

Science

Commonly Used Scientific Tools and Models

This document is a supplement to the Assessment Guide for Educators (AGE). Educators may use this document as a resource for classroom instruction, and students may use it for reinforcement of lessons and as a study guide in preparation for the GED Science test.

The examples provided are associated with the GED Science indicators and content topics from the domains of life science, physical science, and Earth and space science. These examples are separated into two sections: (1) Tools and (2) Models.

1. TOOLS

Balance (triple beam)

An instrument that measures the mass (grams; milligrams) of an object



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Stopwatch

An instrument that measures a time interval (usually minutes and seconds)



Aleksandr Bryliaev/Shutterstock

Electronic Balance

An instrument that measures the mass (grams; milligrams) of an object
Its measurement is more precise than a triple beam balance.



litchima/Shutterstock

Test Tube with stopper

A container used to hold, heat, or mix small amounts of substances



Rawan Hussein/123RF

Beaker

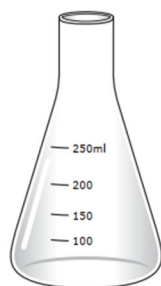
A container that holds liquid samples
It can be used for mixing, heating, and stirring substances as well as for measuring approximate volumes (liters; milliliters) of solutions.



Idea tank/Shutterstock

Erlenmeyer Flask

A container that holds and temporarily stores liquid samples
It can be used for heating or stirring substances as well as for measuring approximate volumes (liters; milliliters) of solutions.



Pipette/Dropper

An instrument used to transfer small amounts (milliliters; microliters) of liquid from one container to another



Paket/Shutterstock

Graduated Cylinder

An instrument that measures the volume (liters; milliliters) of a substance
Its measurement is more precise than a flask or beaker.



gloverk/Shutterstock

Funnel

An instrument used to transfer liquid or powdered substances into a container with a small opening; can also be used for filtering



Jan Kaliciak/Shutterstock

Petri Dish

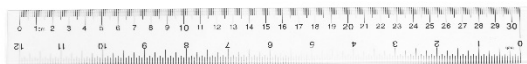
A container that holds a growth medium used to culture different microorganisms and cells

Can also be used to temporarily hold substances



Metric Ruler/meter stick

An instrument that measures length (meter; centimeter; millimeter)



Feng Yu/Shutterstock

Microscope (compound)

A microscope that uses light for the magnification of samples that are placed on a glass slide; can magnify 4 to 2,000 times the size of a sample



Joey Chan/Pearson Education Asia Ltd

Bunsen Burner

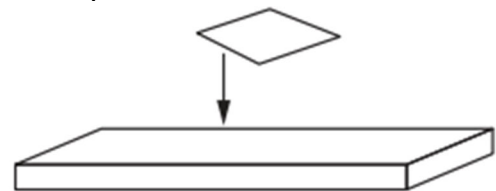
A gas burner that produces a single continuous flame that can be used as a source for heating, sterilization, and combustion



Jan Kaliciak/Shutterstock

Microscope Slide (with coverslip)

A thin flat piece of glass that holds specimens for examination under a microscope



Thermometer

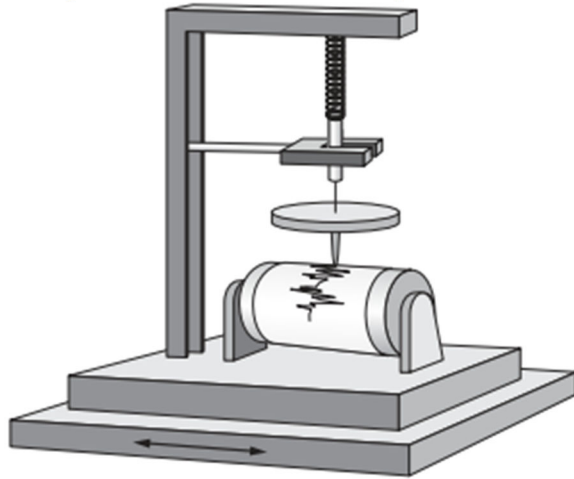
An instrument that measures temperature (°Fahrenheit; °Celsius)



Yanas/Shutterstock

Seismograph

An apparatus that detects earthquakes and measures different aspects of an event by recording the movement of the ground



Spring Scale

An apparatus with a spring and a hook that measures the weight (grams) or force (newtons) of an object that is attached to the hook



Tsz-shan Kwok/Pearson Education Asia Ltd

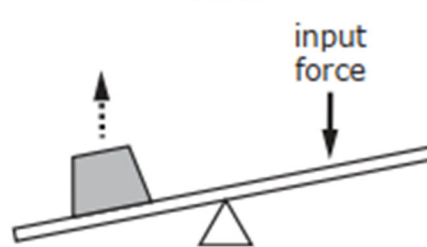
Simple Machines

A device that reduces the amount of force (newtons) required to move objects

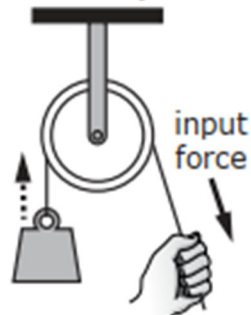
Wheel and Axle



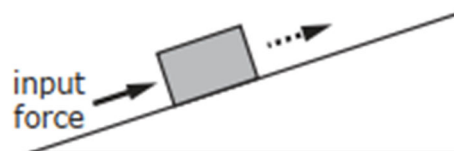
Lever



Pulley



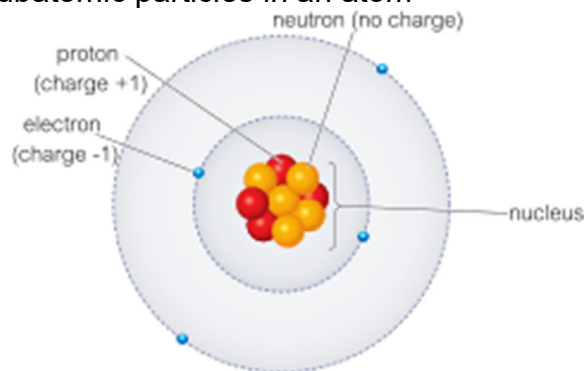
Inclined Plane



2. MODELS

Bohr Model of an Atom

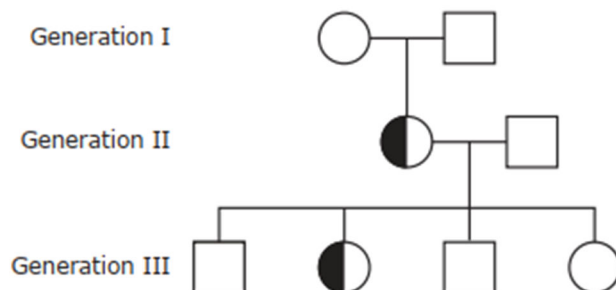
A diagram that shows the arrangement of subatomic particles in an atom



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Pedigree Chart

A diagram that shows an inherited trait in a family over several generations



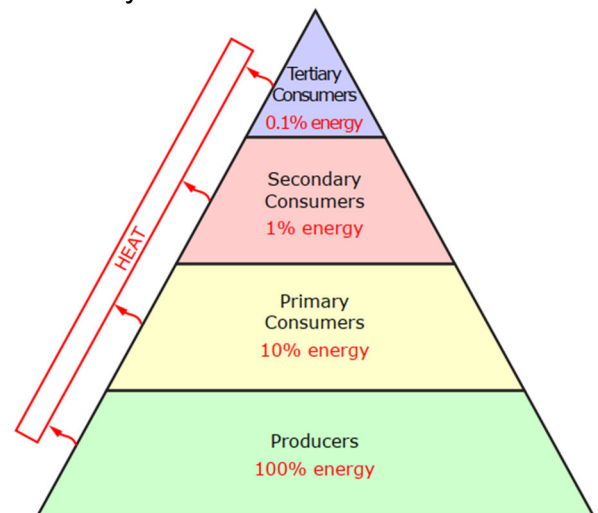
Punnett Square

A diagram that shows the possible combination of alleles in offspring based on parental alleles
Capital letters represent dominant alleles and lowercase letters represent recessive alleles.

	B	B
b	Bb	Bb
b	Bb	Bb

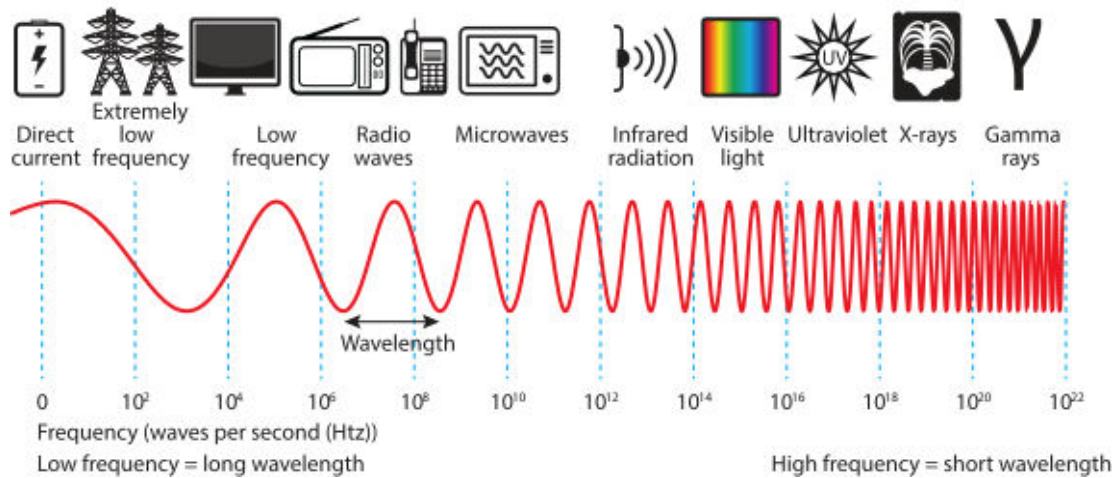
Energy Pyramid

A graphical representation that shows the energy found at each trophic level in an ecosystem



Wave Properties

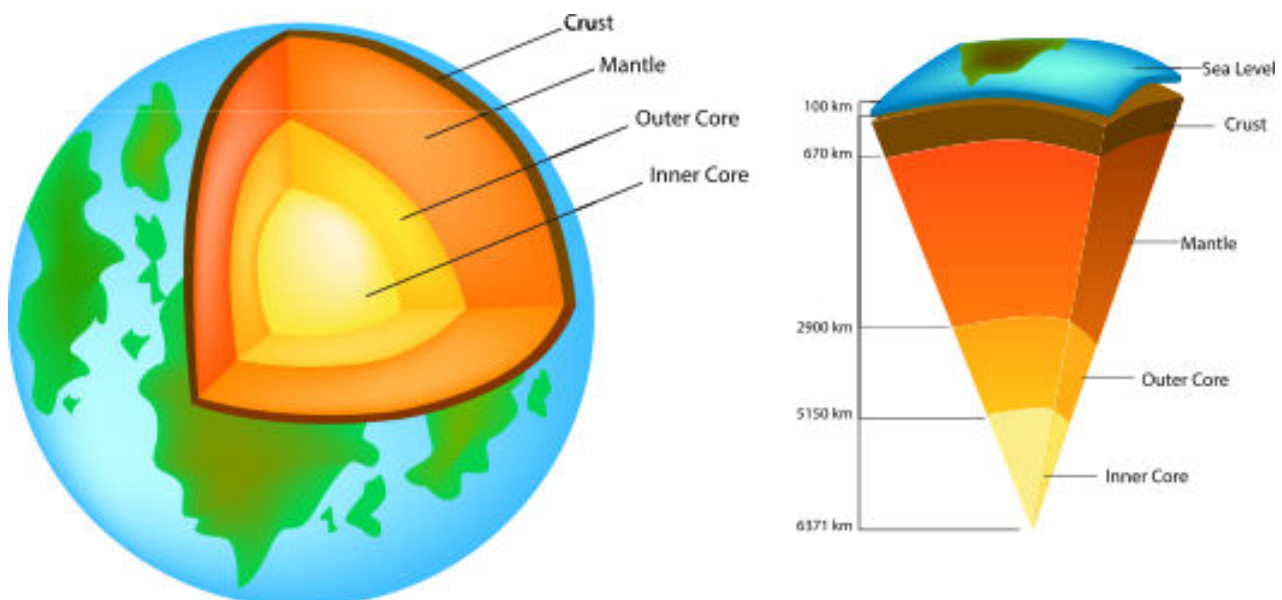
Characteristics that identify or describe waves



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Earth's Layers

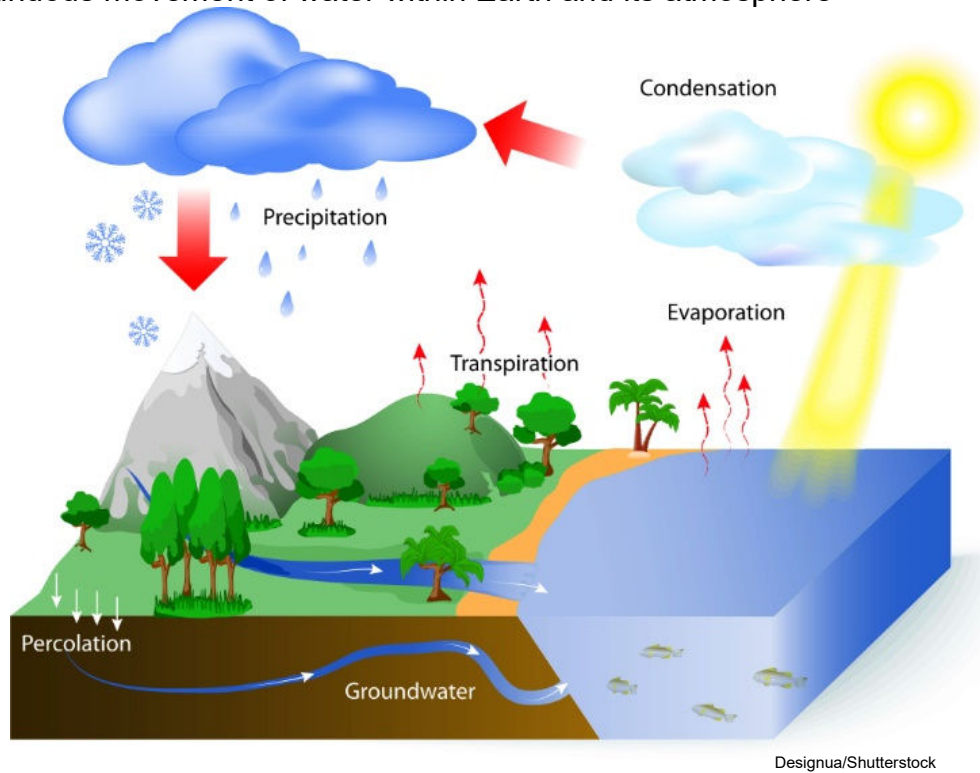
A diagram that shows the different layers of Earth



Sakurra/Shutterstock

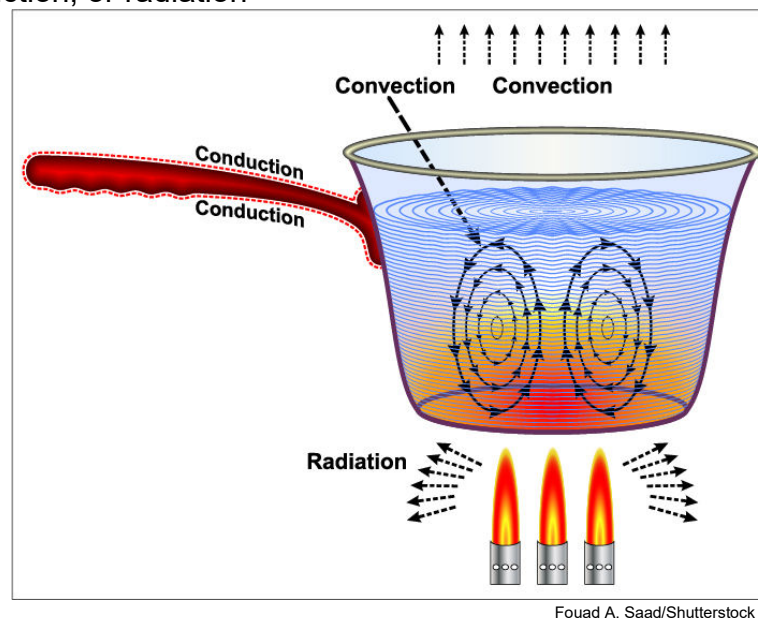
Water Cycle

The continuous movement of water within Earth and its atmosphere



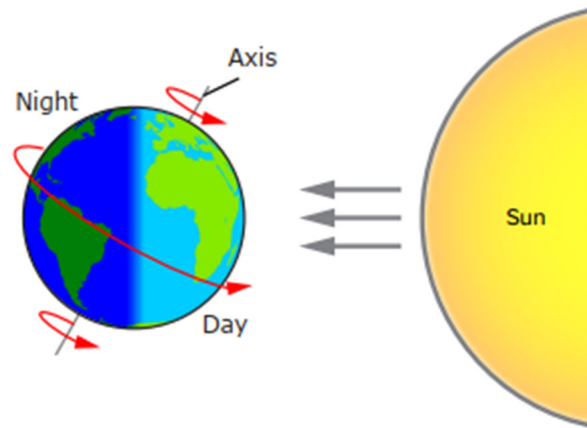
Heat Transfer (convection, conduction, radiation)

The process by which heat (thermal energy) flows from one place to another through convection, conduction, or radiation



Earth's Rotation

The amount of time (approximately 24 hours; 1 day) it takes Earth to complete one rotation on its axis

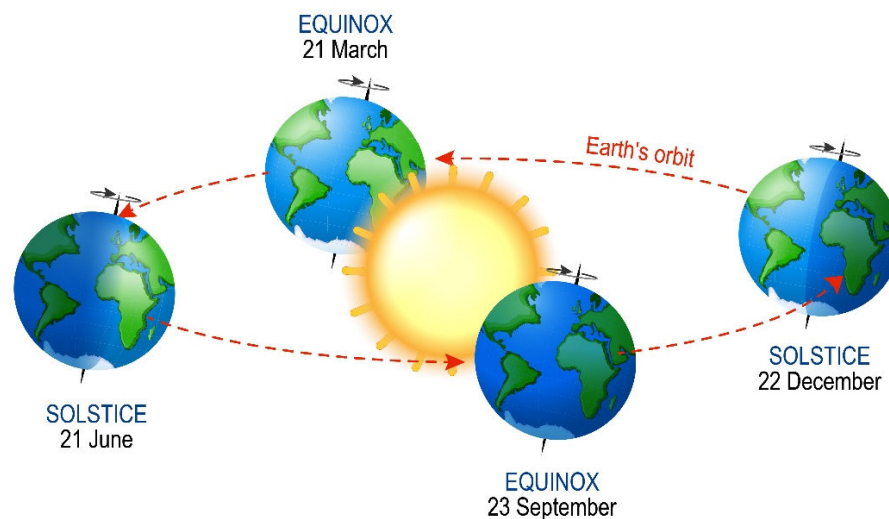


Earth's Revolution and Seasons

Revolution: The amount of time (approximately 365 days; 1 year) it takes Earth to travel around the Sun.

Season: The changes that take place due to Earth's tilt on its axis and the position on its orbital path.

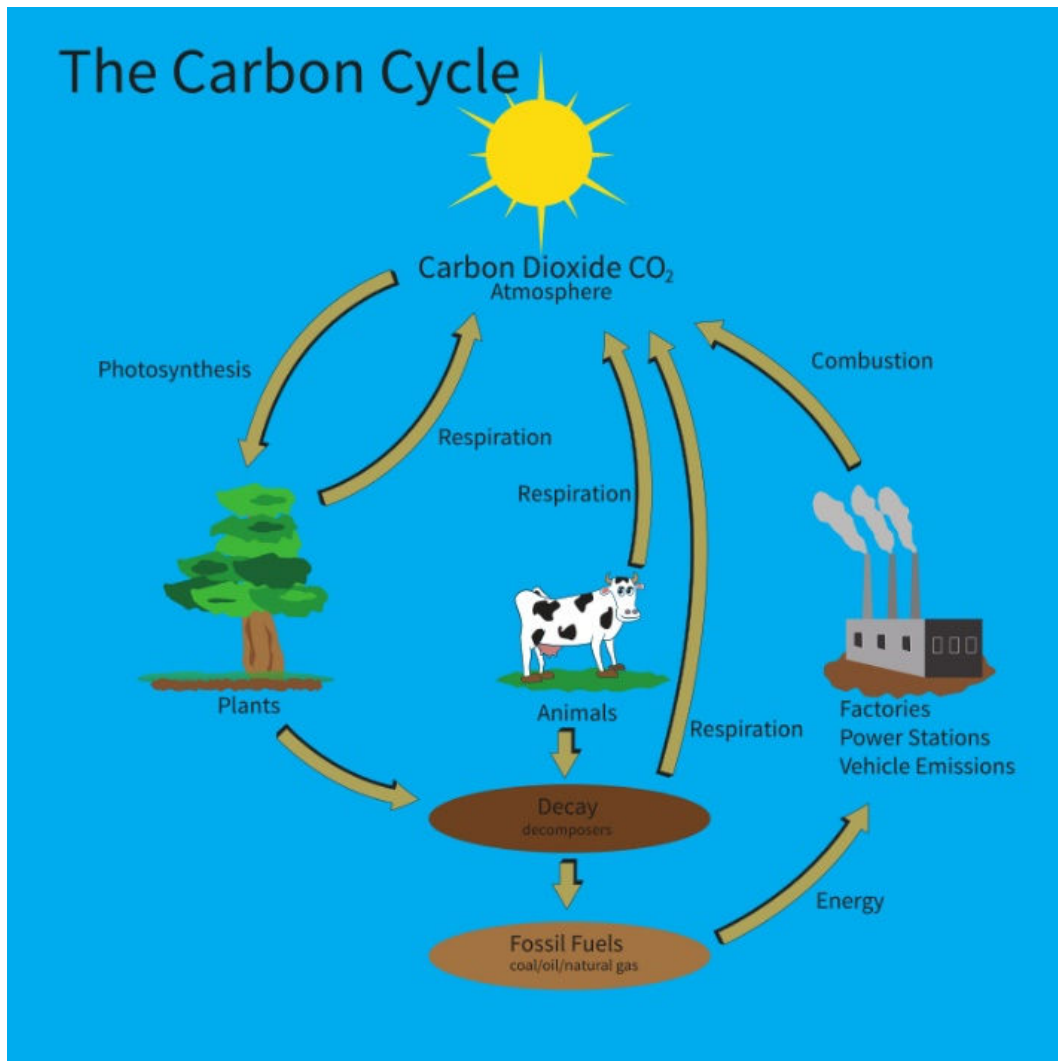
EARTH'S SEASONS in the Northern Hemisphere



Designua/Shutterstock

Carbon Cycle

The continuous movement of carbon through Earth and its atmosphere



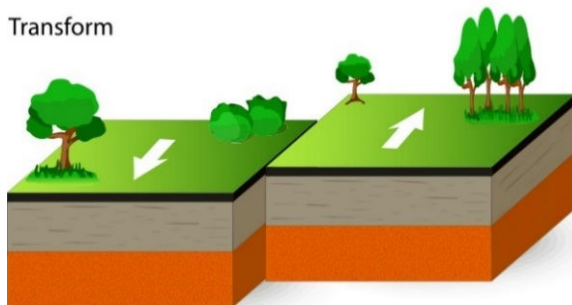
photoconix/Shutterstock

Plate Tectonics Theory

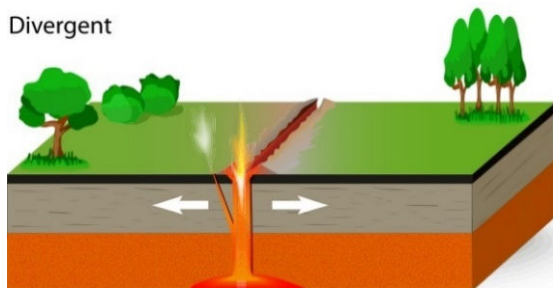
A theory that explains how Earth's geological features (mountains, ridges, trenches, fault lines) form as a result of the movement of plates that are part of the lithosphere

PLATE MOVEMENT

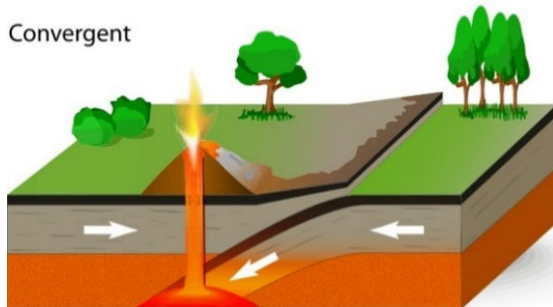
Transform



Divergent



Convergent



Newton's Laws of Motion

Laws that explain the relationship between the motion of an object and the forces acting upon it

FIRST LAW: An object at rest will remain at rest unless it is acted upon by an unbalanced force. An object in motion will remain in motion at constant speed and direction unless acted upon by an unbalanced force.

SECOND LAW: The acceleration of an object depends on the mass of the object and the amount of force applied to it.

THIRD LAW: For every action force, there is an equal and opposite reaction force.