

A 12. Which of the following is not matter

- a) Light b) Books c) X-ray machines d) water

D 13. A material made up of only one type of atom is:

- a) a homogeneous mixture
b) a heterogeneous mixture
c) matter
d) an element

Multiple Choice: /13

1. What type of property is (chemical or physical) is: **hardness?**

- a. chemical property b. physical property

2. What type of property is (chemical or physical) is: **conductivity?**

- a. chemical property b. physical property

3. What type of property is (chemical or physical) is: **corrosion?**

- a. chemical property b. physical property

4. What type of property is (chemical or physical) is: **melting point?**

- a. chemical property b. physical property

5. What type of property is (chemical or physical) is: **malleability?**

- a. chemical property b. physical property

6. What type of property is (chemical or physical) is: **ductility?**

- a. chemical property b. physical property

7. What type of property (chemical or physical) fits this description: **sugar dissolves in hot water**

- a. chemical property b. physical property

8. What type of property (chemical or physical) fits this description: **limestone reacts with acid to form carbon dioxide gas**

- a. chemical property b. physical property

9. What type of property (chemical or physical) fits this description: **a wooden handle does not conduct heat well. So it is safer to use than a metal handle.**

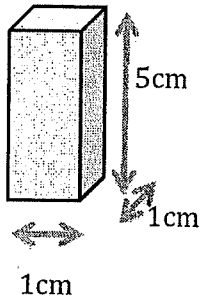
- a. chemical property b. physical property

Total: /9



Density

1. The mass of an object is 10.0g. What is the density of the object? Show all of your work (2 points)



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

$$m = 10.0g$$

$$V = 5cm \times 1cm \times 1cm = 5cm^3$$

$$D = \frac{10.0g}{5cm^3}$$

$$D = 2.0g/cm^3$$

make your answer clear

2. If heat was added to the object, the particles would (circle the correct answer) 1 point

- a) have more energy b) have less energy c) have the same amount of energy

3. This would make the object (circle the correct answer) 1 point

- a) more dense b) less dense c) nothing would change

4. What is the volume of a 20.0g lump of Marium? (Marium has a density of 10.0 g/mL) 2 points

$$V = \frac{m}{d} = \frac{20.0g}{10.0g/mL}$$

$$\therefore V = 2.0g/mL$$

5. An object has a mass of 300g, but it was difficult to measure the volume. So you put it in a pot that had 100.0 mL of water in it and the water in the cylinder rose to 250.0mL. What is the density of the object? 2 points

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

$$m = 300g$$

$$V = 250.0mL - 100.0mL = 150.0mL$$

$$D = \frac{300g}{150.0mL}$$

$$D = 2g/mL$$

Total: /8

True or False

In the space provided, indicate if the statement is True (T) or False (F). If the statement is false, correct the statement in the space below (1 point each)

1. Atoms in a liquid are farther apart than the atoms in a gas F

closer together

2. Pure substances and compounds are both elements F

Elements

pure substances

3. Elements have one kind of particle T

4. You can see different substances in a heterogeneous mixture such as soil T

5. The oxygen molecules that came from a tree are the same as oxygen molecules that came from pond scum in a nearby drainage ditch T

6. The temperature at which a substance changes from one state to another is a property that is unique to that substance F

Corrosion is a chemical property, describing a reaction with oxygen

7. Corrosion is a ~~physical~~ property that describes how metals can be "drawn" into wires F *Two options for correction*

Ductility is a physical property.

8. Cooling removes energy from a substance, causing the particles to move closer together T

9. Solids will take the shape of the container they are put in F

Liquids and gases.

Total: /9

Matching

- H Refers to a slow reaction with oxygen
- K Can be drawn into wires
- E Can be made into thin sheets
- F Cannot be measured directly. It must be calculated.
- I Refers to a substance that is resistant to burning
- C Anything that has mass and takes up space
- L A state of matter that has a definite shape
- G A state of matter that has no definite shape or volume

- A Flammability
- B Boiling point
- C Matter
- E Malleability
- F Density
- G Gas
- H Corrosion
- I Non-flammable
- J Ice
- K Ductility

Total: /8

Identify each of the following as an *element, compound, homogeneous mixture, or heterogeneous mixture*

Silver	element
Carbon dioxide (CO ₂)	compound
Oxygen (O ₂)	element
Seawater	homogenous mixture
Helium	element
Oatmeal Raisin cookie	heterogeneous mixture
Macaroni and cheese	heterogeneous
Water (H ₂ O)	compound
Apple juice	homogenous mixture
Air we breathe	homogenous

Rutherfordium	element
Soil	heterogenous mixture

Total: /8

Short answer (1 point per blank)

1.

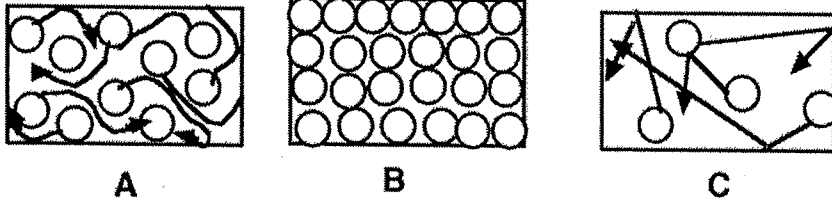
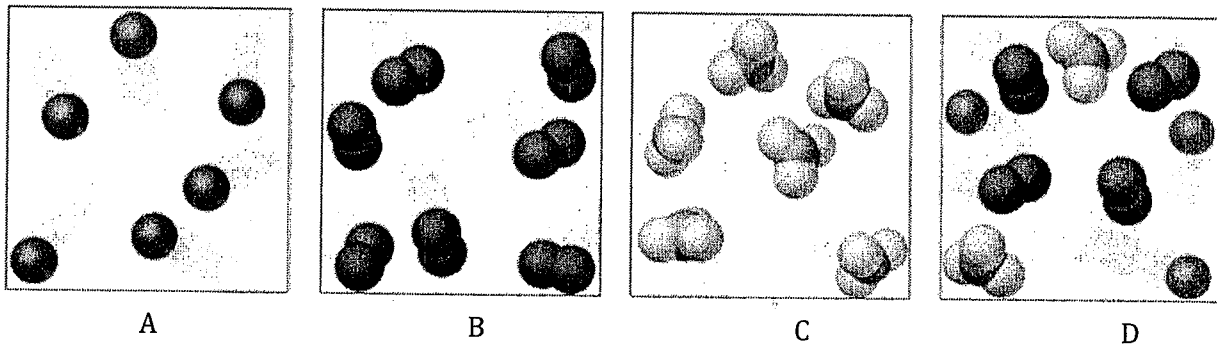


Image A is referring to matter in what state? liquid
 Image B is referring to matter in what state? solid
 Image C is referring to matter in what state? gas.



2. Which of the image(s) is an image of a mixture? D

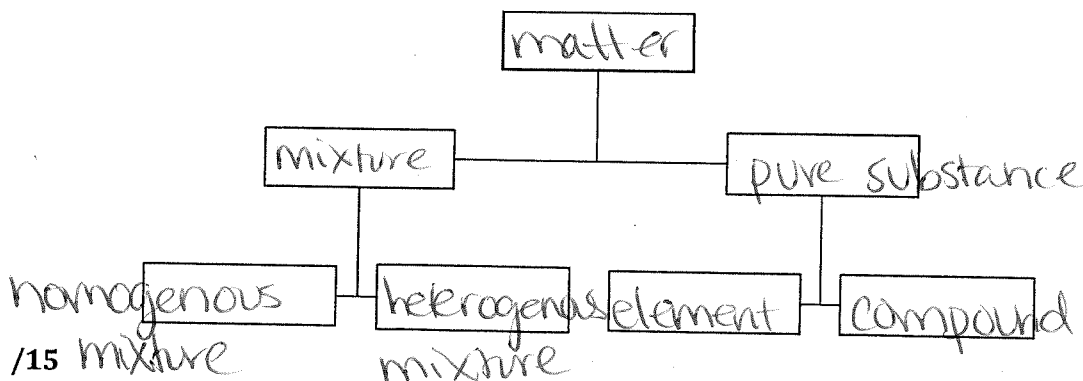
Which of the image(s) is an image of a compound? C

Which of the image(s) is an image of an element? A and B

3. Which state has the least energetic molecules? solid

4. Which state has the most attractive forces between the particles? solid

5. Complete the diagram below. This is a diagram that shows the classification of matter:



Total: /15 mixture

Medium Answer:

6. What are the two defining properties of matter? **1 point**

anything with mass and volume



7. A solid piece of copper is heated but does not change state. What is happening to the particles in the substance as it is being heated? (You can use images to help explain your answer) **2 points**

The particles in the solid are gaining energy and vibrate more than before. As a result the solid expands slightly but the particles do not have enough energy to overcome attractive forces and slide past each other (like a liquid)

8. An ice cube is heated to a temperature so high that it begins turning into water. What is happening to the particles as it is changing state? (You can use images to help explain your answer) **2 points**

The particles in the solid (ice cube) are gaining enough energy that they change state, slide past each other. The particles have also lost some of their attractive forces.

9. Describe the motion of particles in the three states of matter (You can use images to help explain your answer) **3 points**

<p><u>Solid</u> </p> <ul style="list-style-type: none"> -vibrating -close together -tightly packed -lowest energy state 	<p><u>liquid</u> </p> <ul style="list-style-type: none"> -particles slide past each other -medium state of energy 	<p><u>gas</u></p> <ul style="list-style-type: none"> -moving quickly past each other -straight line motion -particles have a lot of energy
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10. Explain how a thermometer works using the Kinetic Molecular Theory. You can use images to help explain your answer. **2 points**

particles gain energy as heat is added. As a result, liquid (or other material) in a thermometer expands and rises

