clothing, public schools, and legal assistance to former slaves.
Radical Republicans:	• Members of Congress who wanted to use the Federal government to impose a new order on the South and grant citizenship rights to former slaves. • Passed the **Civil Rights Act of 1866** which designated all people born in the United States (except American Indians) as citizens and granted all citizen certain rights under the law. This act was significant because it was the first time Congress passed a law that protected racial minorities. • Impeached President Andrew Johnson in 1868, however he was not removed from office, due to his opposition to Radical Reconstruction policies for former Confederate states. • The title "carpetbagger" was given to Northerners that came to the South during the Reconstruction era and supported the Radical Republicans.
Radical Reconstruction:	• Divided the South into military districts • Former Confederate leaders were denied the ability to obtain political positions • Reconstruction governments established the South's first state-funded public-school system, implemented a more equitable tax system, and prohibited racial discrimination in public transportation and accommodations. • Hiram Rhodes Revels became the first African American elected to the U.S. Senate (1870-1871)
Reconstruction Amendments:	**13th Amendment:** Permanently abolished slavery, guaranteeing African Americans freedom from slavery. **14th Amendment:** Reversed the Supreme Court ruling in *Dred Scott v. Sandford* and made all former slaves American citizens **15th Amendment:** Allowed African American men the right to vote.
Black Codes:	Laws enacted by Southern states to limit the effects of the Reconstruction Amendments and control the lives of freedmen.

Lives of African Americans After Reconstruction

Many public places in the South segregated, or separated, African Americans. Later, Jim Crow Laws restrict rights and freedoms.	The sharecropping system traps many former slaves in a cycle of debt.	Poll taxes (fees to vote), literacy (reading) tests, and grandfather clauses were enacted to weaken the Fifteenth Amendment.	White southern leaders regain power and undo Reconstruction Reforms.

1607	First English colony at Jamestown, VA
1619	Virginia House of Burgesses
1620	Mayflower Compact (Pilgrims)
1754 to 1763	French and Indian War (End: Treaty of Paris (1763))
1764	Sugar Act
1765	Quartering Act
1765	Stamp Act
1770	Boston Massacre
1773	Tea Act
1773	Boston Tea Party (British Response: Intolerable Acts (1774))
1775 to 1783	American Revolution (Turning Point: Battle of Saratoga) (End: Treaty of Paris (1783))
1775	Battles of Lexington and Concord
1776	Declaration of Independence
1777	Articles of Confederation
1787	Northwest Ordinance
1787	Constitutional Convention
1789	Bill of Rights
1803	*Marbury v. Madison*
1803	U.S. acquires Louisiana Purchase
1804 to 1806	Lewis and Clark Expedition of Louisiana Purchase
1812 to 1814	War of 1812
1820	Missouri Compromise
1823	Monroe Doctrine
1830	Indian Removal Act
1832	Nullification Crisis
1844	Manifest Destiny
1845	Annexation of Texas
1846 to 1848	Mexican War (End: Treaty of Guadalupe Hidalgo (1848))
1848	U.S. acquires Mexican Cession
1850	Compromise of 1850
1854	Kansas-Nebraska Act
1857	*Dred Scott v. Sandford*
1860	Election of Abraham Lincoln
1861 to 1865	Civil War (Turning Point: Vicksburg) (End: Surrender at Appomattox Court House)
1865 to 1877	Reconstruction

Key Locations



Source: Robert A. Divine et al., *America: Past and Present,* Scott, Foresman (adapted)

Planning Calendar

Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
March 9	March 10	March 11	March 12	March 13	March 14
March 16	March 17	March 18	March 19	March 20	March 29
		Spring Break			
March 23	March 24	March 25	March 26	March 27	March 28
March 30	March 31	April 1	April 2	April 3	April 4
April 6	April 7	April 8	April 9	April 10	April 11
	STAAR Math	STAAR Reading		School Holiday	
April 13	April 14	April 15	April 16	April 17	April 18
April 20	April 21	April 22	April 23	April 24	April 25
April 27	April 28	April 29	April 30	May 1	May 2
May 4	May 5	May 6	May 7	May 8	May 9
			STAAR Science	STAAR Social Studies	
May 11	May 12	May 13	May 14	May 15	May 16
	STAAR Math Retest	STAAR Reading Retest			
May 18	May 19	May 20	May 21	May 22	May 2
May 25	May 26	May 27	May 28		
School Holiday			Last Day of School!		

Important Summer Dates:

- Summer School for students who have not yet passed Reading and Math: June 15 – June 22
- STAAR Math Retest: June 23
- STAAR Reading Retest: June 24