

Use textbook pages 260-265.

Go with the flow

Vocabulary

cubic centimetres (cm ³)	g/mL
denser	mass
density	millilitres (mL)
displacement	particles
float	rise
fluids	volume
g/cm ³	water

Use the terms in the vocabulary box to fill in the blanks. Use each vocabulary term once only. You will not need to use every term.

- _____ can flow because they do not have a fixed shape.
- The _____ of an object is the amount of mass contained in a given volume.
- The key to density is the spaces between the _____
The denser an object is, the more closely packed together the particles are in the object.
- A less dense substance will _____ on a denser substance if the two substances do not mix together.
- As a rule, substances are _____ in their solid state than in their liquid state. An exception to this rule is _____
- To calculate the density of an object, you need to divide its _____ by its _____
- The _____ method can be used to find the volume of an irregularly-shaped object.
- The units for density can be _____ or _____

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Fluids and density

Match each Substance/Object on the left with its Density. Each Density may be used only once.

Substance/Object	Density
1. _____ An object has a mass of 12 g and a volume of 2 cm ³ . Determine its density.	A. 6 cm ³ B. 6 g C. 6 g/cm ³ D. 12 mL E. 12 g F. 12 g/mL
2. _____ A substance has a mass of 24 g and a volume of 2 mL. Determine its density.	

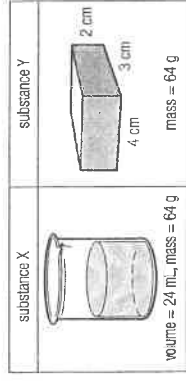
Circle the letter of the best answer.

- Which of the following are fluids?
 - gases only
 - liquids only
 - gases and liquids only
 - solids, liquids, and gases
- Why are fluids able to flow?
 - they do not have a fixed shape
 - they do not have a fixed volume
 - their particles are packed tightly together
 - their particles have very little kinetic energy
- How would you determine the volume of an irregularly-shaped rock?
 - Put the rock on a triple beam balance.
 - Determine the density of the object and divide it by its mass.
 - Use a ruler to measure its length, width, and height. Then multiply the dimensions together.
 - Put the rock in a graduated cylinder filled with water and see how much water is displaced.

6. A graduated cylinder containing 50 mL of water has a mass of 70 g. As you put the object into the graduated cylinder, the water rises to 80 mL and the total mass increases to 90 g. What is the mass, volume, and density of the object?

- A. $m = 20$ g; $V = 10$ mL; $D = 2$ g/mL
 B. $m = 20$ g; $V = 30$ mL; $D = 1.5$ g/mL
 C. $m = 20$ g; $V = 30$ mL; $D = 0.6$ g/mL
 D. $m = 30$ g; $V = 20$ mL; $D = 1.5$ g/mL

Use the following diagrams to answer questions 7 to 9.



- The volume of substance Y is 24 cm³.
 - The statement is true.
 - The statement is false.
 - There is not enough information to determine the density.
- Which of the following compares the density of substance X and substance Y?
 - Substance X is denser than substance Y.
 - Substance Y is denser than substance X.
 - Both substances have the same density.
- If substance Y is placed in a beaker of water, what will happen?
 - Substance Y will sink in water.
 - Substance Y will float on water.
 - Substance Y will dissolve in water.

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States of matter

Match each Term on the left with the best Descriptor on the right. Each Descriptor may be used only once.

Term	Descriptor
1. mass	A. amount of matter in an object
2. matter	B. amount of space an object takes up
3. volume	C. anything that has mass and volume
	D. total energy of the particles in an object

Circle the letter of the best answer.

4. Which of the following is not an example of matter?

- A. heat
- B. solids
- C. water
- D. oxygen

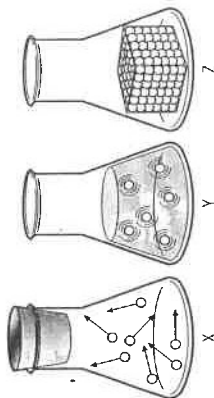
5. What does the kinetic molecular theory explain?

- A. how particles act when their spacing and movement change
- B. how to determine the mass and volume of solids, liquids, and gases
- C. how the kinetic energy in solids, liquids, and gases can be measured
- D. how to find out the temperature of solids, liquids, and gases

6. What happens to matter when energy is added to it?

- A. the particles take up less space
- B. the particles decrease in volume
- C. the particles move around faster
- D. the particles move around slower

Use the following diagram to answer questions 7 to 9.



7. Both Y and Z have definite volume.

- A. The statement is true.
- B. The statement is false.
- C. You cannot tell from the diagram.

8. The particles in Z can flow past each other.

- A. The statement is true.
- B. The statement is false.
- C. You cannot tell from the diagram.

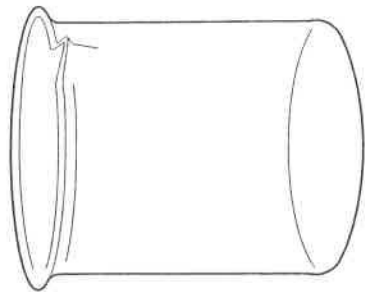
9. Which of the following correctly compares the amount of energy in the particles of X and Z?

- A. The particles in X have less energy than the particles in Z.
- B. The particles in X have more energy than the particles in Z.
- C. The particles in both X and Z have the same amount of energy.
- D. You cannot tell from the diagram.

Dense, denser, densest

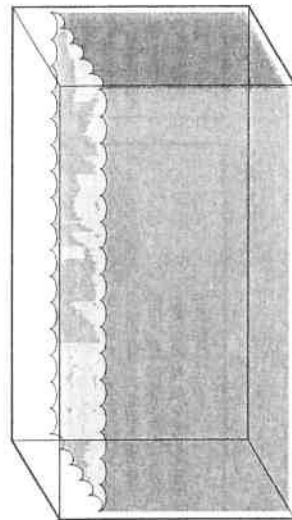
Complete and label the diagrams according to the instructions below.

1. The table below lists the densities of five different fluids. If the fluids were added to a beaker, how would they be layered? Draw and label the layers in the beaker below.



Substance	Density (g/mL)
gasoline	0.69
glycerol	1.26
corn syrup	1.40
vegetable oil	0.92
rubbing alcohol	0.79

2. Water has a density of 1.00 g/mL. Draw and label each of the following objects in the tank of water. Show whether they will sink or float.



Object	Density
cork	0.24 g/cm ³
ice	0.92 g/cm ³
gold ring	19.32 g/cm ³
block of wood	0.66 g/cm ³
marble	2.5 g/cm ³