

THE MOVEMENT OF PARTICLES

Look at the picture of the particles of potassium permanganate.
What inference can you make about them?

DRAW the particle arrangement in a solid, liquid, and gas to show how they are spaced:



Solid



Liquid



Gas

READ pages 97 to 100 in Focus On Physical Science and answer the following questions:

In which state of matter do particles have the most energy?

In which state of matter do particles have the least energy?

Any change in thermal energy means a change in what?

Which changes of state require an increase in thermal energy?

Which changes of state require a decrease in thermal energy?

What is sublimation?

WATCH: Teacher demonstration heating a marble using tongs. Observe what happens when the marble is dropped into a beaker of cold water.

The movement of particles in the marble when heated is faster/slower (circle one).
The movement of particles in the marble when cooled is faster/slower (circle one).

OBSERVE: What happened to the marble when it was dropped it into the cold water?

DO: Place the flask with the colored water on the lab table, and push in the stopper. Grasp the flask with both hands, and watch the level of liquid in the glass tube. What happens?

The movement of particles in the liquid when heated is faster/slower (circle one).
The amount of space the liquid occupies after heating is more/less (circle one).
The number of particles in the liquid when heated or cooled is more/less/same
(circle one).

OBSERVE: What happened to the size (volume) of the balloon after being in the freezer overnight?

DESCRIBE: How the particles of gas (air) inside the balloon are moving after being cooled and losing energy:

CONCLUSIONS

1. The particle theory of matter says-

- A. All matter is made up of particles
- B. Particles in matter have space between them

From today's observations, finish the following sentences-

- C. When energy is added to particles, they move _____ and have _____ space between them.
- D. When energy is taken away from particles, they move _____ and have _____ space between them.

2. How is the flask with the colored water like a thermometer?

3. On a cold winter day, you can see water vapor coming out when you talk. On a warm day, you cannot see the water vapor coming out.

Why can you see the water particles coming out of your mouth when it's cold outside, but not when it's warm outside?
