






Name _____
Date _____

Study Guide
Grade 6

Please do not only study from the study guide, use your ebooks and worksheet as well.

Topic 2

Solid	Liquid	Gas
		
<ul style="list-style-type: none">▪ Rigid▪ Fixed Shape▪ Fixed Volume▪ High Density▪ Closely tight and organized particles▪ Slightly Compressible	<ul style="list-style-type: none">▪ Not Rigid▪ No Fixed Shape▪ Fixed Volume▪ Average to High Density▪ Closely tight but not disorganized particles▪ Slightly Compressible	<ul style="list-style-type: none">▪ Not Rigid▪ No Fixed Shape▪ No Fixed Volume▪ Low Density▪ Far apart and disorganized particles▪ Highly Compressible

A change of state is the change of a substance from one physical form to another. All changes of state are physical changes. The particles have different amounts of energy when the substance is in different states.

Losing or Gaining Energy When most substances lose or gain energy, one of two things happens to the substance: its temperature changes or its state changes. The temperature of a substance is related to the speed of the substance's particles. So, when the temperature of a substance changes, the speed of the particles also changes. But the temperature of a substance does not change until the change of state is complete.

What Is Melting? Melting is the change of state from a solid to a liquid.

Adding Energy: When a solid is at its melting point, any energy added to it is used to overcome the attractions that hold the particles in place.

What Is Freezing? The change of state from a liquid to a solid is called freezing.

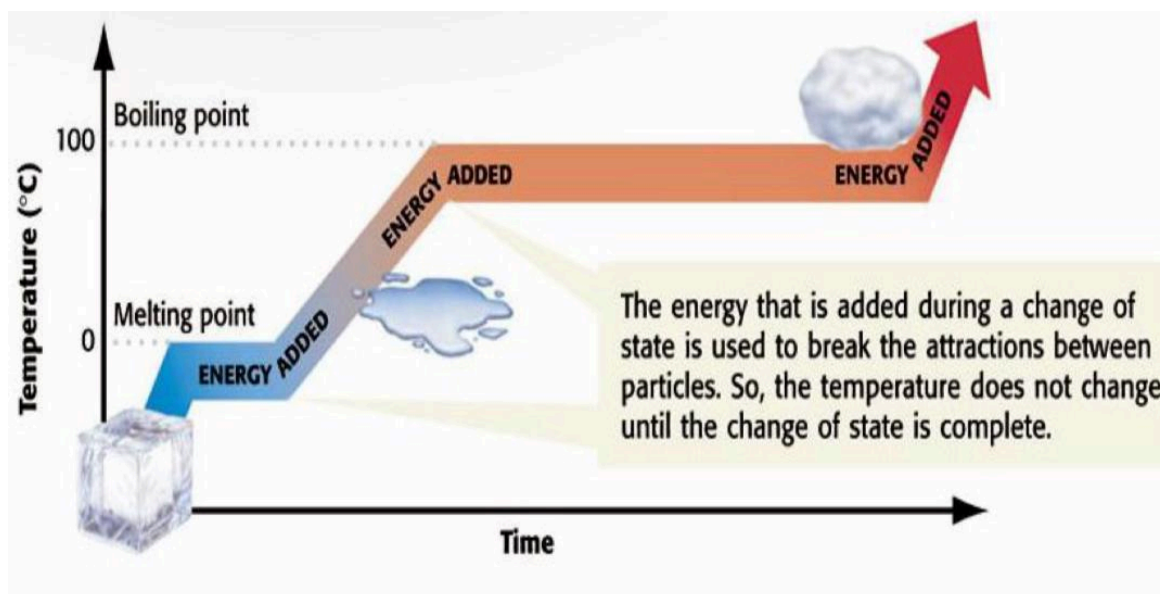
Removing Energy: Removing energy will cause the particles in a liquid to begin locking into place.

Boiling and Evaporation: Evaporation is the change of a substance from a liquid to a gas. Boiling is the change of a liquid to a vapor, or gas, throughout the liquid.

Effects of Pressure on Boiling Point: Earlier, you learned that water boils at 100°C . In fact, water boils at 100°C only at sea level, because of atmospheric pressure. Atmospheric pressure is caused by the weight of the gases that make up the atmosphere.

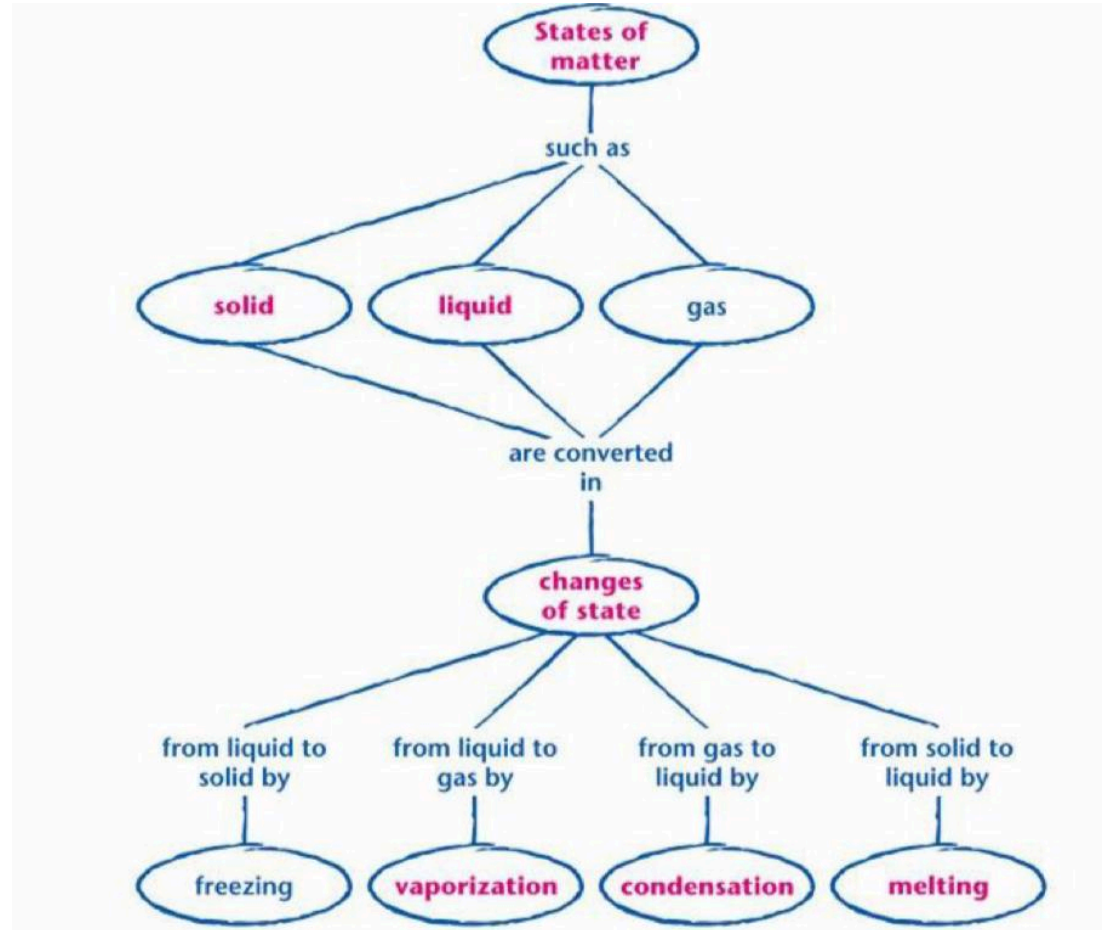
What Is Condensation? Condensation is the change of state from a gas to a liquid.

What Is Sublimation? Sublimation is the change of state in which a solid changes directly into a gas.





Gas Behavior 2.3



Boyle's Law

Constant = Mass

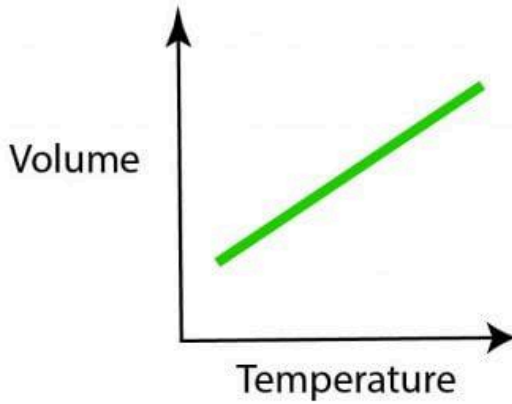
Pressure and Volume are Inversely Proportional

Charles's Law

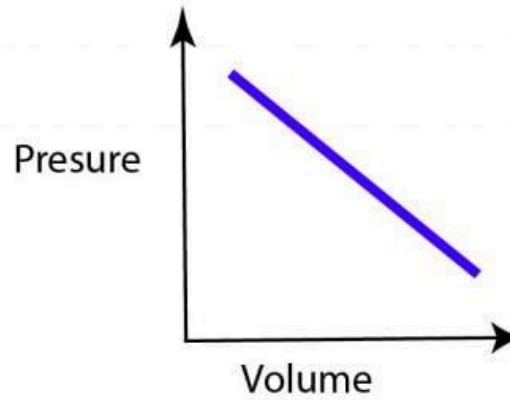
Constant = Pressure

Temperature and Volume are directly proportional

Charles' Law



Boyle's Law



Important vocabulary

Boyle's Law the law that states that the volume of a gas is inversely proportional to the pressure of a gas when temperature is constant.

Charles's Law the law that states that the volume of a gas is directly proportional to the temperature of a gas when pressure is constant.

pressure the amount of force exerted per unit area of a surface.

temperature a measure of how hot (or cold) something is; specifically, a measure of the average kinetic energy of the particles in an object.

volume a measure of the size of a body or region in three-dimensional space.



Topic 10

Lesson 1 : Living Things

All organisms have all of following characteristics:

- All organisms are made from cells
- All organisms respond to their surroundings
- All organisms grow, develop, and reproduce
- All organisms contain similar chemicals and use energy.

Cells

All living organisms are made up of one or more cells.

Unicellular: one cell only

Multicellular: more than one cell

Chemicals and energy

All organisms must obtain resources, such as food, oxygen, and water, which provide required energy to perform the basic processes of life, such as growing and developing, or repairing injured parts.

Autotrophs/producers (for example plants) provide their own food for energy through the process of photosynthesis, while heterotroph/consumers (for example animals) must find an external source for food.

Energy is released from food in most organisms through the process of respiration.

Reproduction and development

Organisms have the ability to reproduce, or produce offspring that have similar characteristics as the parent(s). There are two basic types of reproduction:

- Asexual reproduction - a process that involves only one parent and produces offspring that is identical to the parent.
- Sexual reproduction - a process that involves two parents. The egg (female reproductive cell) and sperm (male reproductive cell) from these two parents combine to make an offspring that has characteristics of both parents.

Development is the process that occurs in the life of the organism that results in the organism becoming more complex structurally.

Response to surroundings

A stimulus is any change in an organism's surroundings that will cause the organism to react.

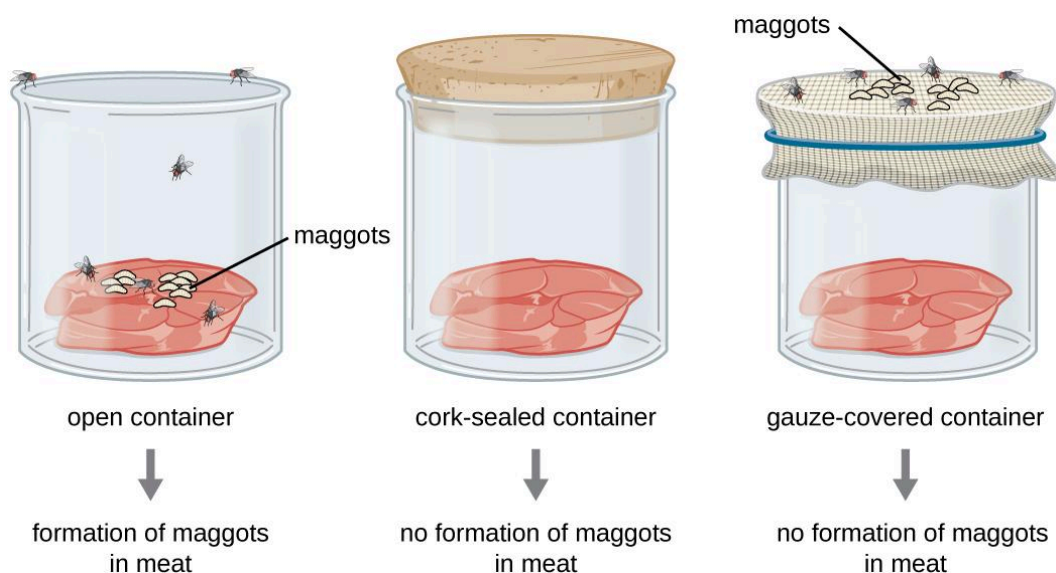
Examples of environmental stimuli may be changes in the following: amount of light, temperature, sound, amount of water, space, amounts or types of food, or other organisms present.

The reaction to the stimulus is called a response. It can be an action or behavior performed by the organism.

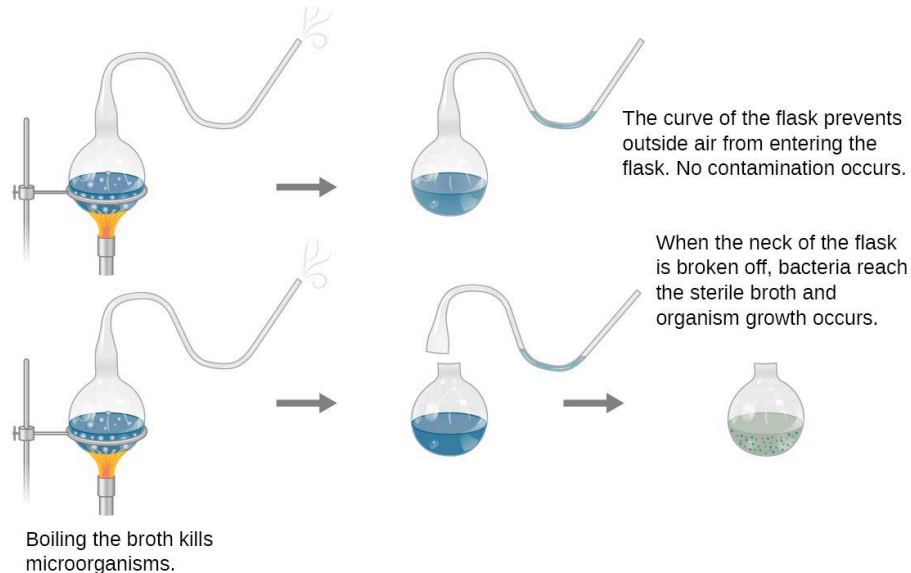
Spontaneous generation

The theory of spontaneous generation states that life arose from nonliving matter. It was a long-held belief dating back to Aristotle and the ancient Greeks.

Experimentation by Francesco Redi in the 17th century presented the first significant evidence refuting spontaneous generation by showing that flies must have access to meat for maggots to develop on the meat.



Louis Pasteur also helped in disproving the theory of spontaneous generation with his famous swan-neck flask experiment. He subsequently proposed that *"life only comes from life."*



(c)

The term **homeostasis** refers to the ability of the body to maintain a stable internal environment despite changes in external conditions. The stability, or balance, that is attained is called a dynamic equilibrium; that is, as changes occur, the body works to maintain relatively uniform conditions.

Living organisms need:

1. Water
2. Food
3. Space
4. Homeostasis