

TEST NAME: **Matter Pre-Test**
TEST ID: **2049427**
GRADE: **06 - Sixth Grade**
SUBJECT: **Life and Physical Sciences**
TEST CATEGORY: **My Classroom**

Student: _____

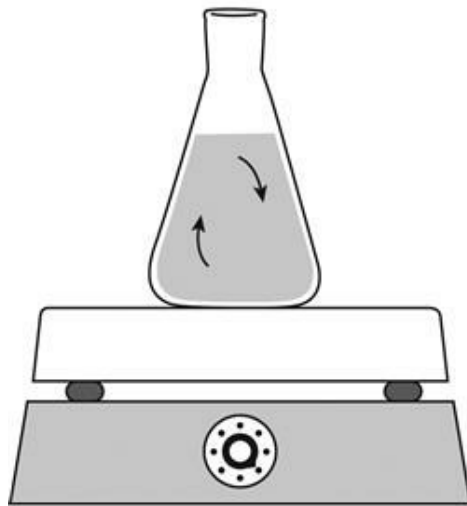
Class: _____

Date: _____

1. **A carpenter rubs sandpaper on a wooden bench to make the bench smoother. The sandpaper will get warm as it is rubbed on the bench. As a result of the friction between the sandpaper and the bench, thermal energy is converted to**
 - A. chemical energy that is stored by the sandpaper.
 - B. radiant energy that is transferred to the bench.
 - C. potential energy that is stored by the wood.
 - D. heat energy that is transferred to the air.

2. **In an investigation, water in an Erlenmeyer flask is placed on a hot plate.**

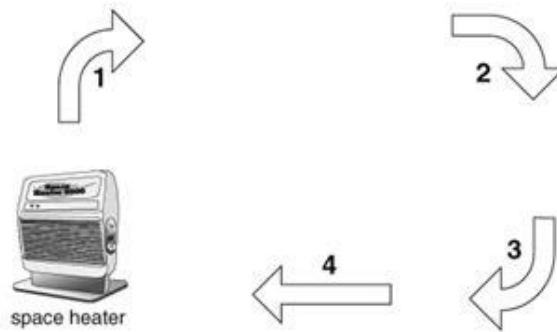
Water Heated on Hot Plate



As the water is heated, the cooler, denser water at the surface sinks and pushes the warmer water to the top. What do the arrows in the drawing MOST likely represent?

- A. phase changes
- B. convection currents
- C. electromagnetic radiation
- D. energy transfer by conduction

3. Use the diagram of a convection current to answer the question that follows.



Which arrow represents the hottest air in this convection current?

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

4. The chart shown appears in a catalog of camping equipment.

Sleeping Bag	Temperature Rating (degrees C)
Everyday	10 – 20
Rugged	0 – 10
Arctic	-10 – 10

The difference between the Arctic sleeping bag and the Rugged sleeping bag is MOST likely that the Arctic sleeping bag is

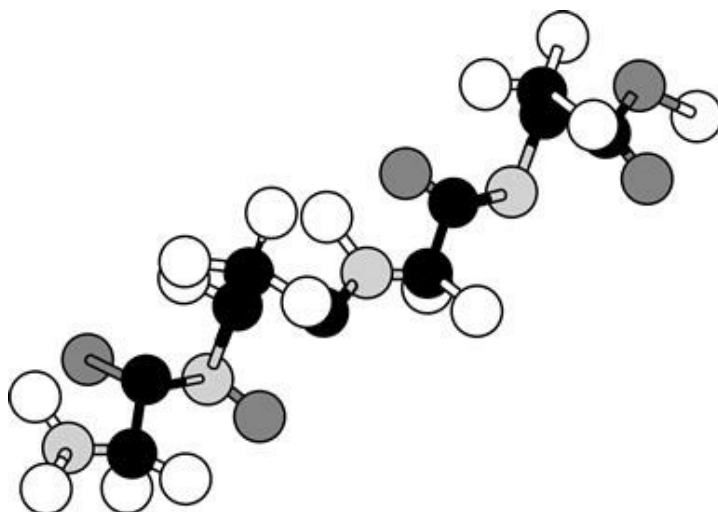
- A. designed to last longer.
- B. made of material that insulates better.
- C. designed for home use as well as camping.
- D. made of material that provides better cushion.

5. The handle of a frying pan is often coated in rubber because rubber provides

- A. heat insulation.
- B. electric conduction.
- C. a low melting point.
- D. a nonstick surface.

6. **Plastic conducts very little thermal energy or electricity. Because of this property, plastic would MOST likely be used to cover**
- A. metal.
 - B. wood.
 - C. solids.
 - D. liquids.
7. **Which basic units of matter have the same properties as an element?**
- A. protons
 - B. electrons
 - C. atoms
 - D. neutrons
8. **What is the smallest particle of an element?**
- A. atom
 - B. electron
 - C. nucleus
 - D. proton
9. **Which describes a property of all elements?**
- A. All elements are metals.
 - B. All elements have six electrons.
 - C. All elements are pure substances.
 - D. All elements exist in the solid phase.

10. The model shows a molecule of silk made by a spider.



What does each sphere in the molecular model represent?

- A. an atom
- B. a compound
- C. a nucleus
- D. an ion

11. A student sees the diagram shown in a textbook.

Atomic Number	14
Symbol	Si
Atomic Mass	28.085
	Silicon
	Name

What does the symbol in the diagram represent?

- A. a compound
- B. an element
- C. a molecule
- D. an isotope

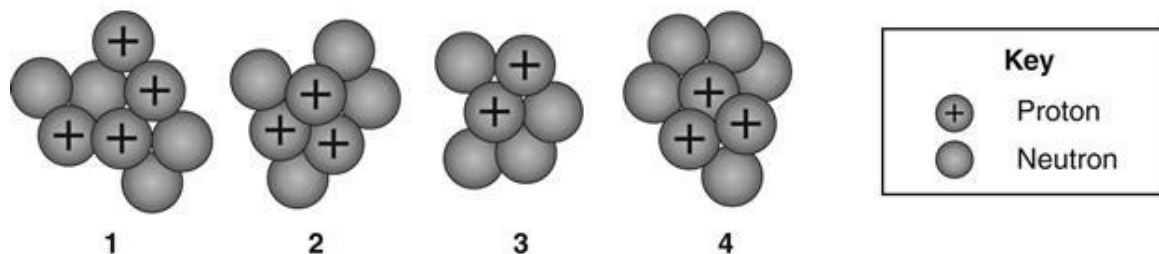
12. An atom can BEST be described as

- A. the smallest particle that has all the characteristics of a compound.
- B. the smallest particle that has all the characteristics of an element.
- C. a charged particle that is similar to a molecule.
- D. a charged particle that is larger than a molecule.

13. Which statement is true about atoms?

- A. Atoms are made of molecules.
- B. Atoms have an electric charge.
- C. Atoms have the same weight.
- D. Atoms are seen by using special tools.

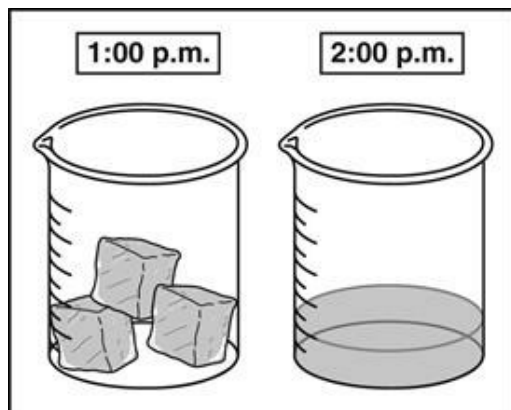
14. The diagram shows the nuclei of some elements.



Which are nuclei of the same element?

- A. 1 and 2
 - B. 1 and 3
 - C. 2 and 4
 - D. 3 and 4
15. Snow turns to liquid water when it
- A. freezes.
 - B. melts.
 - C. condenses.
 - D. evaporates.
16. The metal lid on a glass jar is hard to open, so it is held under warm, running water. What causes the jar to open easily after it was held under the water?
- A. The water increased the pressure under the lid.
 - B. The jar shrunk with the warm water.
 - C. The water acted as a lubricant between the glass and the metal.
 - D. The metal lid expanded under warm water.
17. The boiling of water results in a physical change in matter from
- A. solid to liquid.
 - B. gas to solid.
 - C. solid to gas.
 - D. liquid to gas.

18. A student put 200 milliliters (mL) of water into a pot, sets the pot on a burner, and heats the water to boil. When the pot is taken off the burner, it contains only 180 milliliters (mL) of water. What happened to the rest of the water?
- A. It was used up.
 - B. It condensed.
 - C. It was absorbed by the heat.
 - D. It turned into water vapor.
19. Students took some ice cubes out of the freezer at 1:00 p.m. An hour later, they observed how the ice cubes had changed.



The change is **BEST** described as

- A. chemical because a liquid formed.
 - B. physical because it happened over time.
 - C. physical because no new substance was formed.
 - D. chemical because heat caused the change.
20. At which temperature does water freeze?
- A. 0 degrees Celsius
 - B. 32 degrees Celsius
 - C. 100 degrees Celsius
 - D. 212 degrees Celsius
21. What are the three common states of matter?
- A. liquid, gas, vapor
 - B. gas, liquid, fluid
 - C. solid, gas, liquid
 - D. solid, vapor, liquid

22. Which of the following has the ability to change the state of matter?

- A. heat
- B. wind
- C. light
- D. sound

23. One characteristic that is unique to water is that it

- A. has a low specific heat.
- B. can be changed from a liquid to a solid.
- C. dissolves very few substances.
- D. exists naturally in three states on Earth.

24. The properties of four substances were measured and recorded in the table shown below.

Data Table

Substance	Mass (g)	Volume (cm ³)	Shape	Texture	Reaction to Light
1	15.6	5.78	Rectangle	Smooth	Reflects
2	19.4	16.17	Cube	Smooth	Absorbs
3	26.2	9.70	Cylinder	Smooth	Reflects
4	18.6	5.31	Rectangle	Smooth	Absorbs

Which substances are MOST likely made of the same material?

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

25. A loaf of bread is baking in a pan in a 350°F oven. A baker wants to remove the bread. Which of these has low specific heat and is MOST likely to cause a burn to the hand if the baker is not careful?

- A. the metal pan
- B. the air in the oven
- C. the surface of the bread
- D. the outside of the oven door

26. A student performed an investigation at sea level. First she placed 400 mL of water in four different containers. Then she placed the containers on hot plates with four different temperature settings, as shown in the table.

Beaker	110°C
Petri Dish	95°C
Erlenmeyer flask	60°C
Round bottom bowl	45°C

Which characteristic of water remained the same in each container?

- A. the shape of the water
 - B. the rate of evaporation
 - C. the boiling point of water
 - D. the amount of steam released per minute
27. Specific heat is defined as the amount of energy needed to raise the temperature of 1 gram of a substance by 1°C.

Energy Required to Heat Substances

Substance	Specific Heat (J/g · °C)
Aluminum	0.897
Graphite	0.714
Silver	0.235
Iron	0.449

If the mass of each substance were equal, which substance would heat the fastest?

- A. aluminum
 - B. graphite
 - C. silver
 - D. iron
28. A student was given the volume and description of a substance and was asked to determine its density. What information is missing?
- A. size
 - B. mass
 - C. boiling point
 - D. melting point

29. During a demonstration, a teacher pours CO_2 gas over a candle, putting out the flame.

Which physical property allows the teacher to pour the CO_2 gas?

- A. The gas is more dense than the air.
- B. The gas is more visible than the air.
- C. The gas smells different from the air.
- D. The gas evaporates faster than the air.

30. Appearance, texture, and density are classified as

- A. physical properties.
- B. chemical properties.
- C. magnetic properties.
- D. thermal properties.