

Georgia Milestones at Home Review Plan

Daily Assignments:

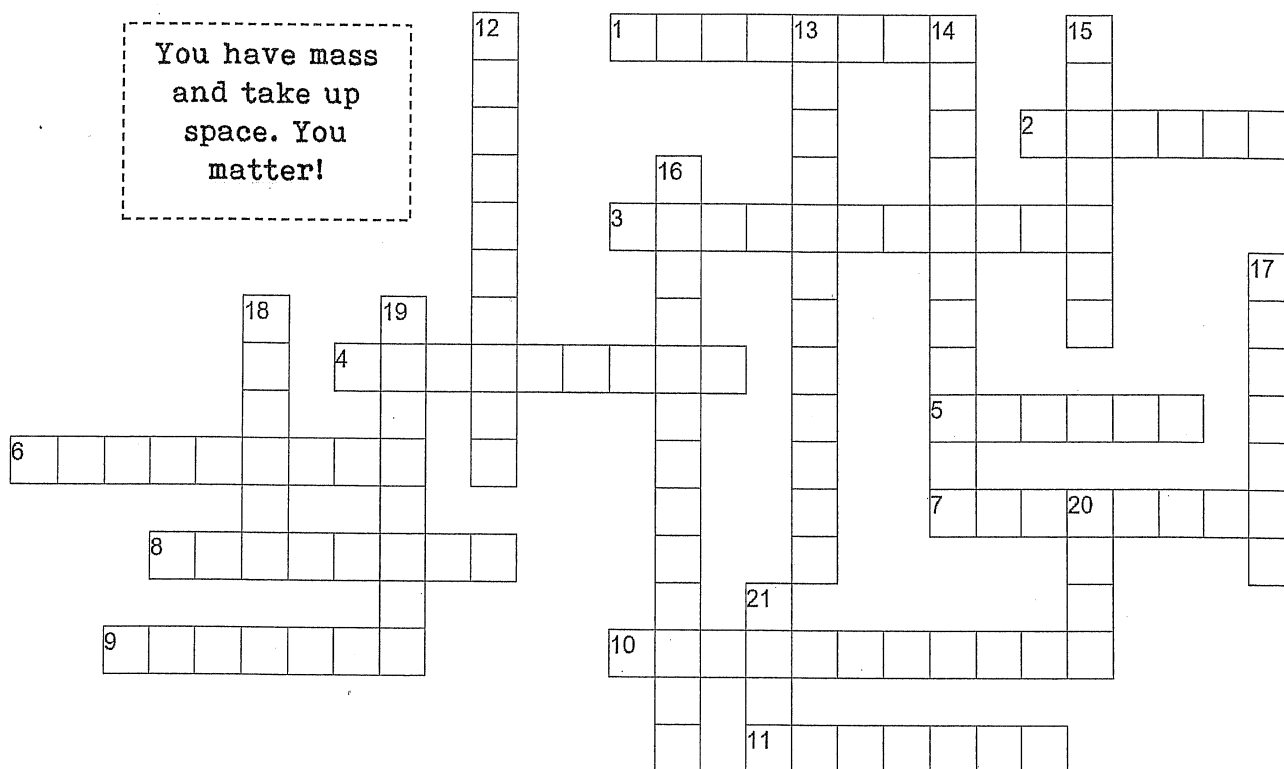
1. Complete the Crossword Puzzle(s)
2. Complete the Georgia Milestones Assessment Item Analysis and Deconstructions
 - a. Identify the Science and Engineering Practice that is the focus of the question
 - b. Highlight and define the key academic vocabulary (use the standard to help you identify these) that this question addresses
 - c. Eliminate two of the answer choices and explain why they are incorrect
 - d. Identify the correct answer choice
 - e. Summary of 5 bulleted points about the key concepts and core ideas for the topics covered

Day	Content Domain	Georgia Standards of Excellence Covered
1	Matter	S8P1a. Pure Substances & Mixtures S8P1c. Properties of Matter S8P1d. Changes in Matter
2	Matter & Energy	S8P1b. States of Matter S8P2d. Thermal Energy and Heat
3	Matter	S8P1e. Atoms and the Periodic Table S8P1f. Law of Conservation of Mass/Matter
4	Energy	S8P2a. Kinetic and Potential Energy S8P2b. KE and PE Transformations S8P2c. Energy Transformations
5	Motion	S8P3a. Motion Graphs– Velocity & Acceleration S8P3b. Forces & Newton's Laws of Motion S8P3c. Force, Mass, Acceleration
6	Waves	S8P4a. Types of Waves S8P4f. Wave Properties
7	Waves	S8P4b. Electromagnetic Spectrum S8P4c. EM Waves Applications
8	Light	S8P4d. Wave Interactions & Behaviors S8P4g. Lenses
9	Sound	S8P4e. Speed of Sound Waves in Media
10	Electricity & Magnetism	S8P5a. Force Fields (electrical, magnetic)

Introduction to Matter

Name: _____

You have mass
and take up
space. You
matter!



Across

1. A group of two or more atoms held together by chemical bonds
2. A measure of the force of gravity on you
3. This is a measure of how much energy particles of matter have
4. The study of matter and how matter changes
5. Anything that has mass and takes up space
6. Carbon dioxide and water are examples
7. This type of energy is stored in bonds between atoms
8. Charcoal's flammability is an example of a ____ property
9. This type of energy relates to heat
10. Salt water is an example of this type of mixture
11. This is calculated by dividing mass by volume

Down

12. This type of change occurs when energy is released
13. The law of ____ of mass states that matter cannot be created nor destroyed
14. This type of change occurs when energy is absorbed
15. A specific type of atom
16. In this type of mixture, parts can be easily separated out
17. This shows the elements in the compound and the ratio of atoms
18. The amount of space that matter occupies
19. This type of property can be observed without changing it into another substance
20. The amount of matter in an object
21. A force of attraction between two atoms

Georgia Milestones Assessment Item Deconstruction and Analysis

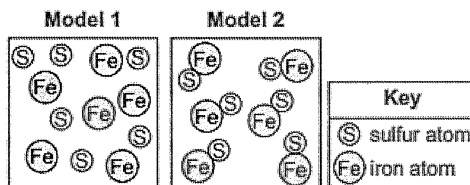
DOK Level: 2

Science Grade 8 Content Domain: Matter

Standard: S8P1. Obtain, evaluate, and communicate information about the structure and properties of matter.

a. Develop and use a model to compare and contrast pure substances (elements and compounds) and mixtures. (Clarification statement: Include heterogeneous and homogeneous mixtures.)

Iron can be found as a gray powder and sulfur can be found as a yellow powder. A student is shown models of two substances made of iron (Fe) and sulfur (S).



The student is asked to classify each substance as a mixture or a pure substance and describe how it would appear. Which classification and description of the models is correct?

- A.
- | Model | Classification | Description |
|-------|---------------------|--|
| 1 | pure substance | uniform |
| 2 | homogeneous mixture | gray and yellow particles visible but evenly distributed |
- B.
- | Model | Classification | Description |
|-------|-----------------------|--|
| 1 | pure substance | gray and yellow particles visible but evenly distributed |
| 2 | heterogeneous mixture | uniform |
- C.
- | Model | Classification | Description |
|-------|---------------------|--|
| 1 | homogeneous mixture | uniform |
| 2 | pure substance | gray and yellow particles visible but evenly distributed |
- D.
- | Model | Classification | Description |
|-------|-----------------------|--|
| 1 | heterogeneous mixture | gray and yellow particles visible but evenly distributed |
| 2 | pure substance | uniform |

Identify the Science and Engineering Practice (SEP) that is the focus of this question.

Highlight and define the key academic vocabulary (use the standard to help you identify these) that this question addresses.

Eliminate two of the answer choices and explain why they are incorrect.

Identify the correct answer choice.

Day 1

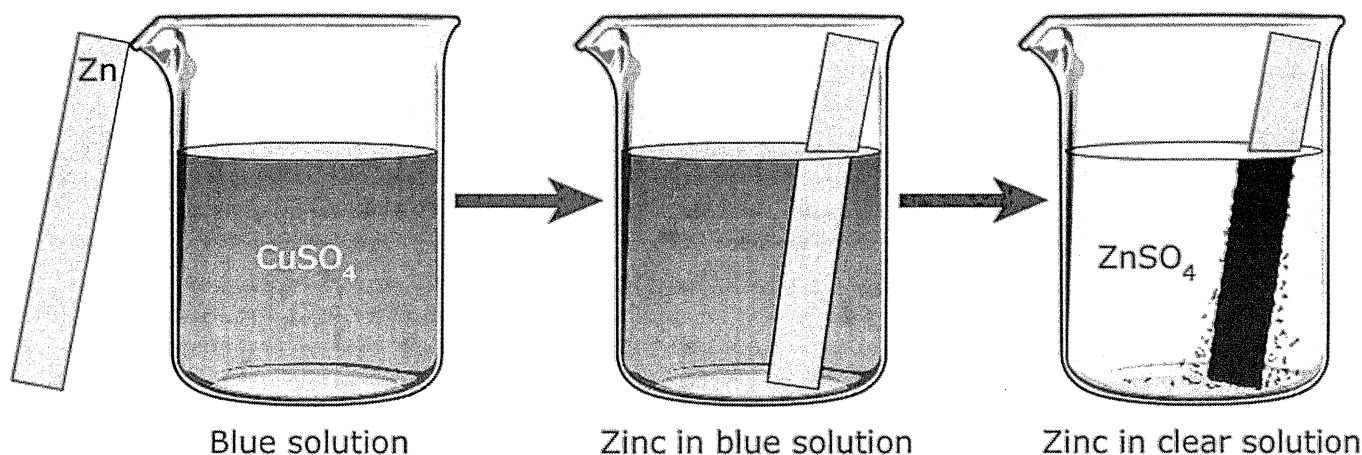
Georgia Milestones Assessment Item Deconstruction and Analysis	
DOK Level: 2	Science Grade 8 Content Domain: Matter
Standard: S8P1. Obtain, evaluate, and communicate information about the structure and properties of matter.	c. Plan and carry out investigations to compare and contrast chemical (i.e., reactivity, combustibility) and physical (i.e., density, melting point, boiling point) properties of matter.
<p>A student is planning an investigation to explore different properties of matter.</p> <p>Which investigation will help the student explore a physical property of matter?</p> <p>A. investigation: Place a solid in a beaker and add a small amount of liquid. observation: The beaker becomes warm to the touch.</p> <p>B. investigation: Add a small amount of solid to a liquid in a beaker. observation: The solid dissolves in the liquid.</p> <p>C. investigation: Add a small amount of solid to a liquid in a beaker. observation: The solution starts to fizz and overflows the container.</p> <p>D. investigation: Place a solid in a beaker and add a small amount of liquid. observation: Bubbles form on the top of the solid.</p>	
Identify the Science and Engineering Practice (SEP) that is the focus of this question.	
Highlight and define the key academic vocabulary (use the standard to help you identify these) that this question addresses.	
Eliminate two of the answer choices and explain why they are incorrect.	
Identify the correct answer choice.	

Standard: S8P1. Obtain, evaluate, and communicate information about the structure and properties of matter.

- d. Construct an argument based on observational evidence to support the claim that when a change in a substance occurs, it can be classified as either chemical or physical. (Clarification statement: Evidence could include ability to separate mixtures, development of a gas, formation of a precipitate, change in energy, color, and/or form.)

A student investigated what happens when a substance goes through chemical or physical changes. For an investigation the student poured a blue solution of CuSO_4 into a beaker. The student then placed a shiny, silver-colored strip of zinc metal in metal in the solution and observed the changes. The student drew a diagram to illustrate the process.

Observations of an Investigation



Based on the diagram what evidence is there that supports the student claim that a chemical change occurred?

- A. A dark solid formed on the zinc metal.
- B. The zinc metal remained silver-colored and shiny.
- C. The CuSO_4 solution turned blue when the zinc metal was added.
- D. There is no evidence that supports the student's claim.

Identify the Science and Engineering Practice (SEP) that is the focus of this question.

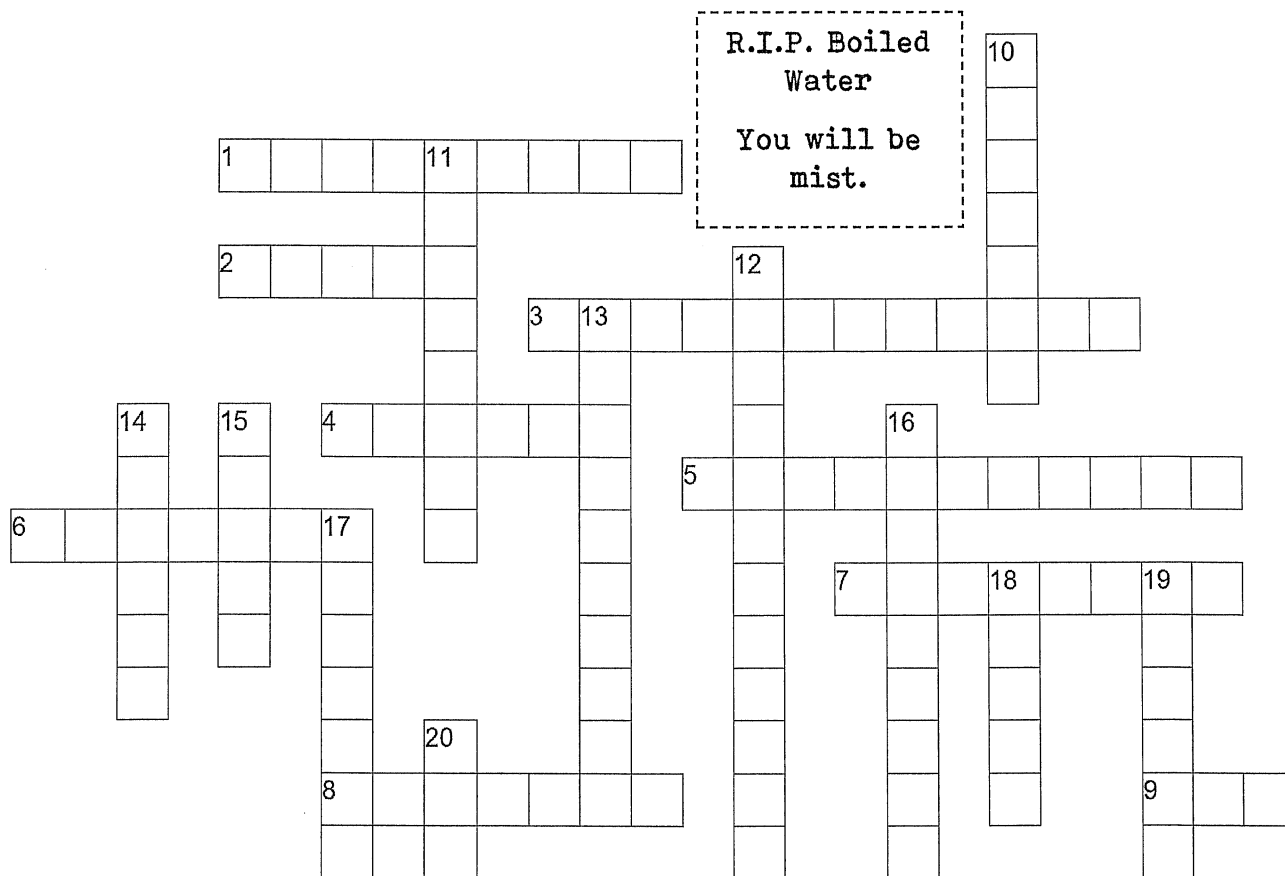
Highlight and define the key academic vocabulary (use the standard to help you identify these) that this question addresses.

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States of Matter

Name: _____



Across

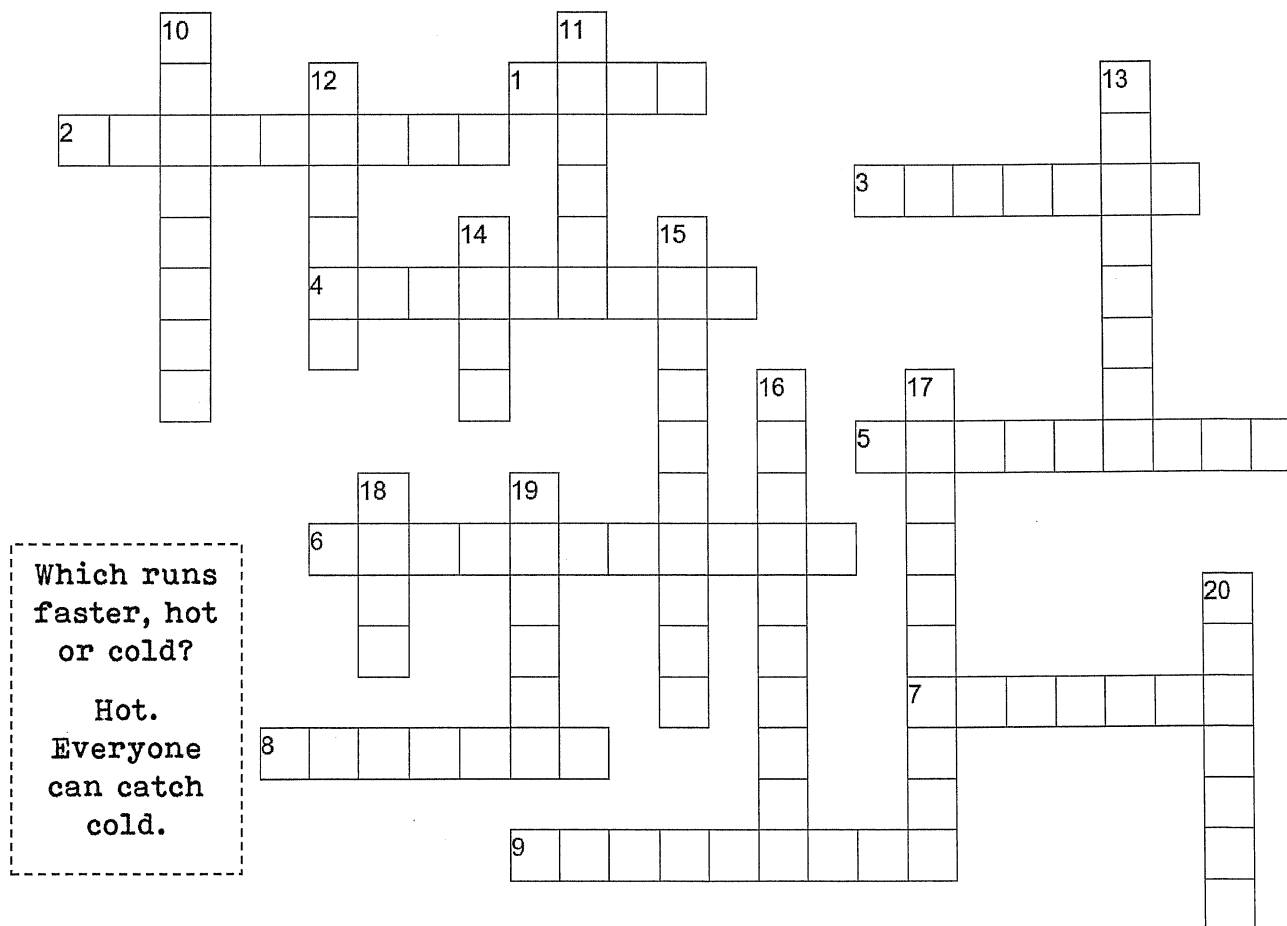
1. Describes solids with particles not arranged in a regular pattern
2. The relationship between gas pressure and volume is described by ____'s law
3. Gas pressure and volume are inversely ____
4. Substances that flow
5. A measure of the average energy of random motion of particles of matter
6. A commonly used unit of temperature
7. Crystalline solids are made of repeating units called ____
8. The relationship between gas temperature and volume is described by ____'s law
9. Frozen water

Down

10. Vaporization that takes place both below and at the surface of a liquid
11. This equals force divided by area
12. The change in state from a gas to a liquid
13. Viscosity is a liquid's ____ to flow
14. A solid has a definite shape and a definite ____
15. The temperature at which a solid changes to a liquid is known as its melting ____
16. When the temperature of a gas decreases, its volume ____
17. Evaporation is vaporization that takes place only on the ____ of a liquid
18. Gases have neither a definite volume nor a definite ____
19. This state of matter has a definite volume but no shape of its own
20. During this sublimation, particles of a solid do not pass through the liquid state as they form this state of matter

Thermal Energy and Heat

Name: _____

**Across**

1. The transfer of thermal energy from a warmer object to a cooler object
2. A material that does not conduct heat well
3. Water boils at one ____ degrees Celsius
4. This enlargement happens when matter is heated
5. A material that conducts heat well
6. A measure of how hot or cold something is compared to a reference point
7. This type of energy is the total energy of all the particles in an object
8. Convection ____ moves in a circular motion
9. The transfer of energy by electromagnetic waves

Down

10. The lowest temperature possible is ____ zero
11. These elements are great thermal conductors
12. Heat is transferred away from ____ areas
13. The amount of energy required to raise the temperature of 1 kg of material by 1 K is called its ____ heat
14. Energy change equals specific heat times temperature change times ____
15. A type of heat transfer that occurs only in fluids
16. This temperature scale is used in the United States
17. This transfers heat from one particle of matter to another within an object or between two objects
18. Thirty two degrees Fahrenheit is equivalent to ____ degrees Celsius
19. This temperature scale is used by many scientists
20. This temperature scale is used in most countries

Georgia Milestones Assessment Item Deconstruction and Analysis

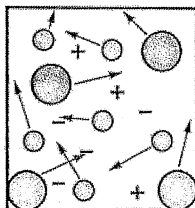
DOK Level: 2

Science Grade 8 Content Domain: Matter

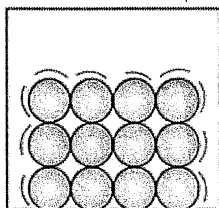
Standard: S8P1. Obtain, evaluate, and communicate information about the structure and properties of matter.

b. Develop and use models to describe the movement of particles in solids, liquids, gases, and plasma states when thermal energy is added or removed.

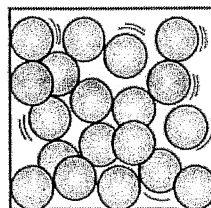
Look at the illustrations.



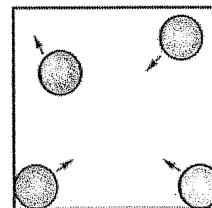
Model 1



Model 2



Model 3



Model 4

Which model shows the structure and movement of particles in a solid?

- A. model 1
- B. model 2
- C. model 3
- D. model 4

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Identify the correct answer choice.

Georgia Milestones Assessment Item Deconstruction and Analysis

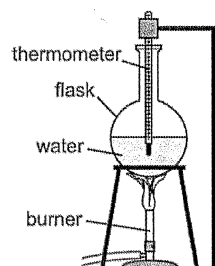
DOK Level: 2

Science Grade 8 Content Domain: Energy

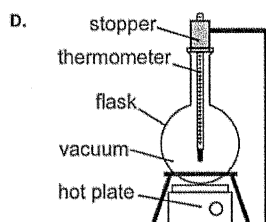
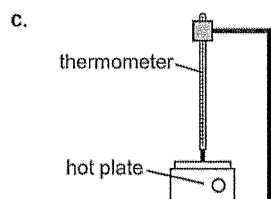
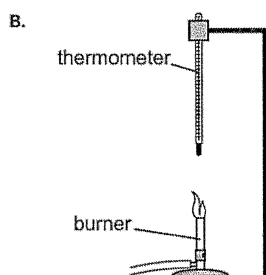
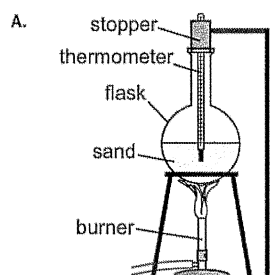
Standard: S8P2. Obtain, evaluate, and communicate information about the law of conservation of energy to develop arguments that energy can transform from one form to another within a system.

- d. Plan and carry out investigations on the effects of heat transfer on molecular motion as it relates to the collision of atoms (conduction), through space (radiation), or in currents in a liquid or a gas (convection).

A student is planning an investigation in which different modes of heat transfer will be used to heat a thermometer. The diagram shows the setup used to conduct the first part of the investigation.



In this setup, the thermometer is being heated by conduction and convection. How should the student change the setup to heat the thermometer by using only radiation?



Identify the Science and Engineering Practice (SEP) that is the focus of this question.

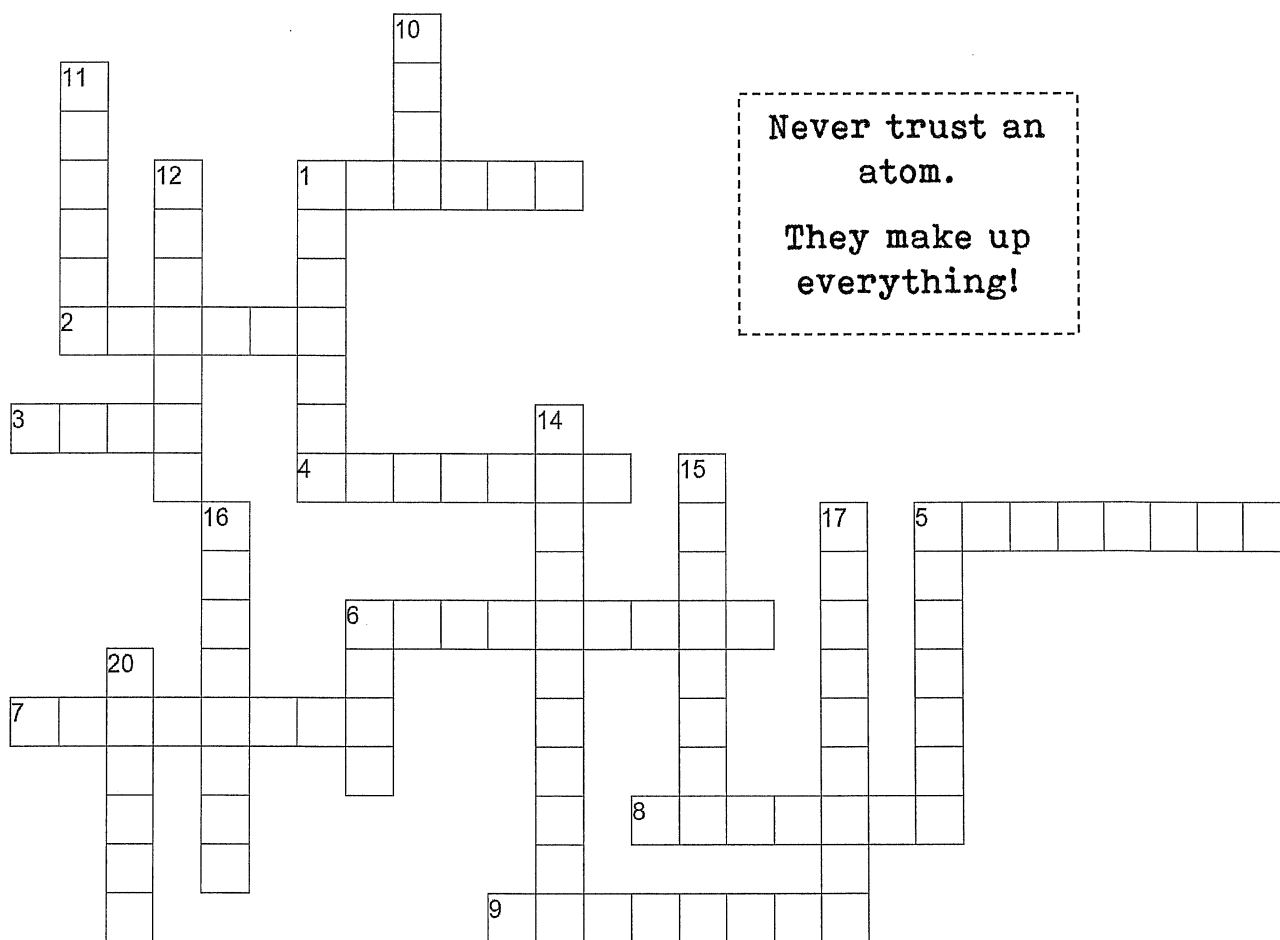
Highlight and define the key academic vocabulary (use the standard to help you identify these) that this question addresses.

Eliminate two of the answer choices and explain why they are incorrect.

Identify the correct answer choice.

Elements and the Periodic Table

Name: _____



Never trust an
atom.

They make up
everything!

Across

1. The atomic ____ is equal to the number of protons in an atom
2. The chemical ____ for potassium is K
3. This element is found in Group 8, period 4
4. "Si" on the periodic table
5. The ____ table arranges the elements in an organized way
6. This Russian chemist created a periodic table in 1869 that helped predict undiscovered elements
7. Atoms with the same number of protons and different numbers of neutrons
8. Rows on the periodic table
9. These atomic particles have no electric charge

Down

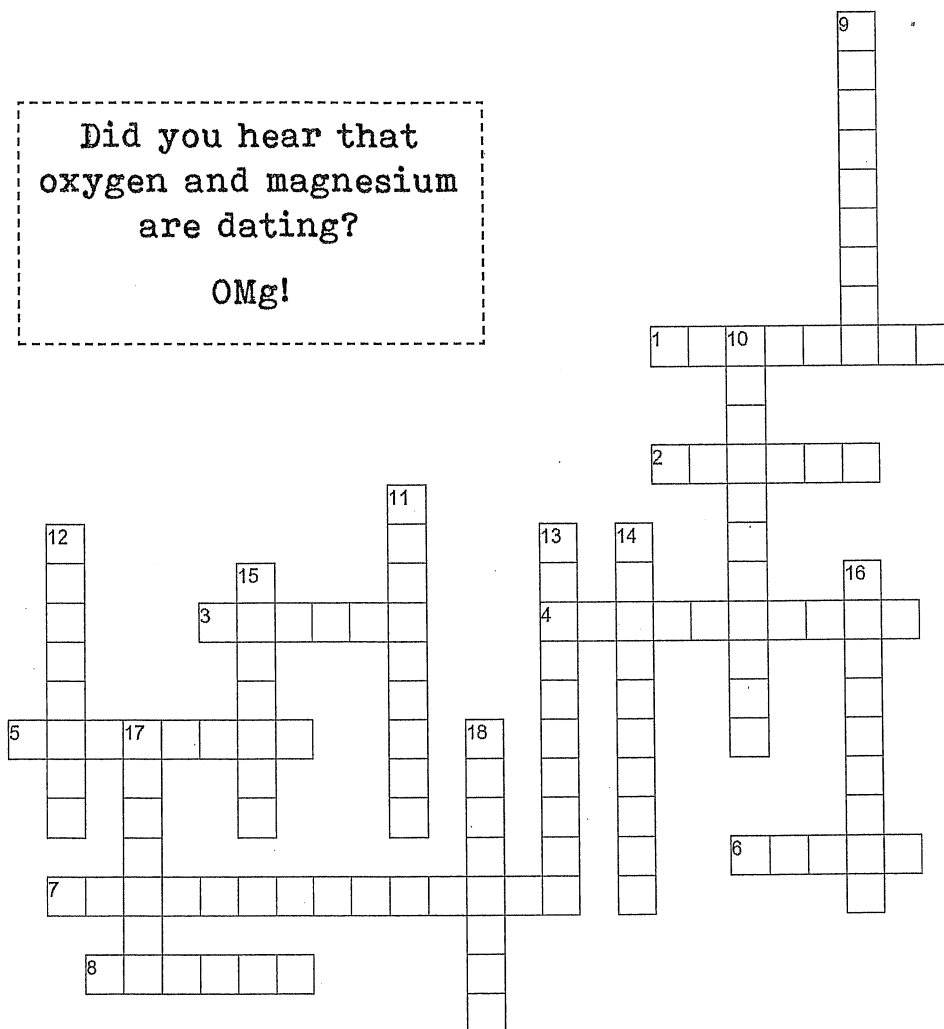
10. The basic particle from which all elements are made
11. Columns on the periodic table
12. A pure substance that cannot be broken down into any other substances by chemical or physical means
1. This small region of the atom contains protons and neutrons
14. Elements in Group 18 are generally ____
15. A group of two or more atoms held together by chemical bonds
16. This element is found in Group 15, period 2
17. Negatively-charged particles found in atoms
5. Positively-charged particles found in atoms
6. The ____ number is the sum of the protons and neutrons in an atom
20. "Na" on the periodic table

Metals, Nonmetals, and Metalloids

Name: _____

Did you hear that
oxygen and magnesium
are dating?

OMg!



Across

1. These elements are found in Group 17
2. Elements that are good conductors of electric current and heat
3. The way a metal reflects light from its surface
4. The elements in Groups 3 through 12 are known as ____ metals
5. Describes a molecule made up of two atoms
6. The ____ gases are found in Group 18
7. Substances that can conduct electric current under some conditions but not under others
8. Group 1 of the periodic table contains the ____ metals

Down

9. Describes a material that can be hammered or rolled into flat sheets
10. The two rows of elements placed below the main part of the periodic table are the ____ and actinides
11. The deterioration of a metal due to a chemical reaction in the environment
12. Group 2 of the periodic table contains the ____ earth metals
13. Elements that have some properties of metals and some properties of nonmetals
14. The ease and speed with which an element combines with other substances
15. Describes a material that can be pulled into long wires
16. Nitrogen, phosphorous, carbon, and hydrogen are all examples
17. This type of conductivity relates to heat
18. This is the only nonmetal found in Group 1

Georgia Milestones Assessment Item Deconstruction and Analysis

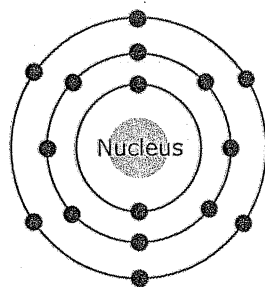
DOK Level: 3

Science Grade 8 Content Domain: Matter

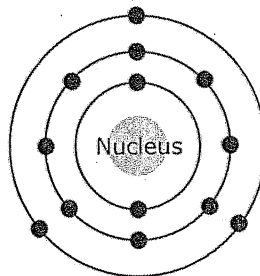
Standard: S8P1. Obtain, evaluate, and communicate information about the structure and properties of matter.

e. Develop models (e.g., atomic-level models, including drawings, and computer representations) by analyzing patterns within the periodic table that illustrate the structure, composition, and characteristics of atoms (protons, neutrons, and electrons) and simple molecules.

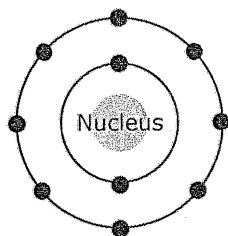
A student developed and used the atomic models below to analyze the patterns found on the periodic table to illustrate the structure and compositions of atoms. The models of four different elements are shown below.



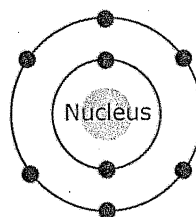
Atom 1



Atom 2



Atom 3



Atom 4

Based on the models shown which two atoms are of elements in the same group on the periodic table?

- A. Atom 1 and Atom 4
- B. Atom 2 and Atom 3
- C. Atom 3 and Atom 4
- D. Atom 1 and Atom 2

Identify the Science and Engineering Practice (SEP) that is the focus of this question.

Highlight and define the key academic vocabulary (use the standard to help you identify these) that this question addresses.

Eliminate two of the answer choices and explain why they are incorrect.

Identify the correct answer choice.

Georgia Milestones Assessment Item Deconstruction and Analysis

DOK Level: 3

Science Grade 8 Content Domain: Matter

Standard: S8P1. Obtain, evaluate, and communicate information about the structure and properties of matter.

f. Construct an explanation based on evidence to describe conservation of matter in a chemical reaction including the resulting differences between products and reactants. (Clarification statement: Evidence could include models such as balanced chemical equations.)

A lab group is conducting an investigation on how matter is conserved in a chemical reaction to generate evidence to support the claim that during a chemical reaction matter is conserved. For the investigation students combined substances in a beaker to observe chemical reaction. They performed two procedures. They measured the mass of each substance before and after each reaction. The data table below show the results of their investigation.

	Mass of Reactants	Mass of Products
Procedure 1	100.0 g	97.5 g
Procedure 2	100.0 g	102.5 g

Assuming the students did not make any careless errors what explanation best explains the changes in mass

- A. Procedure 1: All the reactants were liquids that evaporated.
Procedure 2: A gas was formed as one product, and it escaped into the air.
- B. Procedure 1: One of the reactants was converted to thermal energy.
Procedure 2: All the products were liquids.
- C. Procedure 1: The reactants were liquids with different densities.
Procedure 2: The reactants were combined into only one product.
- D. Procedure 1: One of the products was a gas that escaped into the air.
Procedure 2: A gas from the air reacted with one of the other reactants.

Identify the Science and Engineering Practice (SEP) that is the focus of this question.

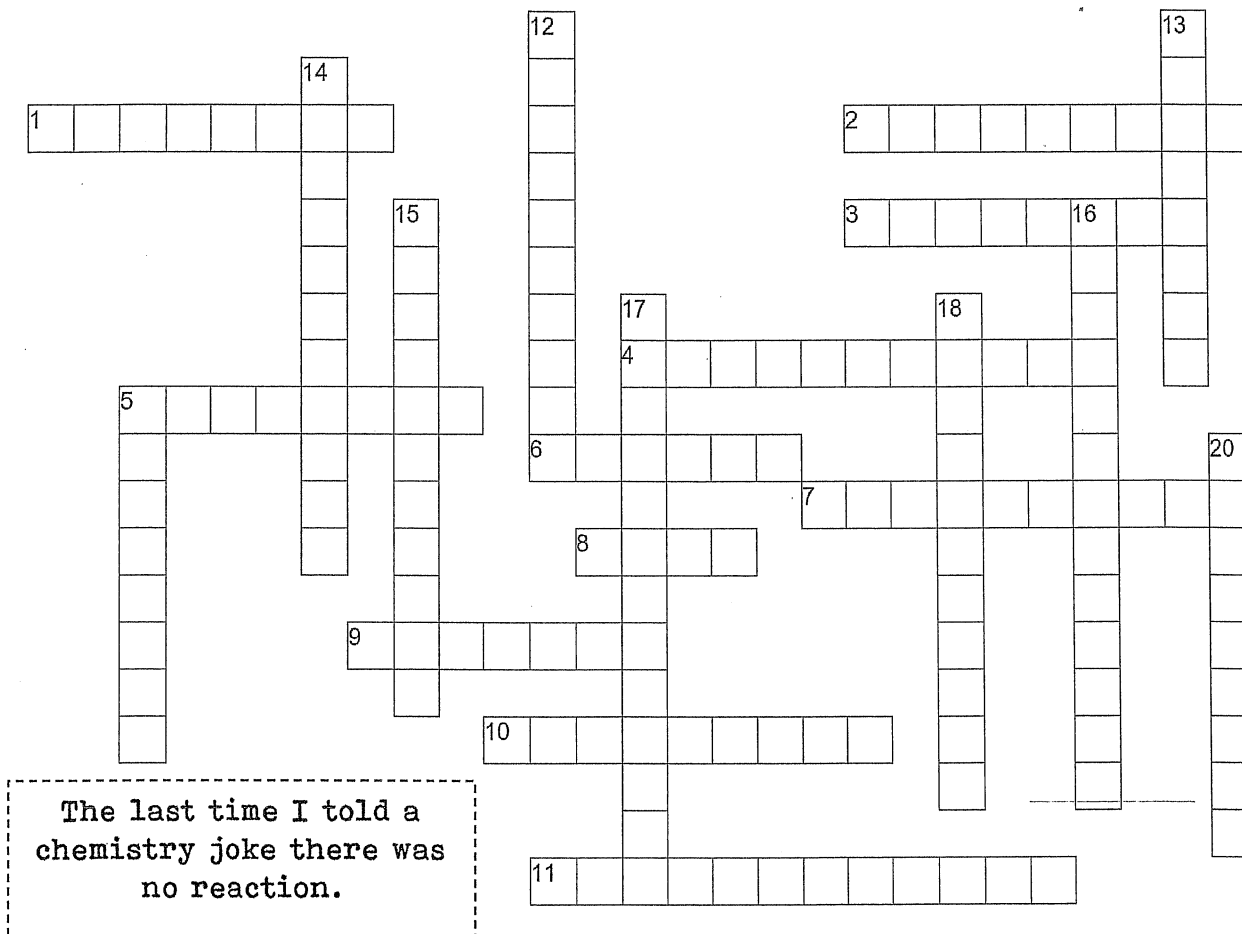
Highlight and define the key academic vocabulary (use the standard to help you identify these) that this question addresses.

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Identify the correct answer choice.

Chemical Reactions

Name: _____

**Across**

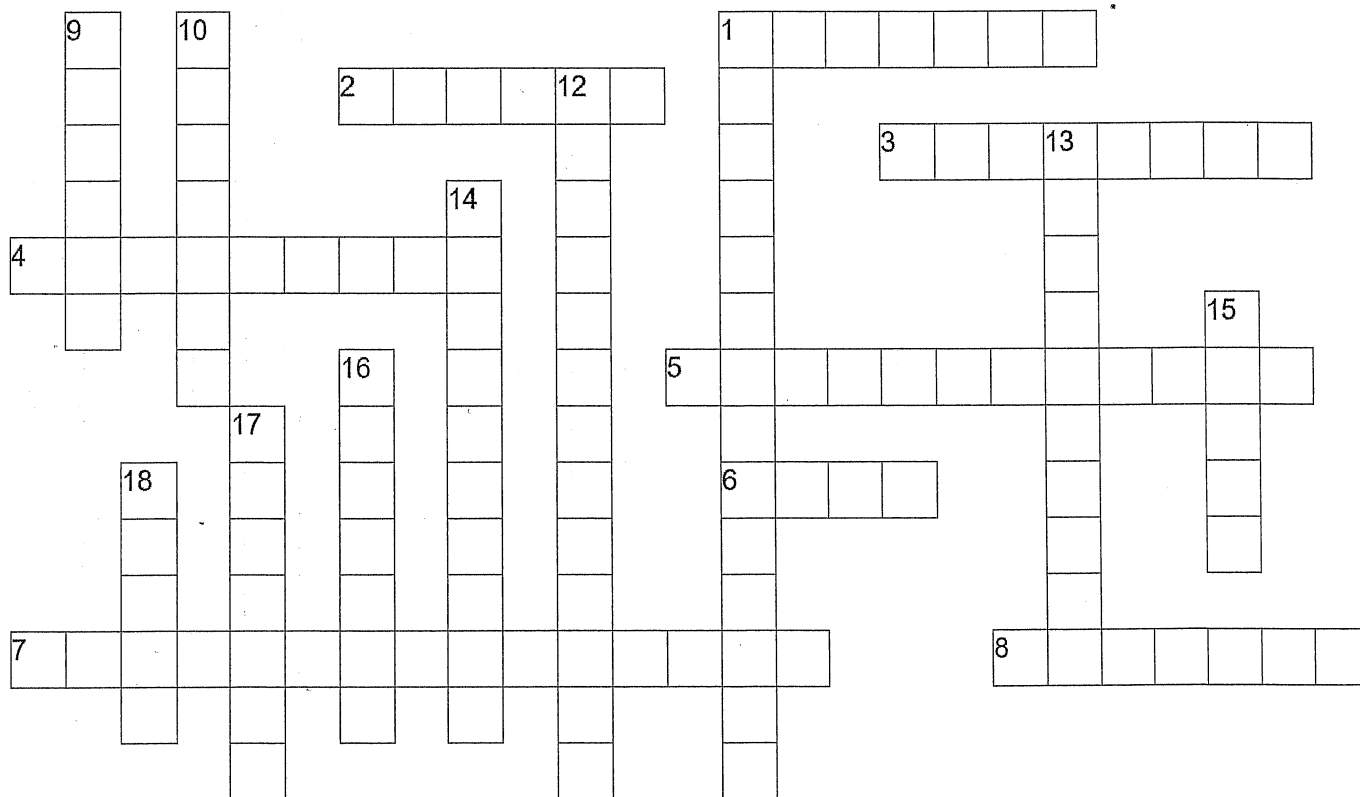
1. A chemical ____ uses symbols to depict the reactants and products of a chemical reaction
2. Substances that undergo chemical changes
3. This type of change involves atoms being rearranged
4. Describes a reaction that absorbs more energy that it releases
5. This type of change alters the form or appearance of a substance but does not change it into another substance
6. In a ____ system, matter does not enter or leave
7. This type of energy is needed to start a chemical reaction
8. In an ____ system, matter can enter or escape to the surroundings
9. Biological catalysts
10. This type of reaction involves two or more substances combining
11. The law of ____ of mass states that matter cannot be created or destroyed

Down

12. Describes a reaction that releases energy
13. Increases the reaction rate by lowering the activation energy needed
14. A number placed in front of a chemical formula that tells you the amount of that substance that takes part in the reaction
15. This type of reaction involves one element replacing another element in a compound
16. The amount of a substance in a given volume
17. This type of reaction involves compounds breaking down into simpler products
18. A solid that forms from liquids during a chemical reaction
5. The substances formed by a chemical reaction
20. A material used to decrease the rate of a chemical reaction

Energy

Name: _____



Across

1. The total kinetic and potential energy of the particles in an object is called ____ energy
2. The ability to do work or cause change
3. This type of potential energy is stored in bonds
4. Energy that results from the position or shape of an object
5. The law of ____ of energy states that when one form of energy is transformed to another, no energy is lost in the process
6. The kinetic energy of an object depends on its speed and ____
7. This type of energy is also referred to as radiant energy
8. Potential energy associated with objects that can be compressed or stretched

Down

9. This type of nuclear reaction occurs in the sun
10. Potential energy stored in the nucleus of an atom
11. A change from one form of energy to another
12. Potential energy related to an object's height
13. The form of energy associated with the motion, position, or shape of an object
14. The energy of electric charge
15. A unit of energy
16. This type of nuclear reaction occurs at some power plants
17. The energy an object has due to its motion
18. This equals energy transferred divided by time

You matter. Until you multiply yourself by
the speed of light squared.

Then you energy.

Georgia Milestones Assessment Item Deconstruction and Analysis

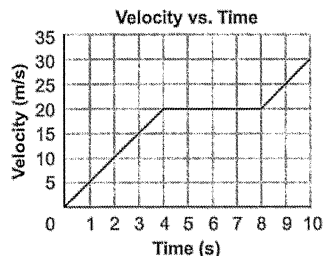
DOK Level: 3

Science Grade 8 Content Domain: Energy

Standard: S8P2. Obtain, evaluate, and communicate information about the law of conservation of energy to develop arguments that energy can transform from one form to another within a system.

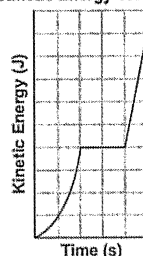
- a. Analyze and interpret data to create graphical displays that illustrate the relationships of kinetic energy to mass and speed, and potential energy to mass and height of an object.

A physics student used radar to measure the velocity of a vehicle over a 10-second period. The student presented the data in the graph shown.

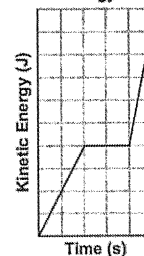


Which graph of the kinetic energy of the vehicle versus time corresponds to the velocity versus time graph?

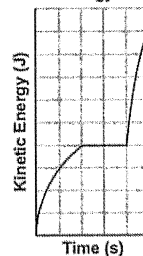
A. Kinetic Energy vs. Time



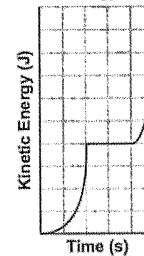
B. Kinetic Energy vs. Time



C. Kinetic Energy vs. Time



D. Kinetic Energy vs. Time



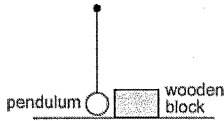
Identify the Science and Engineering Practice (SEP) that is the focus of this question.

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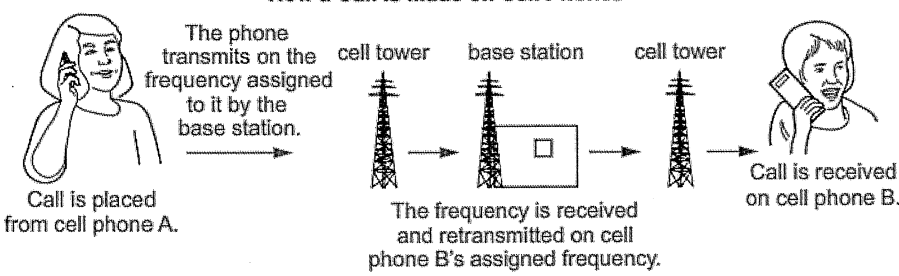
Eliminate two of the answer choices and explain why they are incorrect.

Identify the correct answer choice.

Georgia Milestones Assessment Item Deconstruction and Analysis

DOK Level: 3		Science Grade 8 Content Domain: Energy	
Standard: S8P2. Obtain, evaluate, and communicate information about the law of conservation of energy to develop arguments that energy can transform from one form to another within a system.		b. Plan and carry out an investigation to explain the transformation between kinetic and potential energy within a system (e.g., roller coasters, pendulums, rubber bands, etc.).	
<p>A student wishes to use the pendulum and wooden block shown to investigate energy transfer between kinetic and potential.</p> 		<p>Which procedure would BEST allow the student to complete measurements for the investigation, and which energy transformation will occur during the investigation?</p> <p>A. step 1: Release the pendulum from a measured height and allow it to swing down and collide with the wooden block at the bottom of the swing. step 2: Allow the wooden block to come to rest, then measure the distance the block slid. step 3: Repeat steps 1 and 2 using different starting heights for the pendulum. Compare the data for the different starting heights. transformation: The potential energy of the pendulum transforms into kinetic energy, which then is transferred to the wooden block. The higher the pendulum is raised, the more potential energy the pendulum has. This means the pendulum will have more kinetic energy when it hits the block. This kinetic energy causes the block to travel. The more kinetic energy that is transferred from the pendulum, the farther the block will travel.</p> <p>B. step 1: Release the pendulum from a measured height and allow it to swing down and collide with the wooden block at the bottom of the swing. step 2: Allow the wooden block to come to rest, then measure the distance the block slid. step 3: Repeat steps 1 and 2 using different starting heights for the pendulum. Compare the data for the different starting heights. transformation: The kinetic energy of the pendulum transforms into potential energy, which then is transferred to the wooden block. The higher the pendulum is raised, the more kinetic energy the pendulum has. This means the pendulum will have more potential energy when it hits the block. This potential energy causes the block to travel. The more potential energy that is transferred from the pendulum, the farther the block will travel.</p> <p>C. step 1: Pull the pendulum back and throw it downwards, allowing it to swing down and collide with the wooden block at the bottom of the swing. step 2: Allow the wooden block to come to rest, then measure the distance the block slid. step 3: Repeat steps 1 and 2, throwing the pendulum with different amounts of force. Compare the data for the different throws. transformation: The potential energy of the pendulum transforms into kinetic energy, which then is transferred to the wooden block. The larger the force used to throw the pendulum, the more potential energy the pendulum has. This means the pendulum will have more kinetic energy when it hits the block. This kinetic energy causes the block to travel. The more kinetic energy that is transferred from the pendulum, the farther the block will travel.</p> <p>D. step 1: Pull the pendulum back and throw it downwards, allowing it to swing down and collide with the wooden block at the bottom of the swing. step 2: Allow the wooden block to come to rest, then measure the distance the block slid. step 3: Repeat steps 1 and 2, throwing the pendulum with different amounts of force. Compare the data for the different throws. transformation: The kinetic energy of the pendulum transforms into potential energy, which then is transferred to the wooden block. The larger the force used to throw the pendulum, the more kinetic energy the pendulum has. This means the pendulum will have more potential energy when it hits the block. This potential energy causes the block to travel. The more potential energy that is transferred from the pendulum, the farther the block will travel.</p>	
Identify the Science and Engineering Practice (SEP) that is the focus of this question.			
Highlight and define the key academic vocabulary (use the standard to help you identify these) that this question addresses.			
Eliminate two of the answer choices and explain why they are incorrect.			
Identify the correct answer choice.			

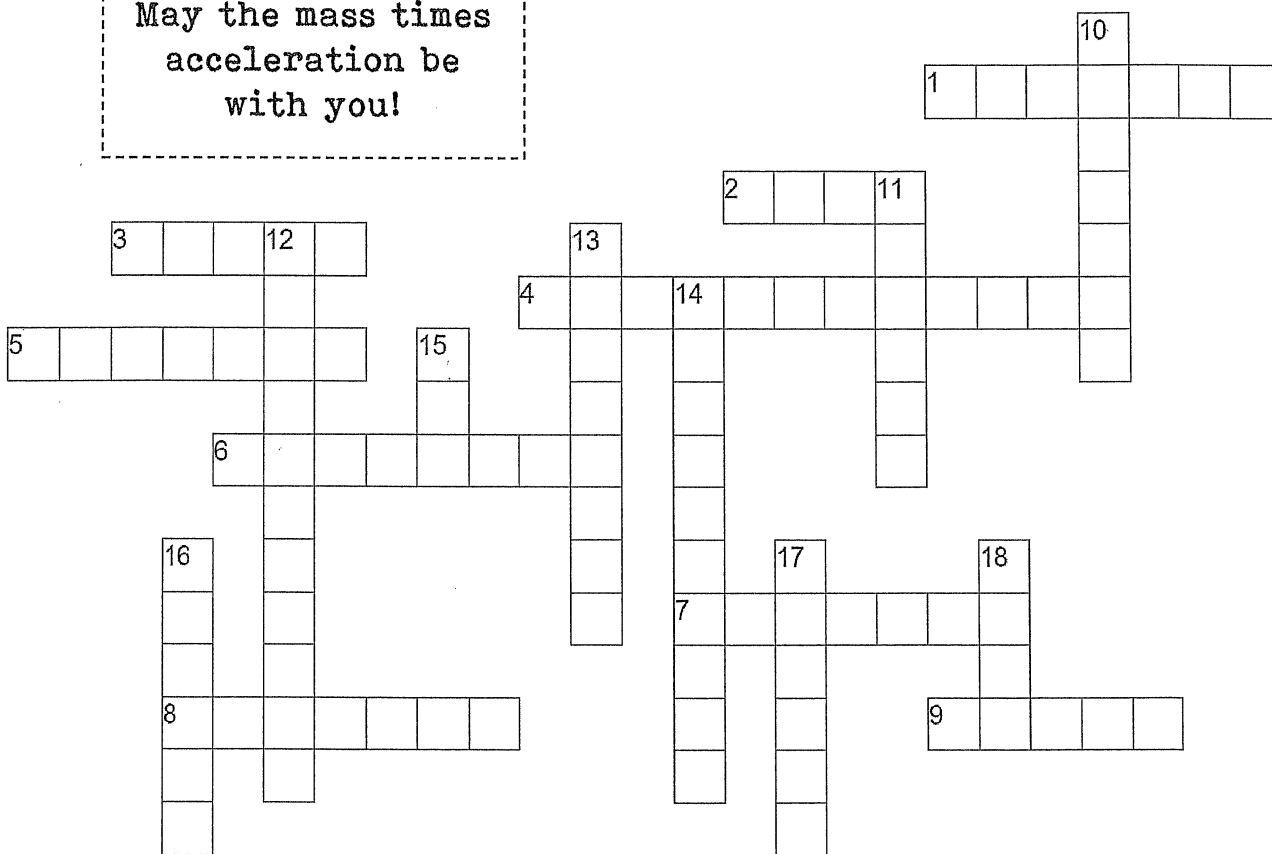
Georgia Milestones Assessment Item Deconstruction and Analysis

DOK Level: 3	Science Grade 8 Content Domain: Energy
Standard: S8P2. Obtain, evaluate, and communicate information about the law of conservation of energy to develop arguments that energy can transform from one form to another within a system.	c. Construct an argument to support a claim about the type of energy transformations within a system [e.g., lighting a match (light to heat), turning on a light (electrical to light)].
<p>A student investigated the energy transformations that occur when a call is placed from cell phone A and received by cell phone B. The student drew a diagram to show the process.</p> <p style="text-align: center;">How a Call Is Made on Cell Phones</p>  <p>Based on the diagram, what evidence is there for the transformation of chemical energy into electrical energy, and which other energy transformations must occur for the call to be received by cell phone B?</p> <p>A. evidence: Cell phones are powered by a battery that produces the electricity used to send or receive a call. transformation 1: Sound energy is transformed into electrical energy by cell phone A. transformation 2: Electrical energy is transformed into mechanical energy in the cell towers and base station.</p> <p>B. evidence: Cell phones are powered by a battery that produces the electricity used to send or receive a call. transformation 1: Sound energy is transformed into electromagnetic waves by cell phone A. transformation 2: Electromagnetic waves are transformed back into sound energy by cell phone B.</p> <p>C. evidence: Base stations are powered by a battery that produces the electricity used to receive and forward a call. transformation 1: Sound energy is transformed into electrical energy by cell phone A. transformation 2: Electrical energy is transformed into mechanical energy in the cell towers and base station.</p> <p>D. evidence: Base stations are powered by a battery that produces the electricity used to receive and forward a call. transformation 1: Sound energy is transformed into electromagnetic waves by cell phone A. transformation 2: Electromagnetic waves are transformed back into sound energy by cell phone B.</p>	
Identify the Science and Engineering Practice (SEP) that is the focus of this question.	
Highlight and define the key academic vocabulary (use the standard to help you identify these) that this question addresses.	
Eliminate two of the answer choices and explain why they are incorrect.	
Identify the correct answer choice.	

Forces

Name: _____

May the mass times
acceleration be
with you!



Across

1. This type of friction explains why it's easy to push a bike along the sidewalk when the wheels can turn
2. A measure of the amount of matter in an object
3. A push or a pull
4. The law of ___ of momentum states that, in the absence of outside forces like friction, the momentum of objects that interact does not change
5. The upward force water and other fluids exert on submerged objects
6. The force that two surfaces exert on each other when they rub against each other
7. Resistance to change in motion
8. A force that pulls objects toward each other
9. This type of friction is easier to overcome than sliding friction

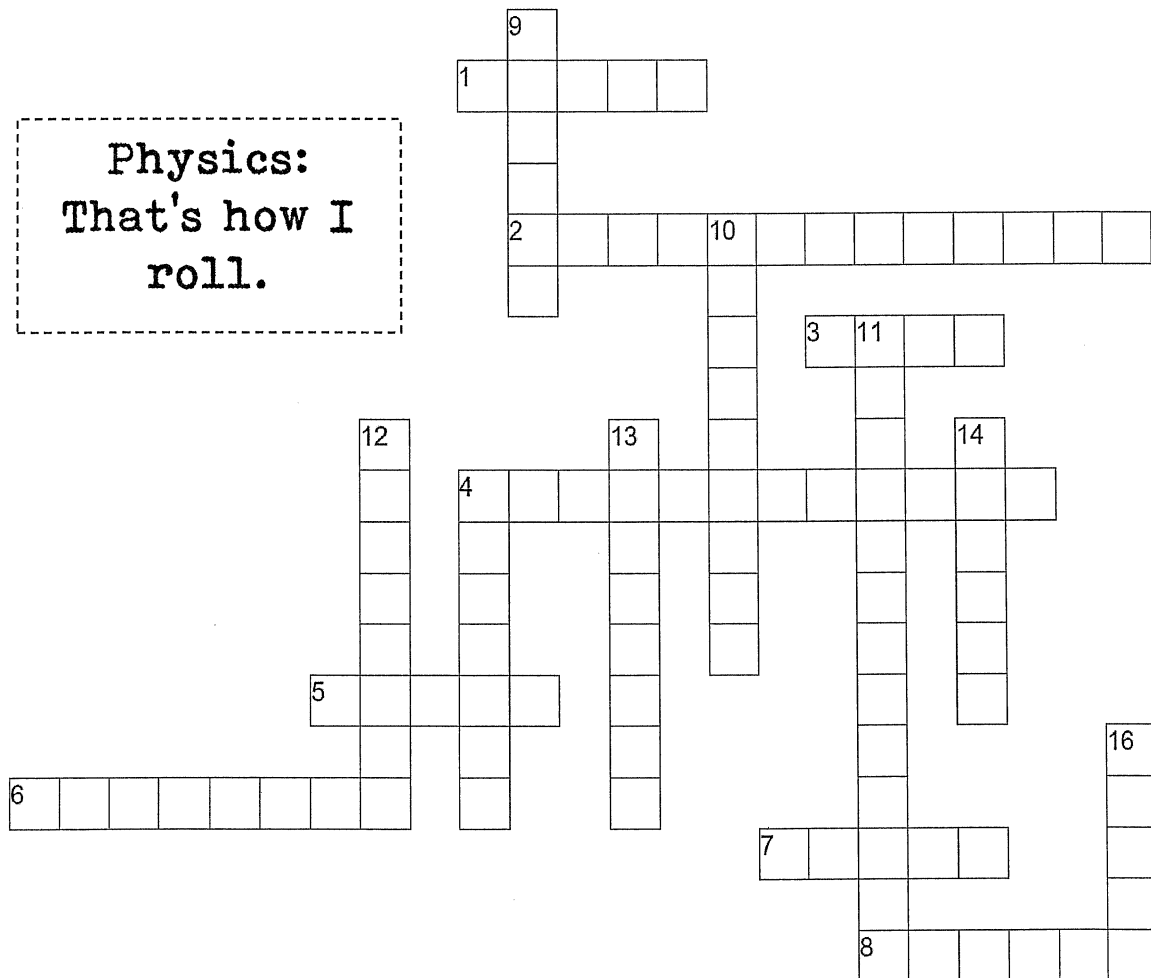
Down

10. This type of friction occurs when two solid surfaces move over each other
11. This type of friction acts between objects that aren't moving
12. A force that causes an object to move in a circular path
13. A characteristic of a moving object that is related to the mass and the velocity of the object
14. Objects that orbit around other objects in space
15. The combination of all forces on an object is called the ___ force
16. A measure of the force of gravity on an object
17. The SI unit for the strength of a force
18. An object is said to be in free ___ when the only force acting on it is gravity

Motion

Name: _____

Physics:
That's how I
roll.



Across

1. SI unit for distance
2. The "SI" in SI units stands for Systeme _____
3. The x-axis of a distance-versus-time graph
4. The rate at which velocity changes
5. Acceleration equals the _____ speed minus the initial speed divided by time
6. A softball has a _____ acceleration when it is thrown
7. Equals rise (the vertical difference between any two points on the line) divided by run (the horizontal difference between the points)
8. SI unit for time

Down

9. The _____ system is used when making measurements in science
10. A _____ point is a place of object used for comparison to determine if something is in motion
11. The speed at which an object is moving at a given instant in time is known as _____ speed
12. A softball has a _____ acceleration when it is caught
13. Speed in a given direction
14. If an object's position changes it is in _____
4. To find the _____ speed, divide the total distance traveled by the total time
16. Equals distance divided by time

Georgia Milestones Assessment Item Deconstruction and Analysis

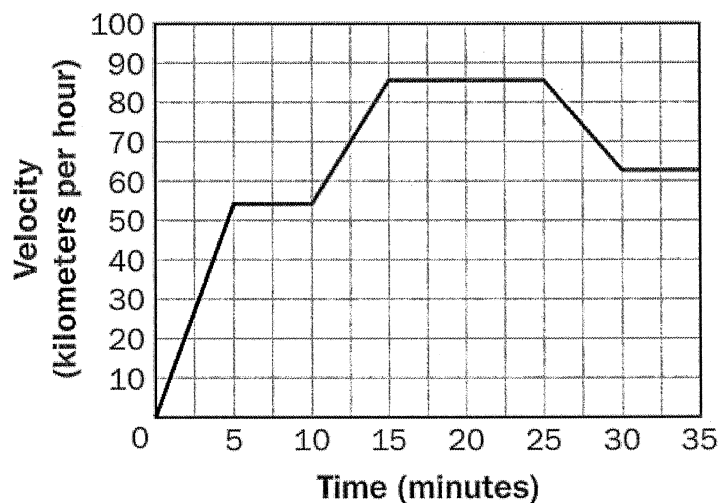
DOK Level: 2

Science Grade 8 Content Domain: Motion

Standard: S8P3. Obtain, evaluate, and communicate information about cause and effect relationships between force, mass, and the motion of objects.

- a. Analyze and interpret data to identify patterns in the relationships between speed and distance, and velocity and acceleration.
(Clarification statement: Students should be able to analyze motion graphs, but students should not be expected to calculate velocity or acceleration.)

The graph shows the velocity of a moving train over time.



During which two intervals of time was the train moving with a constant, positive acceleration?

- A. 0–5 minutes and 10–15 minutes
- B. 5–10 minutes and 15–25 minutes
- C. 10–15 minutes and 25–30 minutes
- D. 15–20 minutes and 30–35 minutes

Identify the Science and Engineering Practice (SEP) that is the focus of this question.

Highlight and define the key academic vocabulary (use the standard to help you identify these) that this question addresses.

Eliminate two of the answer choices and explain why they are incorrect.

Identify the correct answer choice.

Georgia Milestones Assessment Item Deconstruction and Analysis

DOK Level: 2

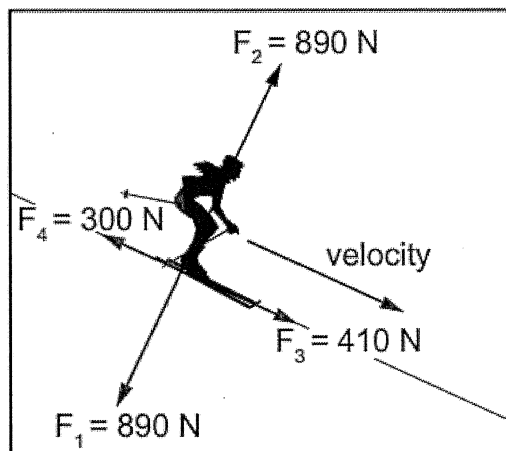
Science Grade 8 Content Domain: Motion

Standard: S8P3. Obtain, evaluate, and communicate information about cause and effect relationships between force, mass, and the motion of objects.

- b. Construct an explanation using Newton's Laws of Motion to describe the effects of balanced and unbalanced forces on the motion of an object.

A force diagram for a downhill skier is shown.

Force Diagram for Downhill Skier



Which statement is a valid description and explanation of the skier's motion based on evidence from the diagram?

- The skier's speed decreases going down the hill because forces F_1 and F_2 are balanced and acting perpendicular to the direction of the velocity, causing the skier to speed up.
- The skier's speed increases going down the hill because forces F_1 and F_2 are balanced and acting perpendicular to the direction of the velocity, causing the skier to slow down.
- The skier's speed increases going down the hill because forces F_3 and F_4 are unbalanced, with F_3 acting in the same direction as the velocity, causing the skier to speed up.
- The skier's speed decreases going down the hill because forces F_3 and F_4 are unbalanced, with F_4 acting in the opposite direction of the velocity, causing the skier to slow down.

Identify the Science and Engineering Practice (SEP) that is the focus of this question.

Highlight and define the key academic vocabulary (use the standard to help you identify these) that this question addresses.

Eliminate two of the answer choices and explain why they are incorrect.

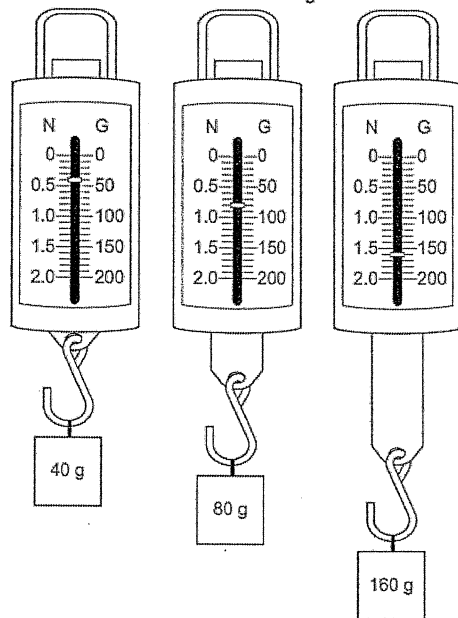
Identify the correct answer choice.

Georgia Milestones Assessment Item Deconstruction and Analysis

DOK Level: 3	Science Grade 8 Content Domain: Motion
Standard: S8P3. Obtain, evaluate, and communicate information about cause and effect relationships between force, mass, and the motion of objects.	c. Construct an argument from evidence to support the claim that the amount of force needed to accelerate an object is proportional to its mass (inertia).

A lab group is investigating how Earth's gravitational acceleration affects the force exerted on toy blocks of different masses. The diagram shows the results of their investigation.

Force vs. Mass Investigation



The group claims that the amount of force needed to accelerate a toy block is directly proportional to its inertia.

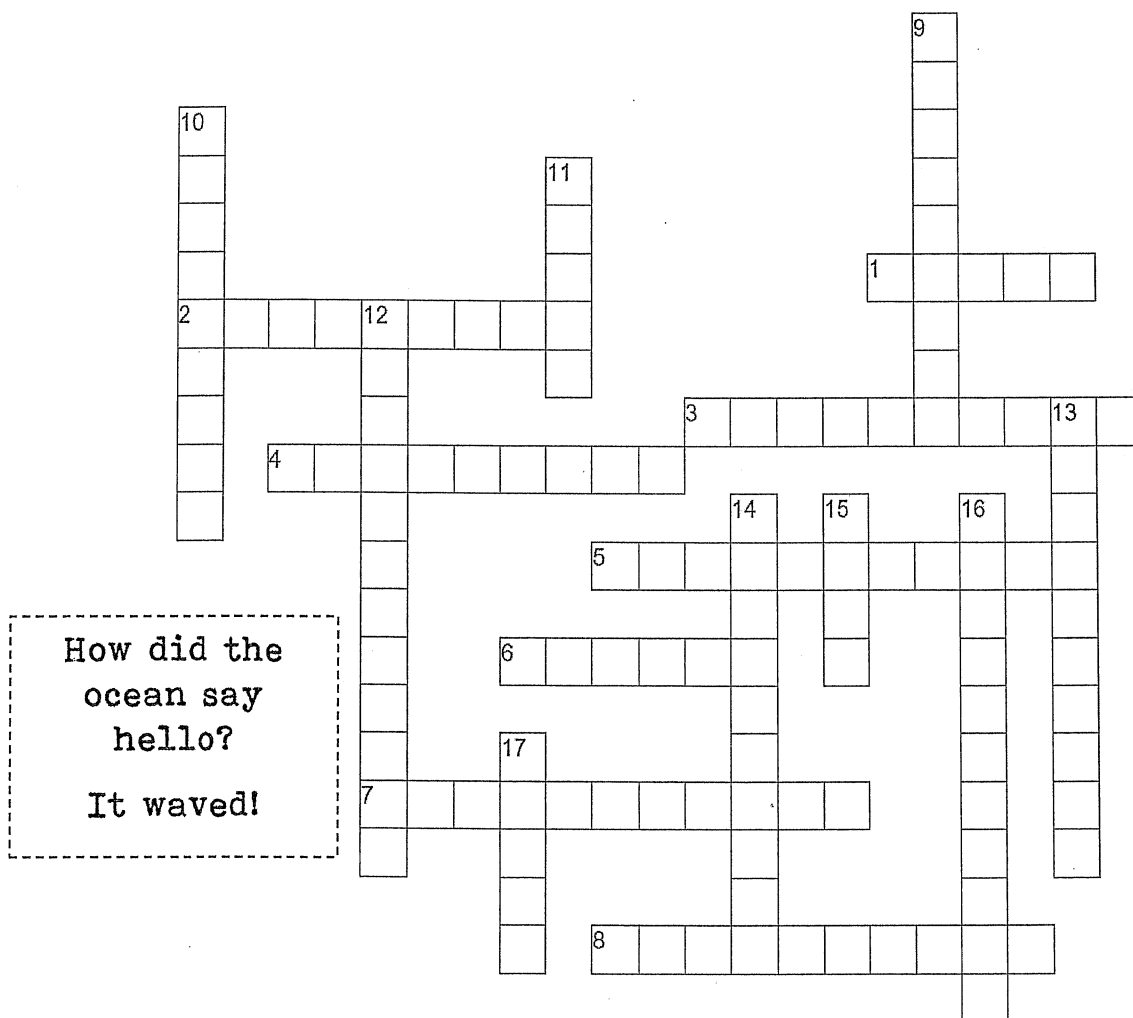
Which explanation presents the BEST argument for whether the group's claim is true?

- A. The claim is false because every time the mass of the metal cube is increased, the pointer on the spring scale moves downward.
- B. The claim is true because every time the mass of the metal cube is doubled, the gravitational force doubles.
- C. The claim is false because every time the volume of the metal cube is increased, the pointer on the spring scale moves downward.
- D. The claim is true because every time the volume of the metal cube is doubled, the gravitational force doubles.

Identify the Science and Engineering Practice (SEP) that is the focus of this question.	
Highlight and define the key academic vocabulary (use the standard to help you identify these) that this question addresses.	
Eliminate two of the answer choices and explain why they are incorrect.	
Identify the correct answer choice.	

Characteristics of Waves

Name: _____



How did the
ocean say
hello?
It waved!

Across

Down

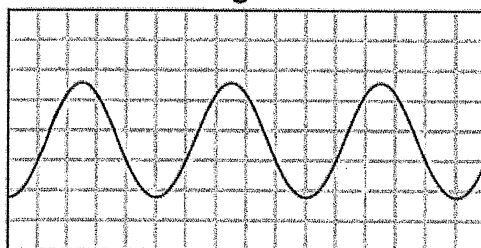
1. These are disturbances involving the transfer of energy from place to place
2. The maximum distance the medium vibrates from the rest position
3. The distance between two corresponding parts of a wave
4. This is measured in hertz
5. The part of a longitudinal wave where the particles of the medium are spread out
6. The opposite of a crest
7. The part of a longitudinal wave where the particles of the medium are close together
8. The bouncing back of an object of a wave when it hits a surface through which it cannot pass
9. An increase in the amplitude of a vibration that occurs when external vibrations match an object's natural frequency
10. A repeated back-and-forth or up-and-down motion
11. Points with zero amplitude produced by destructive interference in a standing wave
12. Could be constructive or destructive
13. Describes a wave that vibrates the medium perpendicular to the direction in which the wave travels
14. These waves require a medium to travel
15. A longitudinal wave vibrates the medium in the ____ direction in which the wave travels
16. The bending or spreading of waves as they move around a barrier or pass through an opening
17. Refraction is the bending of waves due to a change in this

Georgia Milestones Assessment Item Deconstruction and Analysis

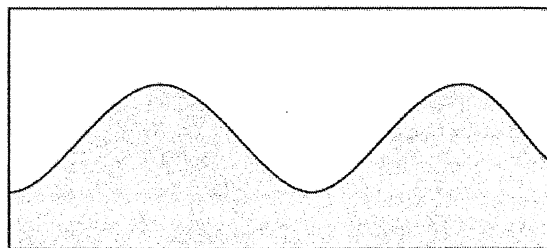
DOK Level: 2	Science Grade 8 Content Domain: Waves
Standard: S8P4. Obtain, evaluate, and communicate information to support the claim that electromagnetic (light) waves behave differently than mechanical (sound) waves.	a. Ask questions to develop explanations about the similarities and differences between electromagnetic and mechanical waves. (Clarification statement: Include transverse and longitudinal waves and wave parts such as crest, trough, compressions, and rarefactions.)

A student drew models of an electromagnetic wave and a water wave.

Electromagnetic Wave



Water Wave



Which scientific question did the student MOST LIKELY ask to know how to draw these models?

- A. Are water waves and electromagnetic waves examples of transverse waves?
- B. Do water waves travel at a slower speed than electromagnetic waves?
- C. Can water waves and electromagnetic waves travel through different media?
- D. How do water waves and electromagnetic waves increase their amplitude?

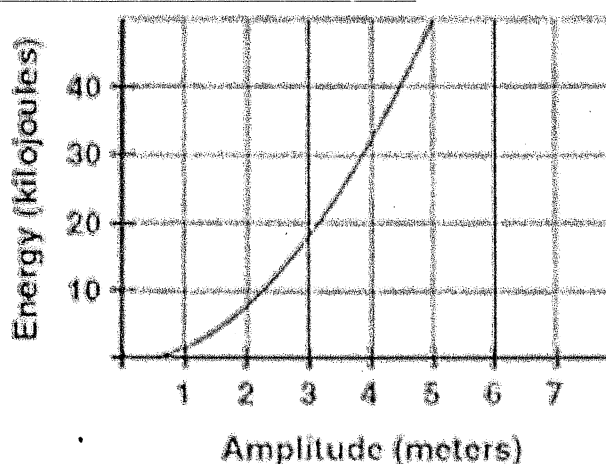
Identify the Science and Engineering Practice (SEP) that is the focus of this question.	
Highlight and define the key academic vocabulary (use the standard to help you identify these) that this question addresses.	
Eliminate two of the answer choices and explain why they are incorrect.	
Identify the correct answer choice.	

Georgia Milestones Assessment Item Deconstruction and Analysis

DOK Level: 2	Science Grade 8 Content Domain: Waves
Standard: S8P4. Obtain, evaluate, and communicate information to support the claim that electromagnetic (light) waves behave differently than mechanical (sound) waves.	f. Develop and use a model (e.g., simulations, graphs, illustrations) to predict and describe the relationships between wave properties (e.g., frequency, amplitude, and wavelength) and energy

A student developed the graphical model below to show the relationship between wave properties (e.g., frequency, amplitude, and wavelength) and energy.

Wave Energy vs. Amplitude



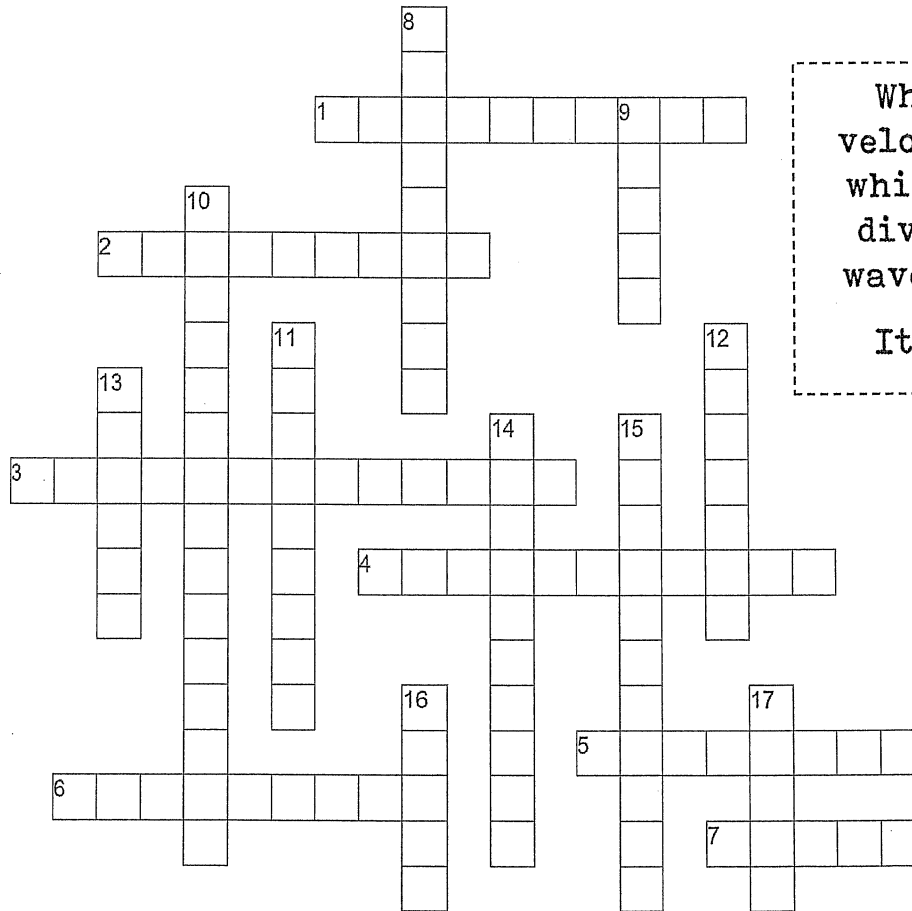
Based on the information presented in the graph what is the relationship between amplitude and energy?

- A. Energy and amplitude are directly proportional because energy increases as amplitude increases.
- B. Energy and amplitude are directly proportional because energy increases as amplitude decreases.
- C. Energy and amplitude are inversely proportional because energy increases as amplitude decreases.
- D. Energy and amplitude are inversely proportional because energy increases as amplitude increases.

Identify the Science and Engineering Practice (SEP) that is the focus of this question.	
Highlight and define the key academic vocabulary (use the standard to help you identify these) that this question addresses.	
Eliminate two of the answer choices and explain why they are incorrect.	
Identify the correct answer choice.	

Electromagnetic Waves

Name: _____



What did
velocity say
while being
divided by
wavelength?

It hertz!

Across

1. An image that shows the regions of different temperatures in different colors
2. Describes light that has been filtered so that all of its waves are parallel to each other
3. This effect occurs when light causes an electron to move so much that it is knocked out of a metal
4. Too much exposure to these rays can burn your skin and cause skin cancer
5. These rays have wavelengths shorter than microwaves
6. The energy that electromagnetic waves transfer through matter
7. These rays have the greatest amount of energy on the electromagnetic spectrum

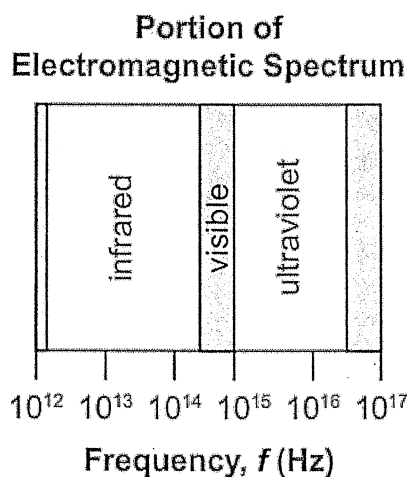
Down

8. This type of modulation involves broadcasting signals by changing the frequency of a wave
9. The electromagnetic waves with the longest wavelengths
10. This type of wave is a transverse wave that involves the transfer of electric and magnetic energy
11. This type of modulation involves broadcasting signals by changing the amplitude of a wave
12. When white ____ light is passed through a prism, a rainbow of colors appears
13. A particle of light energy
14. These electromagnetic waves have shorter wavelengths and higher frequencies than radio waves do
15. A global ____ system (GPS) uses satellites to broadcast radio signals to Earth
16. X-rays can be used to make images of ____ and teeth
17. This stands for radio detection and ranging

Georgia Milestones Assessment Item Deconstruction and Analysis

DOK Level: 2	Science Grade 8 Content Domain: Waves
Standard: S8P4. Obtain, evaluate, and communicate information to support the claim that electromagnetic (light) waves behave differently than mechanical (sound) waves.	b. Construct an explanation using data to illustrate the relationship between the electromagnetic spectrum and energy.

The diagram shows three types of electromagnetic radiation and their range of frequencies.



Which explanation correctly uses the data in the diagram to show how infrared radiation and ultraviolet radiation are related in terms of energy?

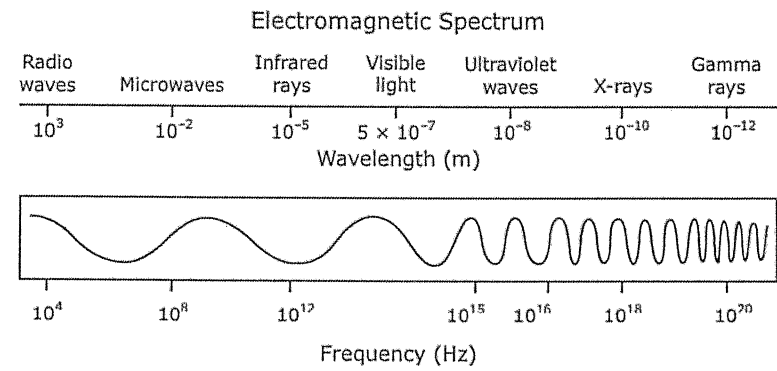
- A. Ultraviolet radiation has less energy than infrared radiation because energy is inversely proportional to frequency and the frequency of ultraviolet radiation is higher.
- B. Ultraviolet radiation has more energy than infrared radiation because energy is inversely proportional to frequency and the frequency of ultraviolet radiation is lower.
- C. Ultraviolet radiation has less energy than infrared radiation because energy is proportional to frequency and the frequency of ultraviolet radiation is lower.
- D. Ultraviolet radiation has more energy than infrared radiation because energy is proportional to frequency and the frequency of ultraviolet radiation is higher.

Identify the Science and Engineering Practice (SEP) that is the focus of this question.	
Highlight and define the key academic vocabulary (use the standard to help you identify these) that this question addresses.	
Eliminate two of the answer choices and explain why they are incorrect.	
Identify the correct answer choice.	

Georgia Milestones Assessment Item Deconstruction and Analysis

DOK Level: 3	Science Grade 8 Content Domain: Waves
Standard: S8P4. Obtain, evaluate, and communicate information to support the claim that electromagnetic (light) waves behave differently than mechanical (sound) waves.	c. Design a device to illustrate practical applications of the electromagnetic spectrum (e.g., communication, medical, military).

Private citizens, the military, and large companies now utilize drones for a variety of uses. Their long wavelengths and lower frequencies make for safe usage of this now widely available technology.



Based on the information in the diagram below which type of wave on the electromagnetic spectrum allows such wide use of drone technology?

- A. Gamma Rays
- B. X-Rays
- C. Ultraviolet Waves
- D. Radio Waves

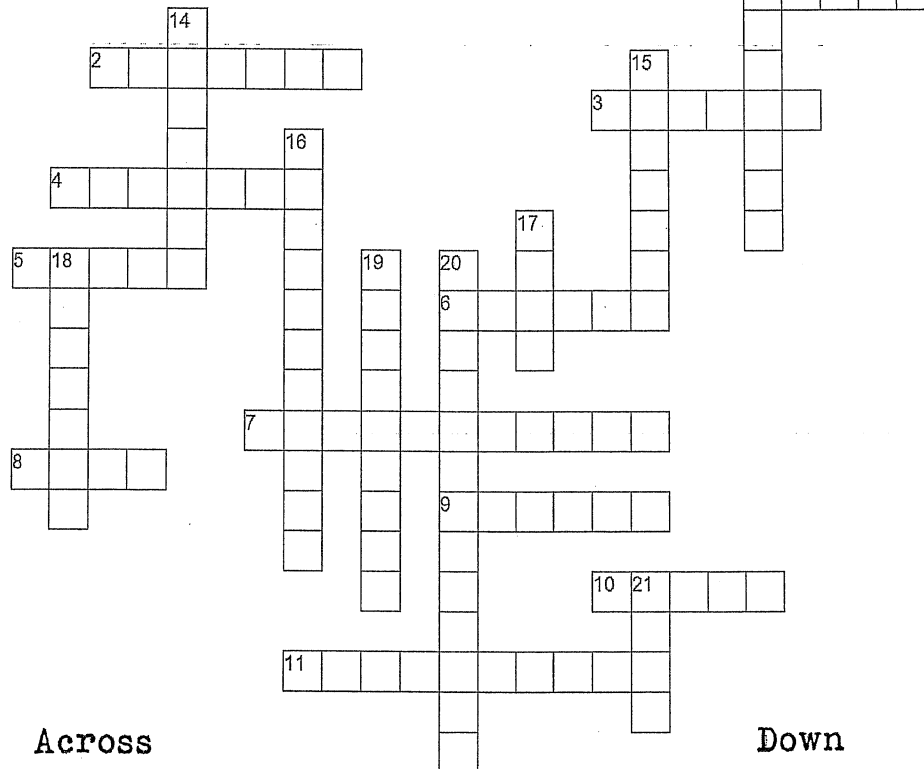
Identify the Science and Engineering Practice (SEP) that is the focus of this question.	
Highlight and define the key academic vocabulary (use the standard to help you identify these) that this question addresses.	
Eliminate two of the answer choices and explain why they are incorrect.	
Identify the correct answer choice.	

Light

Name: _____

How did the photon respond when
he was asked if he needed help
carrying his luggage?

No, thanks. I'm traveling light.

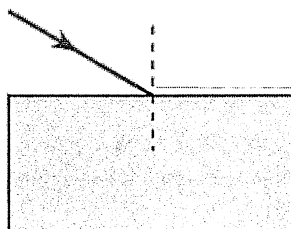
**Across****Down**

1. A copy of an object formed by reflected or refracted rays of light
2. Three colors that can combine to make any other color
3. Describes a mirror with a surface that curves outward
4. This type of reflection occurs when parallel rays of light hit a smooth surface
5. The point at which rays parallel to the optical axis reflect and meet
6. Describes a material that reflects or absorbs all of the light that strikes it
7. Describes a material that scatters the light that passes through it
8. Light waves may be represented by straight lines called _____
9. An image of a distant object caused by the refraction of light
10. This type of mirror is a flat sheet of glass that has a smooth, silver-colored coating on one side
11. The index of _____ of a medium is a measure of how much a light ray bends when it enters that medium
12. This type of reflection occurs when parallel rays of light hit an uneven surface
13. Colored substances that are used to color other materials
14. Describes the image you see in a plane mirror
15. Describes a mirror with a surface that curves inward
16. Describes a material that light can pass through without being scattered
17. Describes an image that forms when light rays actually meet
18. The _____ axis is an imaginary line that divides a mirror in half
19. Two primary colors combine in equal amounts to produce this type of color
20. Yellow and blue are _____ colors
21. A curved piece of glass that refracts light

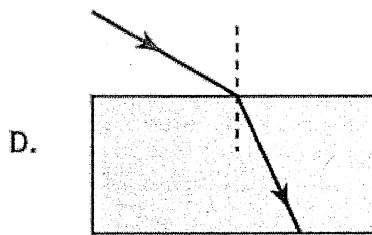
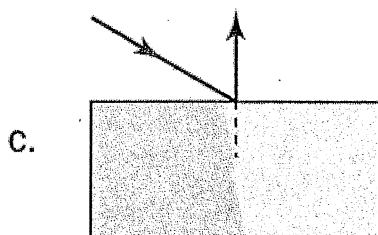
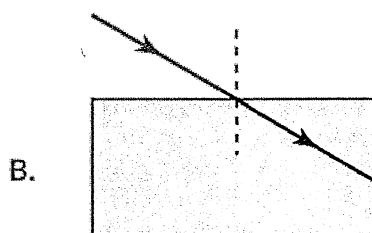
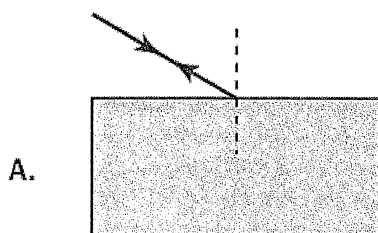
Georgia Milestones Assessment Item Deconstruction and Analysis

DOK Level: 3	Science Grade 8 Content Domain: Waves
Standard: S8P4. Obtain, evaluate, and communicate information to support the claim that electromagnetic (light) waves behave differently than mechanical (sound) waves.	d. Develop and use a model to compare and contrast how light and sound waves are reflected, refracted, absorbed, diffracted or transmitted through various materials. (Clarification statement: Include echo and how color is seen but do not cover interference and scattering.)

A student is drawing a diagram of a light ray as it enters a pane of transparent glass.



Which of these shows the correctly completed diagram?



Identify the Science and Engineering Practice (SEP) that is the focus of this question.

Highlight and define the key academic vocabulary (use the standard to help you identify these) that this question addresses.

Eliminate two of the answer choices and explain why they are incorrect.

Identify the correct answer choice.

Georgia Milestones Assessment Item Deconstruction and Analysis

DOK Level: 3

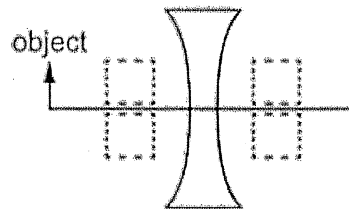
Science Grade 8 Content Domain: Waves

Standard: S8P4. Obtain, evaluate, and communicate information to support the claim that electromagnetic (light) waves behave differently than mechanical (sound) waves.

- g. Develop and use models to demonstrate the effects that lenses have on light (i.e., formation an image) and their possible technological applications.

A student is modeling an image that will be reproduced by a double concave lens as shown below.

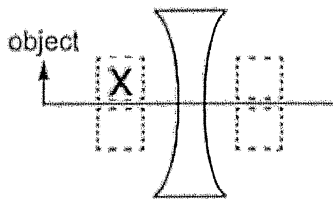
Double Concave Lens



Which diagram below correctly shows the location of the image that will be produced?

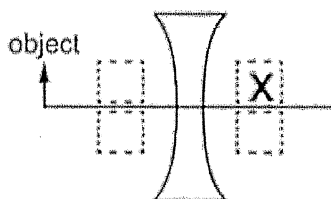
A

Double Concave Lens



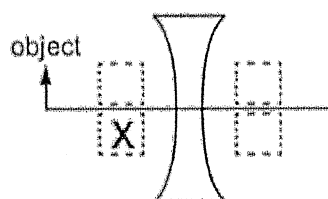
B

Double Concave Lens



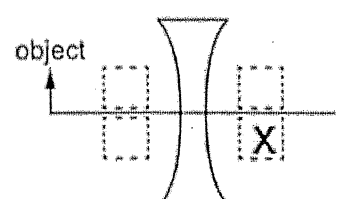
C

Double Concave Lens



D

Double Concave Lens



Identify the Science and Engineering Practice (SEP) that is the focus of this question.

Highlight and define the key academic vocabulary (use the standard to help you identify these) that this question addresses.

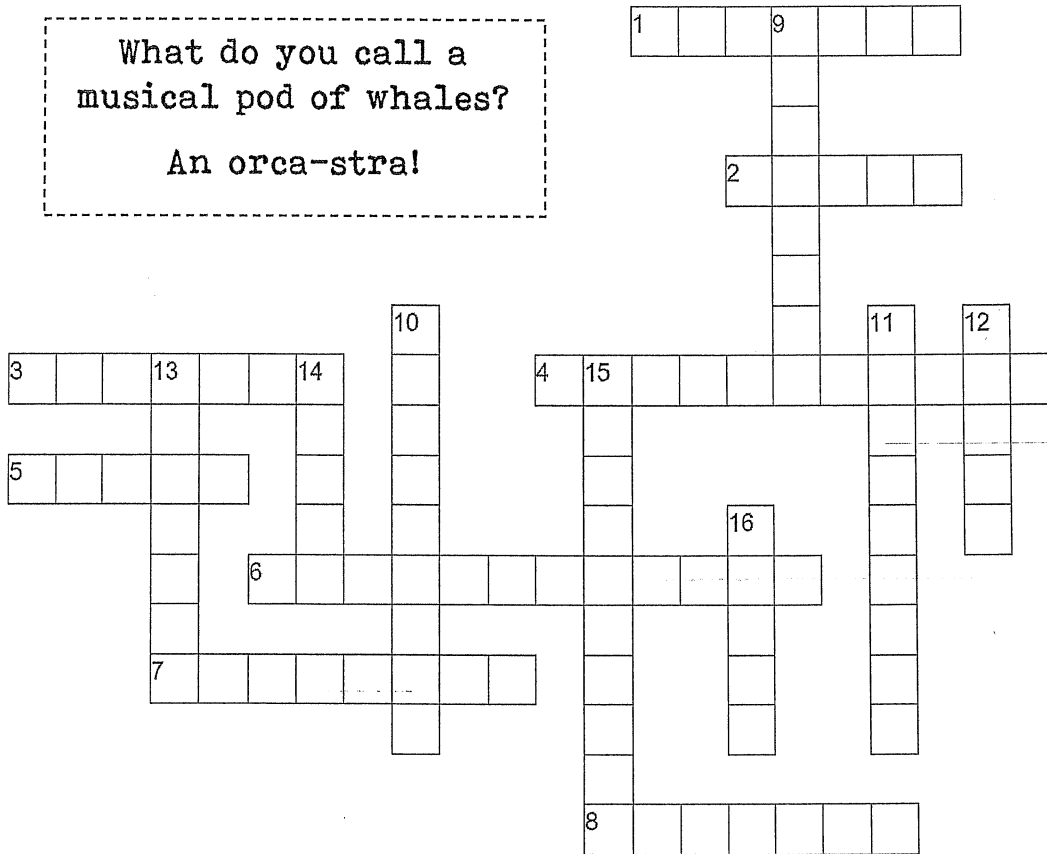
Eliminate two of the answer choices and explain why they are incorrect.

Identify the correct answer choice.

Sound

Name: _____

What do you call a
musical pod of whales?
An orca-stra!



Across

1. The amount of matter or mass there is in a given amount of space or volume
2. A disturbance that travels through a medium as a longitudinal wave
3. Sound waves make this part of your ear vibrate
4. The lowest natural frequency is called the ____ tone
5. This depends on the frequency of a sound wave and describes how high or low the sound seems
6. The use of reflected sound waves to determine distances or to locate objects
7. This depends on the energy and intensity of the sound wave
8. This effect occurs because the motion of the source causes sound waves to either get close together or spread out

Down

9. A picture created by an ultrasound imaging device
10. The higher natural frequencies
11. The amount of energy a sound wave carries per second through a unit area
12. The ear ____ connects to the outer ear and the eardrum
13. This unit is used to compare the loudness of different sounds
14. A set of notes that combine in patterns as an art form
15. Sound waves with frequencies above the normal human range of hearing
16. A system that uses reflected sound waves to detect and locate objects under water

Georgia Milestones Assessment Item Deconstruction and Analysis

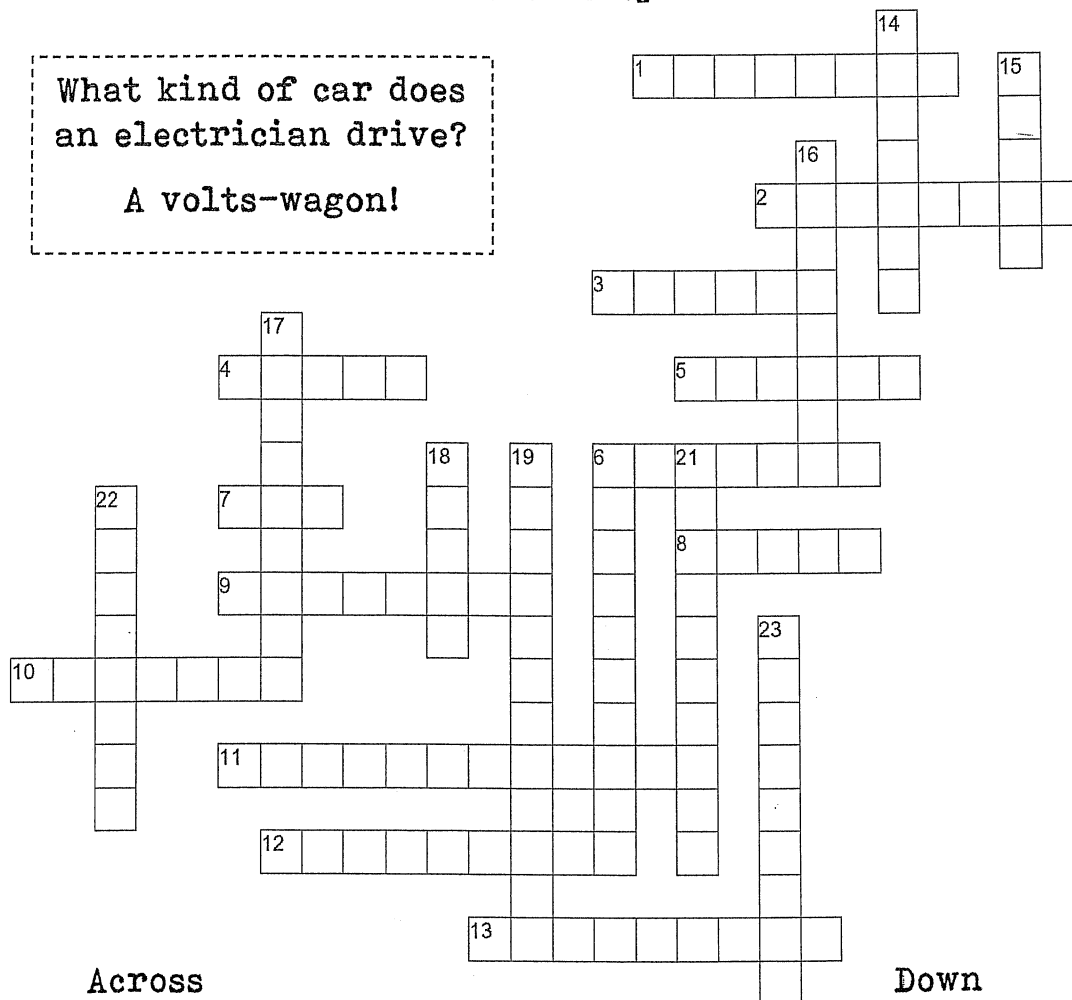
DOK Level: 3	Science Grade 8 Content Domain: Waves																																		
Standard: S8P4. Obtain, evaluate, and communicate information to support the claim that electromagnetic (light) waves behave differently than mechanical (sound) waves.	e. Analyze and interpret data to predict patterns in the relationship between density of media and wave behavior (i.e., speed).																																		
<p>A student questioned how the properties of different materials affect the speed of sound waves traveling through them. The student found the following data in a chemistry handbook for the speed of sound in gases, liquids, and solids.</p> <p style="text-align: center;">Speed of Sound in Different Materials at Room Temperature</p> <table><tr><th>State</th><th>Material</th><th>Density (kg/m³)</th><th>Speed of Sound (m/s)</th></tr><tr><td rowspan="3">gas</td><td>carbon dioxide</td><td>1.842</td><td>267</td></tr><tr><td>helium</td><td>0.166</td><td>1,007</td></tr><tr><td>methane</td><td>0.668</td><td>446</td></tr><tr><td rowspan="3">liquid</td><td>benzene</td><td>874</td><td>1,310</td></tr><tr><td>ethanol</td><td>789</td><td>1,162</td></tr><tr><td>water</td><td>1,000</td><td>1,497</td></tr><tr><td rowspan="3">solid</td><td>aluminum</td><td>2,700</td><td>6,420</td></tr><tr><td>copper</td><td>8,790</td><td>5,010</td></tr><tr><td>gold</td><td>19,290</td><td>3,240</td></tr></table> <p>The student analyzed the data to make predictions about the speed of sound on materials with various densities and states of matter. Which TWO predictions can be made based on the data shown in the table?</p> <p>A. The speed of sound generally increases as it moves from gases to liquids to solids. B. The speed of sound generally increases as it moves from liquids to gases to solids. C. The speed of sound generally increases as it moves from solids to gases to liquids. D. As the density of liquids and solids increases, the speed of sound generally increases. E. As the density of gases and liquids increases, the speed of sound generally decreases. F. As the density of solids and gases increases, the speed of sound generally decreases.</p>		State	Material	Density (kg/m ³)	Speed of Sound (m/s)	gas	carbon dioxide	1.842	267	helium	0.166	1,007	methane	0.668	446	liquid	benzene	874	1,310	ethanol	789	1,162	water	1,000	1,497	solid	aluminum	2,700	6,420	copper	8,790	5,010	gold	19,290	3,240
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Identify the correct answer choices.																																			

Electricity

Name: _____

What kind of car does
an electrician drive?

A volts-wagon!



Across

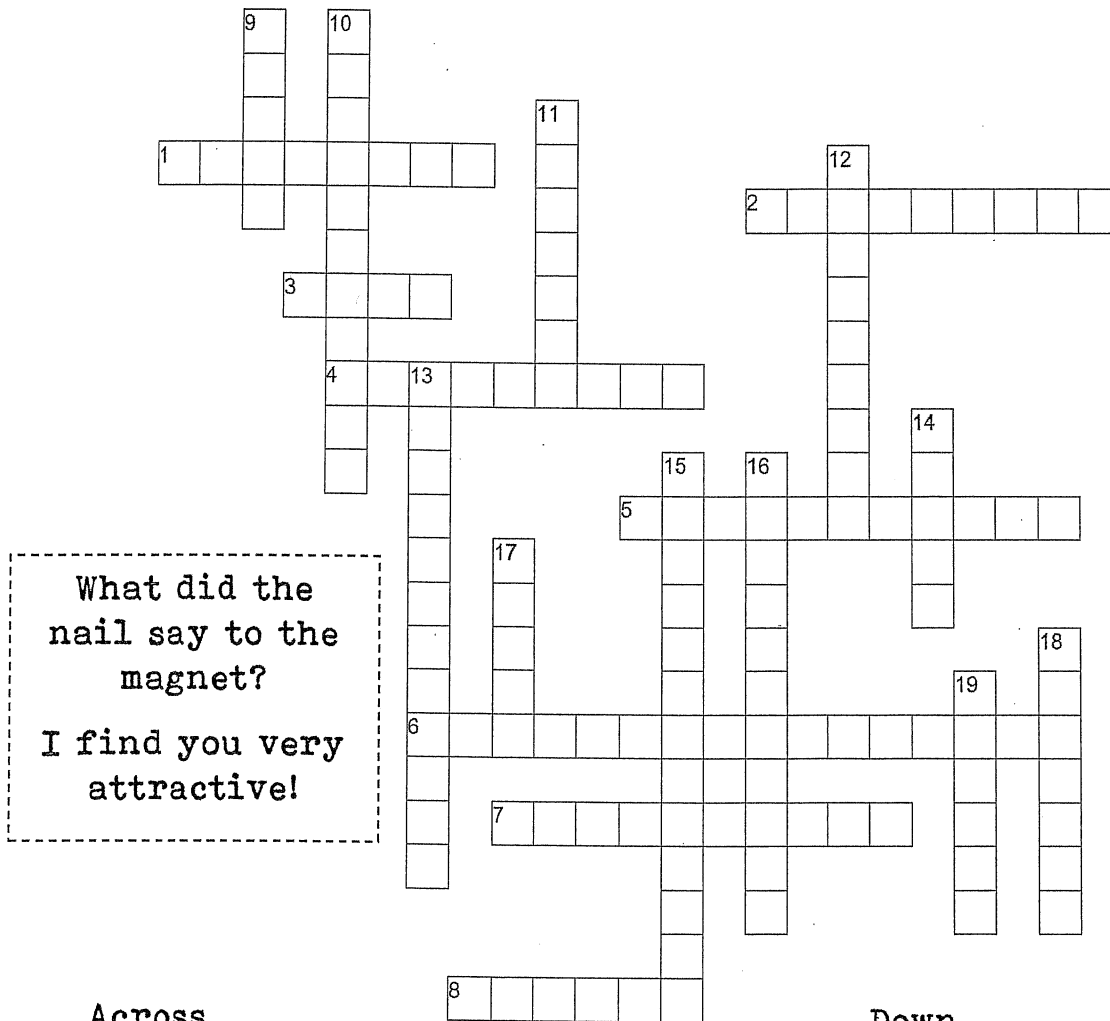
1. The force between charged objects
2. Describes any circuit connected to Earth by means of a third prong
3. The buildup of charged on an object is called ____ electricity
4. An electric ____ is a region around a charged object where the object's electric force is exerted on other charged objects
5. This type of circuit has only one path for the current to take
6. The continuous flow of electric charge through a material
7. Resistance is equal to voltage divided by current according to ____'s law
8. In this type of circuit, current takes the path of least resistance
9. Circuit ____ are switches that will bend away from circuits as they heat up
10. The difference in electric potential energy per charge between two points in a circuit
11. Electrons react to electric fields, resulting in individual atoms having charged ends that are attracted to charged objects
12. Occurs when electrons react to the electric field of a charged object without touching the object itself
13. A material that does not allow charges to flow, such as rubber

Down

14. A complete, unbroken path that charges can flow through
15. Equal to voltage times current
16. A transfer of electrons from one uncharged object to another by rubbing the objects together
17. Static electricity is transferred from one object to another in static ____
18. Devices that melt if they get to hot, which breaks the circuit
19. The law of ____ of charge states that charges are neither created nor destroyed
6. The transfer of electrons from one object to another by direct contact
21. The measure of how difficult it is for charges to flow through an object
22. In this type of circuit, different parts of the circuit are on separate branches
23. A material through which charge can flow easily

Magnetism

Name: _____



- | | |
|---|--|
| 1. A coil of wire with a current | 9. The area of magnetic force around a magnet |
| 2. A device that transforms mechanical energy into electrical energy | 10. A device that increases or decreases voltage |
| 3. Each magnet has two of these, north and south | 11. Unlike poles ____ |
| 4. The attraction or repulsion of magnetic materials | 12. Generating electric current from the motion of a conductor through a magnetic field is called electromagnetic ____ |
| 5. A constantly reversing current | 13. An electric current turns the pointer of this device which is used in fuel gauges and lie detectors |
| 6. The relationship between electricity and magnetism | 14. An electric ____ uses an electric current to turn an axle |
| 7. Electrical energy is transformed into this type of energy when a wire with a current is placed in a magnetic field | 15. A solenoid with a ferromagnetic core |
| 8. Any material that attracts iron or contains iron | 16. Magnetic ____ is the angle between geographic north and the north to which a compass points |
| | 17. The attraction or repulsion between magnetic poles is magnetic ____ |
| | 18. A device that has a magnet on a needle that spins freely |
| | 19. A current with charges that flow in one direction |

Georgia Milestones Assessment Item Deconstruction and Analysis

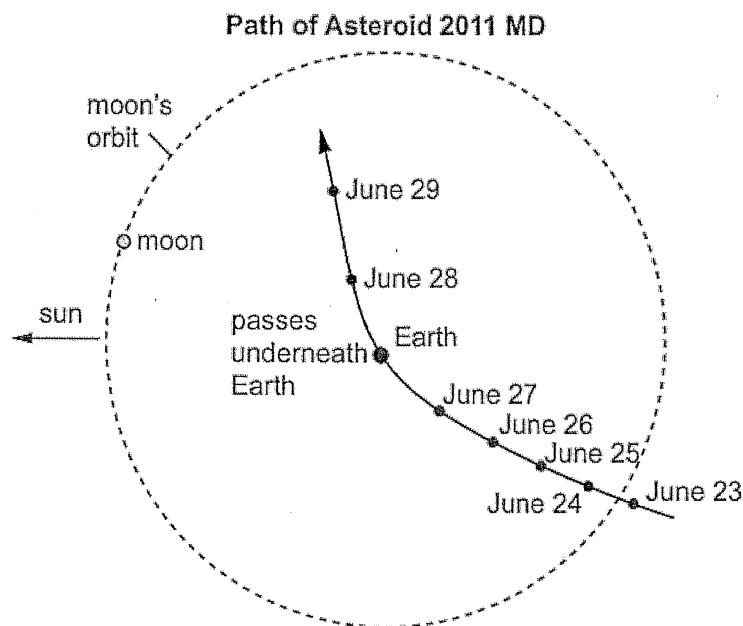
DOK Level: 2

Science Grade 8 Content Domain: Gravity, Electricity, and Magnetism

Standard: S8P5. Obtain, evaluate, and communicate information about gravity, electricity, and magnetism as major forces acting in nature.

a. Construct an argument using evidence to support the claim that fields (i.e., magnetic fields, gravitational fields, and electric fields) exist between objects exerting forces on each other even when the objects are not in contact.

A space agency tracked the path of an asteroid named 2011 MD, which passed within 12,300 kilometers of Earth's surface. The path of the asteroid is projected onto the plane of the moon's orbit around Earth in the diagram.



Space scientists claimed that Earth's strong gravitational field was responsible for the path of asteroid 2011 MD. Which argument BEST supports this claim?

- A. The velocity of the asteroid changed as evidenced by the changing direction of the asteroid.
- B. The velocity of the asteroid changed as evidenced by the straight line path after it passes Earth.
- C. The position of the asteroid bends slightly away from Earth as evidenced by the different locations relative to Earth.
- D. The position of the asteroid bends slightly toward the sun as evidenced by the different locations relative to the sun.

Identify the Science and Engineering Practice (SEP) that is the focus of this question.

Highlight and define the key academic vocabulary (use the standard to help you identify these) that this question addresses.

Eliminate two of the answer choices and explain why they are incorrect.

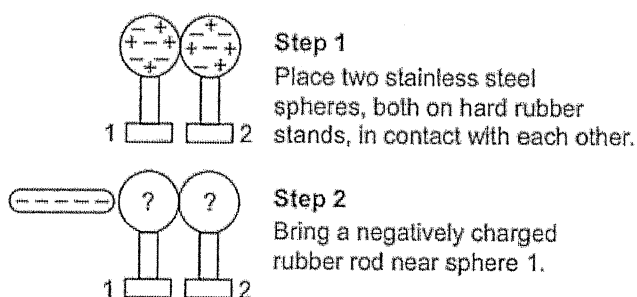
Identify the correct answer choice.

Georgia Milestones Assessment Item Deconstruction and Analysis

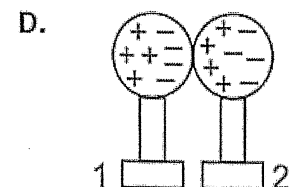
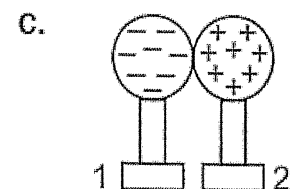
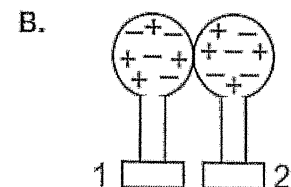
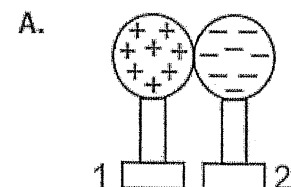
DOK Level: 2	Science Grade 8 Content Domain: Gravity, Electricity, and Magnetism
Standard: S8P5. Obtain, evaluate, and communicate information about gravity, electricity, and magnetism as major forces acting in nature.	b. Plan and carry out investigations to demonstrate the distribution of charge in conductors and insulators. (Clarification statement: Include conduction, induction, and friction.)

A student is investigating how a negatively charged rubber rod affects how charges are distributed on two stainless steel spheres that are touching each other. A diagram showing two steps of the investigation is shown.

Investigation of the Process of Induction



Which diagram for step 2 correctly predicts the distribution of charges on the stainless steel spheres?



Identify the Science and Engineering Practice (SEP) that is the focus of this question.

Highlight and define the key academic vocabulary (use the standard to help you identify these) that this question addresses.

Eliminate two of the answer choices and explain why they are incorrect.

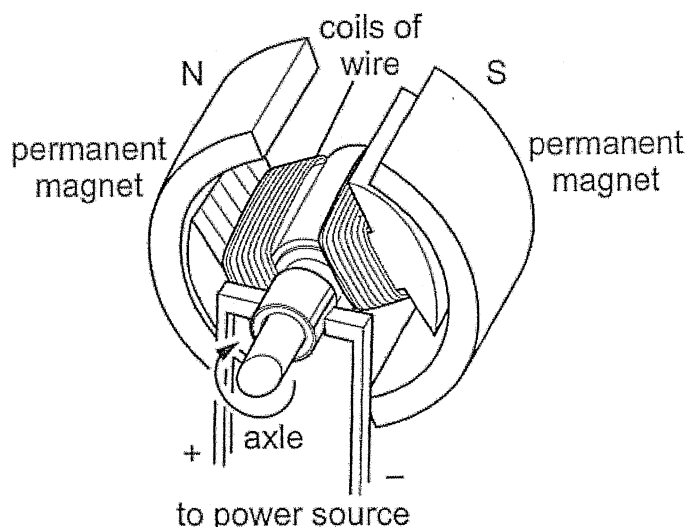
Identify the correct answer choice.

Georgia Milestones Assessment Item Deconstruction and Analysis

DOK Level: 2	Science Grade 8 Content Domain: Gravity, Electricity, and Magnetism
Standard: S8P5. Obtain, evaluate, and communicate information about gravity, electricity, and magnetism as major forces acting in nature.	c. Plan and carry out investigations to identify the factors (e.g., distance between objects, magnetic force produced by an electromagnet with varying number of wire turns, varying number or size of dry cells, and varying size of iron core) that affect the strength of electric and magnetic forces. (Clarification statement: Including, but not limited to, generators or motors.)

A group of students is investigating the different factors that affect the strength of an electric motor. A diagram of the motor is shown.

Inner Workings of an Electric Motor



What step should the students take next in the investigation to increase the strength of the motor?

- A. Reduce the size of the axle running through the center of the motor.
- B. Increase the number of coils of wire within the two sections of the motor.
- C. Decrease the voltage of the power source being used to operate the motor.
- D. Place the permanent magnets and coils of wire farther apart inside the motor.

Identify the Science and Engineering Practice (SEP) that is the focus of this question.	
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