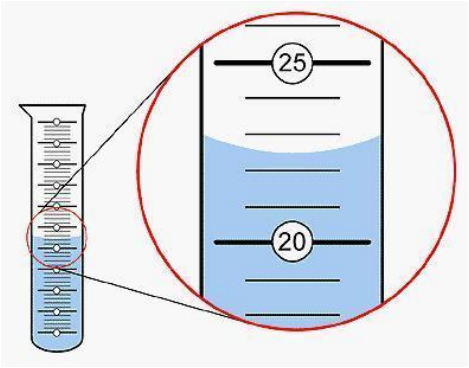
Sample density calculations:

$$\text{Density (in g/mL or g/cm}^3\text{)} = \frac{\text{mass (g)}}{\text{volume (mL or cm}^3\text{)}}$$

For all the problems listed here, show your work clearly! Put a box around your final answer.

1. A block of aluminum occupies a volume of 15.0mL and weighs 40.5g. What is its density?

2. 306.0 g of mercury metal is poured into a graduated cylinder. The volume is shown on the right. From this information, calculate the density of mercury.



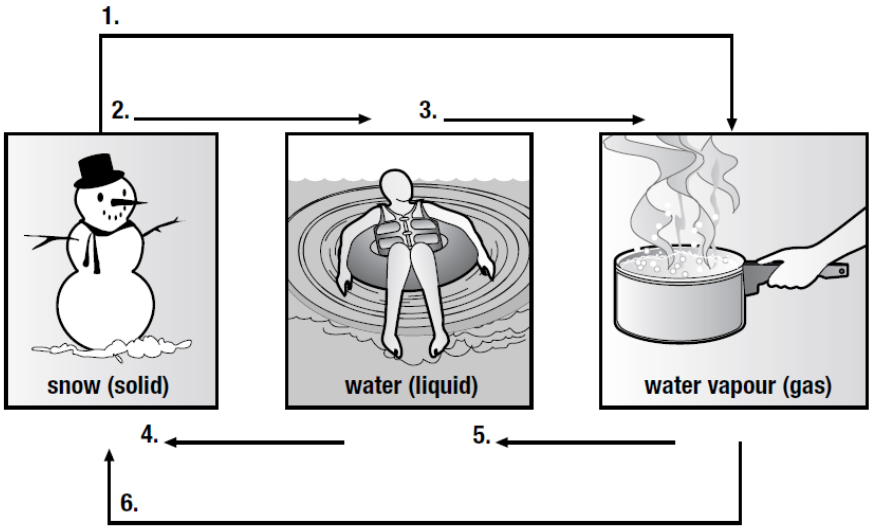
3. A block of lead has dimensions of 4.5cm by 5.2cm by 6.0cm. They block weights 1587g. From this information, calculate the density of lead.

4. What is the weight of the ethanol that exactly fills a 200.0mL container? The density of ethanol is 0.789g/mL. (harder question!)

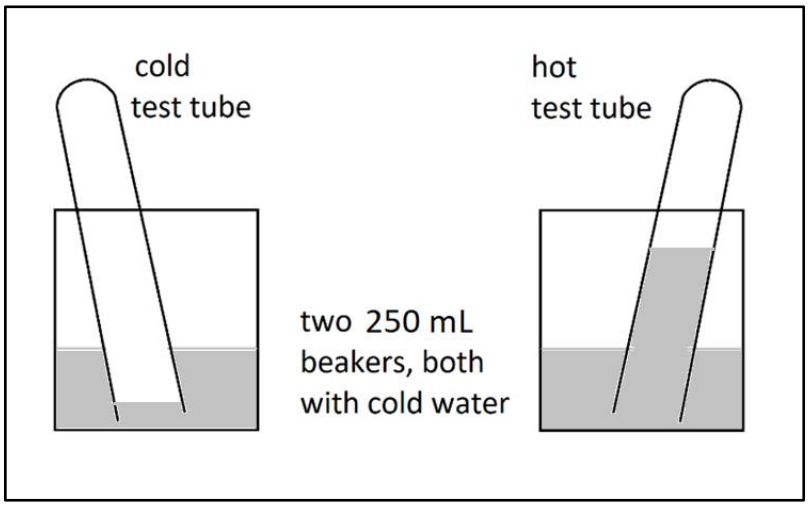
Kinetic molecular theory review:

Vocabulary	
condensation	melting
deposition	solidification (freezing)
evaporation	sublimation

Use the terms in the vocabulary box to label the diagram. Place the terms on the numbered arrows.



In one of the labs we did, we observed cold water from a beaker travelling up a cooling test tube.
Why did the water go up into the test tube that started hot, but not into the test tube that started cold?



Vocabulary	
condensation	melting
contracts	move around quickly
deposition	rises
evaporation	slide past each other
expands	slower
falls	solidification
faster	state of matter
kinetic molecular theory	sublimation
mass	vibrate
matter	volume

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

1. _____ is the amount of material that makes up something.
   _____ is the amount of space that a material takes up.
   Anything that has mass and volume is called _____.

2. When you add energy to matter, its temperature _____.

3. _____ is the process of a solid changing to a liquid.
   _____ is the process of a solid changing directly to a gas.

4. _____ is the process of a liquid changing to a gas.
   _____ is the process of a liquid changing to a solid.

5. _____ is the process of a gas changing to a liquid.
   _____ is the process of a gas changing to a solid.

6. Particles in a solid are packed so close together they can only _____.
   Particles in a liquid can _____.
   Particles in a gas can _____.

7. When you remove energy from particles they move _____ and the matter _____.

8. The _____ explains how particles act when their spacing and movement change.

Use with textbook pages 246–253.

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?

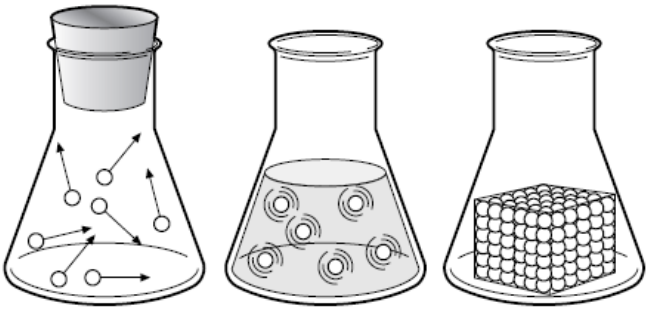
A. the particles take up less space

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.