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7th Grade Science Semester Review

Elements vs Compounds

Use the periodic table to fill in the table below.

	Chemical Symbol or Formula	Element or Compound	Atom or Molecule
Ag			
Al(OH) ₂			
O ₂			
Cl			
KCl			

Counting Atoms

1. How many elements are in the following compounds?

a. H₂SO₄ - _____

c. H₂O - _____

b. C₂H₆O - _____

d. O₂ - _____

2. Count the atoms.

i. NH₄OH

N:

H:

O:

Total:

iii. C₂(H₄O₂)₃

C:

H:

O:

Total:

ii. 2H₂SO₄

H:

S:

O:

Total:

of Molecules:

iv. 3H₃(PO₄)₂

H:

P:

O:

Total:

of Molecules:

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Physical vs Chemical Changes

1. Define the following and give an example of each

a. Chemical Change

b. Physical Change

3. Fill in the blank: States of Matter Changes (Melting, Freezing, Boiling) are _____ changes.

4. Identify each description as a Physical Change (P) or Chemical Change (C).

1. ____ stirring lemonade mix into water
2. ____ rotting eggs
3. ____ baking cookies
4. ____ dissolving salt in water
5. ____ two substances are combined, producing bubbles
6. ____ cutting paper
7. ____ molding clay from a ball into a cube
8. ____ two clear liquids are combined, producing a purple color
9. ____ melting ice
10. ____ burning a candle wick
11. ____ two room-temperature liquids are combined, and the solution becomes hot

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7.6D-Solutions Vocabulary

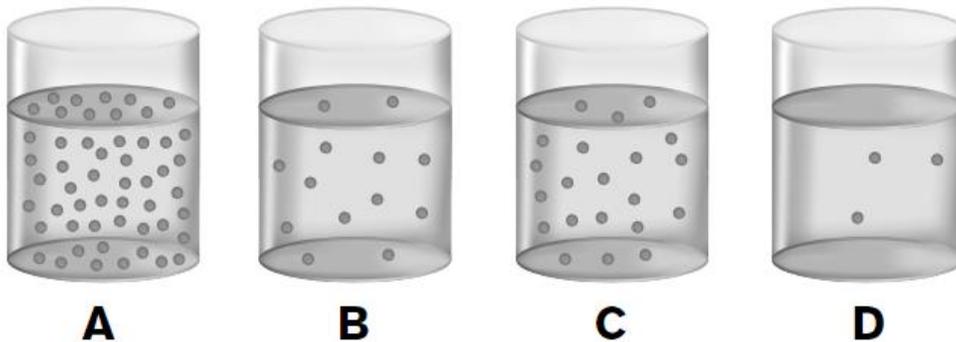
Use the word bank to match the correct vocabulary word with its definition.

Word Bank: dissolve, solute, solvent, solution, dilution, concentration

Word	Definition
	a homogeneous mixture containing one or more substances (solute) dissolved in a solvent
	to become or cause to become incorporated into a solvent so as to form a solution
	the liquid that is dissolving a solute
	the process whereby the concentration of solute in a solution is decreased by increasing the amount of solvent
	the measure of the amount of solute that has been dissolved in a given amount of solvent to create a solution
	a substance that is dissolved by a solvent

7.6D-Describing Solutions

Examine the following images of aqueous solutions. Then, answer the following questions in complete sentences.



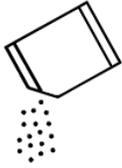
1. What do the circles in each image represent?
2. Which of the solutions is least concentrated/most dilute? Explain.
3. Which of the solutions is most concentrated/least dilute? Explain.
4. List the solutions in order from least concentrated to most concentrated.
5. How could you increase the concentration of these aqueous solutions? What would happen over time if you continue to increase the concentration?

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7.6E-Factors that affect rate of dissolution

1. Based on the “Action Picture”, complete the table.

Action	Effect on Rate of Dissolution	Explanation
 stirring		
 using a powdered solute		
 cooling		
 solute being kept whole		
 shaking		
 heating		

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Thermal Energy

Fill in the Blank: Fill in the blank with the correct words.

Word bank: radiation, increases, convection, warmer, conduction

1. When the temperature of a substance increases, the kinetic energy of its particles _____.
2. Thermal energy moves from _____ areas to cooler areas until equilibrium is reached.
3. The transfer of thermal energy through direct contact of particles is called _____.
4. _____ is the method of thermal energy transfer that involves the movement of fluids (liquids and gases).
5. Thermal energy from the Sun reaches Earth through _____.

Multiple Choice Questions: Choose the correct answer from the choices for each question.

1. Which of the following describes the relationship between temperature and kinetic energy?
 - a. A) As temperature decreases, kinetic energy increases.
 - b. B) As temperature increases, kinetic energy increases.
 - c. C) Temperature and kinetic energy are not related.
 - d. D) Kinetic energy decreases as temperature increases.
2. What happens to thermal energy when substances reach thermal equilibrium?
 - a. A) It continues to move from warmer to cooler areas.
 - b. B) It stops moving altogether.
 - c. C) It moves randomly in all directions.
 - d. D) It is divided equally among all substances.
3. Which method of thermal energy transfer involves the movement of fluids?
 - a. A) Conduction

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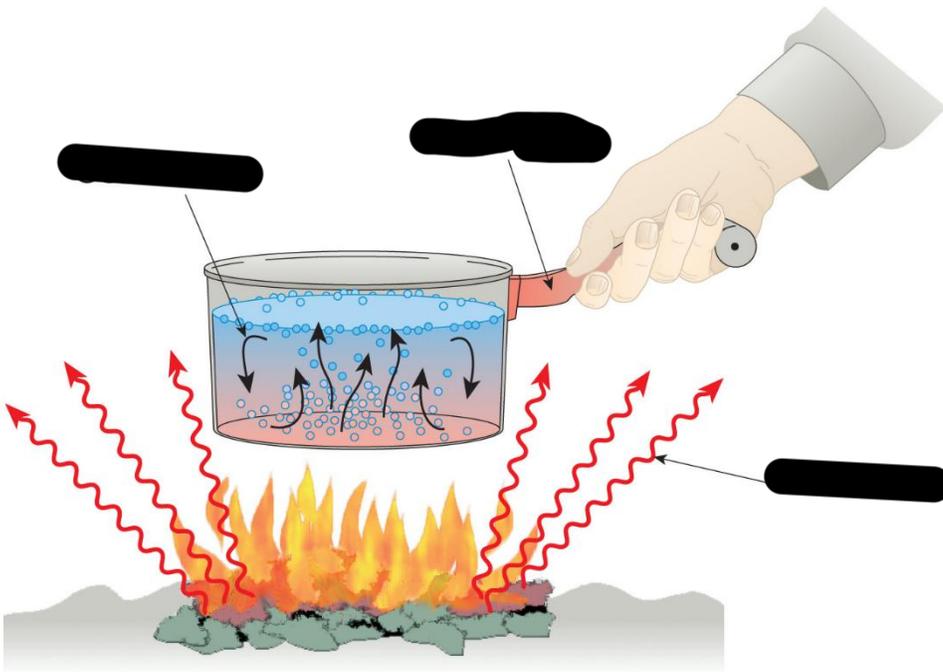
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- b. B) Convection
 - c. C) Radiation
 - d. D) Insulation
4. How is the Sun's energy transferred to the Earth?
- a. A) Conduction
 - b. B) Convection
 - c. C) Radiation
 - d. D) Evaporation
5. Which method of heat transfer occurs when you touch a hot stove?
- a. A) Radiation
 - b. B) Convection
 - c. C) Conduction
 - d. D) Insulation
6. What is the main direction of thermal energy movement?
- a. A) Cooler to warmer
 - b. B) Warmer to cooler
 - c. C) Side to side
 - d. D) Up and down
7. What term describes the point at which two objects no longer transfer thermal energy?
- a. A) Thermal diffusion
 - b. B) Thermal equilibrium
 - c. C) Thermal expansion
 - d. D) Thermal contraction
8. Which of the following is an example of thermal energy transfer?
- a. A) Ice melting in a drink
 - b. B) A lamp turning on
 - c. C) A ball rolling down a hill

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- d. D) A plant growing
9. How does thermal energy affect the temperature of a substance?
- a. A) It causes it to decrease
 - b. B) It causes it to increase
 - c. C) It can cause it to either increase or decrease
 - d. D) It has no effect

Label the following picture with the correct energy transfer.



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1. Describe the theories of plate tectonics and continental drift. What evidence do scientists have to support these theories?

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Plate tectonics

2. Describe superposition and how it relates to how old fossils are.

3. Fill in the chart below.

<u>Plate Boundary</u>	<u>Direction of Plate Movement</u>	<u>Geological Features Formed</u>	<u>Real-Word Example</u>
Divergent Boundary			
Convergent Boundary			
Transform Boundary			

Write the correct letter on the line.

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Objects in Space & Habitable Planet

- A. Asteroid
- B. Comet
- C. Moon
- D. Planet
- E. Oort Cloud
- F. Kuiper Belt
- G. Meteor

- ___ 1. A rocky object that orbits the Sun, mostly between Mars & Jupiter.
- ___ 2. An icy object with a tail that forms when near the Sun.
- ___ 3. A natural object that orbits a planet.
- ___ 4. A large body that orbits the Sun in an elliptical path.
- ___ 5. A glowing streak of light produced when a space rock enters Earth's atmosphere.
- ___ 6. A region beyond Neptune containing icy objects and dwarf planets.
- ___ 7. A spherical region of trillions of icy bodies surrounding the solar system.

B. Fill in the Blanks

- 8. The Sun is a _____.
- 9. The inner planets are made mostly of _____.
- 10. The outer planets are made mostly of _____.

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11. When a meteoroid hits Earth's surface, it is called a _____.
12. The asteroid belt lies between _____ and _____.

C. Label the Diagram

Use the word bank to fill in each blank.

Word Bank:

Sun • Inner Planets • Outer Planets • Asteroid Belt • Kuiper Belt

[Sun] — (_____) — [_____] — (_____) — [_____]

A. Multiple Choice

Circle the correct answer.

13. What force keeps the planets in orbit around the Sun?
- a. Electricity
 - b. Magnetism
 - c. Gravity
 - d. Pressure
14. Why does Earth's Moon stay in orbit?
- a. Earth pushes it
 - b. Earth's gravity pulls it

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c. The Sun holds it still

d. It is too heavy to move

15. If the Sun's gravity disappeared, planets would:

a. Move closer to the Sun

b. Stay in place

c. Fly off into space

d. Stop rotating

A. True or False

Write **T** for true or **F** for false.

___ 18. Earth is in the "Goldilocks Zone," where temperatures allow liquid water.

___ 19. Earth's atmosphere protects us from harmful solar radiation.

___ 20. Earth is the only planet with any water.

___ 21. The Sun is too close for life to survive on Earth.