Name

Solids, Liquids, and Gases

We learned in some of our other lessons that matter is made up of atoms and molecules.

Millions and millions of these tiny objects fit together to form larger things like animals and planets and cars. Matter includes the water we drink, the air we breathe, and the chair we are sitting on.

States or Phases Matter usually exists in one of three states or phases: solid, liquid, or gas. The chair you are sitting on is a solid, the water you drink is liquid, and the air you breathe is a gas. Changing State

The atoms and molecules don't change, but the way they move about does. Water, for example, is always made up of two hydrogen atoms and one oxygen atom. However, it can take the state of liquid, solid (ice), and gas (steam).

Matter changes state when more energy gets added to it. Energy is often added in the form of heat or pressure. Water

Solid water is called ice.

This is water with the lowest energy and temperature.

When solid, the molecules in water are held tightly together and don't move easily. Liquid water is just called water. As ice heats up it will change phases to liquid water.

Liquid molecules are looser and can move about easily.

Gas water is called steam or vapor.

When water boils it will turn to vapor.

These molecules are hotter, looser, and moving faster than the liquid molecules. They are more spread apart and can be compressed or squished.

Solid

Liquid

Gas

More States

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There are actually two more states or phases that matter can take, but we don't see them much in our everyday life.

One is called plasma.

Plasma occurs at very high temperatures and can be found in stars and lightning bolts. Plasma is like gas, but the molecules have lost some electrons and become ions.

Another state has the fancy name Bose-Einstein condensates. This state can occur at super low temperatures.

1) Which of the following is an example of a solid?

- ☐ Air you breathe
- ☐ Coffee you drink
- ☐ A chair you sit on
- ☐ Water you swim in
- ☐ All of the Above

2) Which of the following is the common name for the solid state of water?

- ☐ Liquid
- ☐ Rain
- ☐ Steam
- ☐ Ice
- ☐ Vapor

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3) Which of the following states of matter is the most abundant state of matter in the universe?

- ☐ Solid
- ☐ Liquid
- ☐ Gas
- ☐ Plasma
- ☐ Bose-Einstein condensates

4) Which of the following states of matter is water in when it's in the form of steam or vapor?

- ☐ Solid
- ☐ Liquid
- ☐ Gas
- ☐ Plasma
- ☐ Bose-Einstein condensates

5) Which of the following states of matter occur between solid and gas as the energy is increased?

- ☐ Solid
- ☐ Liquid
- ☐ Gas
- ☐ Plasma
- ☐ Bose-Einstein condensates

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6) What unique state of matter only occurs at extremely low temperatures?

- ☐ Solid
- ☐ Liquid
- ☐ Gas
- ☐ Plasma
- ☐ Bose-Einstein condensates

7) In which of the following three states of matter are the particles moving the fastest?

- ☐ Solid
- ☐ Liquid
- ☐ Gas
- ☐ They are all moving the same
- ☐

8) In which of the following three states of matter are the particles the closest together?

- ☐ Solid
- ☐ Liquid
- ☐ Gas
- ☐ They are all spaced the same
- ☐

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9) Which of the following states of matter assume the volume and shape of their container?

- ☐ Solids
- ☐ Liquids
- ☐ Gases
- ☐ All of the above
- ☐ None of the Above

10) Which of the following statements is true about plasma as a state of matter?

- ☐ It occurs at very high temperatures
- ☐ It is found in stars
- ☐ It's like gas, but some molecules have become ions
- ☐ It is found in lightning bolts
- ☐ All of the Above

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