

FORCE, MOTION, AND ENERGY

MOTION...

Motion is the process of an object changing place or position.

Speed refers to the rate an object changes position. When you are in motion you might speed up, go the same speed, or slow down.

To **accelerate** means to go faster; **decelerate** means to slow down.



FORCE!

A **force** is a push or pull upon an object. Some forces affect only objects that are in motion. Other forces act on objects that are not moving. Forces can be pushing or pulling.



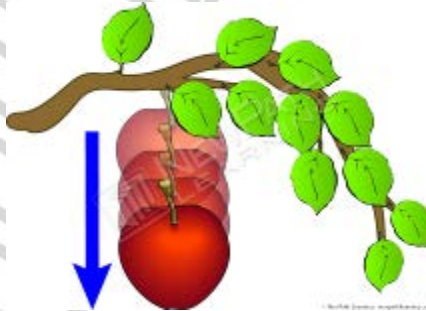
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Types of Forces

Friction is a force that works against an object that is moving along a surface, which can slow down or stop the object.

Gravity is an attracting force that tries to pull two or more objects together. Gravity depends on two things: the mass of the objects and the distance between them.



Objects don't move by themselves...

Inertia is a property of matter referring to the way an object remains at rest and doesn't move unless someone or something forces it to move.

Work is the ability to move an object. An object **MUST** move in order for work to have been done.



Work can be made easier by the help of simple machines....

Simple machines can make work easier, but do not make less work. There are several types of simple machines.

- A **pulley** has a wheel with a grooved rim in which a rope can run around in order to lift a load easier than without it. An example of a pulley is a pulley used to lift a load.
- A **wheel and axle** consists of a wheel attached to a smaller axle so that these two parts rotate together in the same direction.



PREVIEW

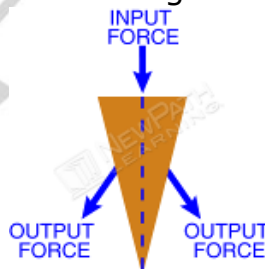
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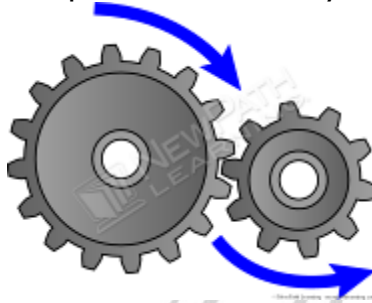
- A **lever** is a simple machine that is a board that can move on a fixed point, called a fulcrum, and can be used to move an object up or down.



- A **wedge** is simple machine that is actually two inclined planes joined together back to back. Wedges are used to split wood.



- A **gear** is made of two wheels that have notches that fit together either directly or by a chain or belt which allows one wheel to turn the other wheel. Gears help clocks and bicycles move.



Lesson Checkpoint:
Give one example of a simple machine you see around you.

ENERGY!!!

Energy is
forms. En



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Types of

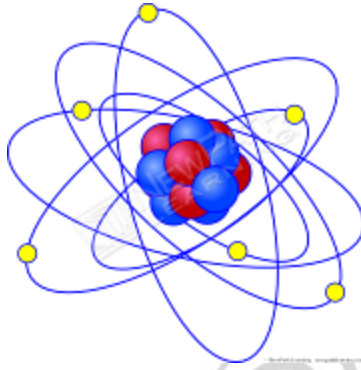
- **Kinetic**
- **Potent**

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has

- **Chemical energy** is energy that certain matter has because of the way its atoms are connected together. Remember? Matter is made up of atoms.
- **Electrical energy** is the movement of electrical charges. Electrical charges moving through a wire is called electricity.
- **Light and sound** energy are forms of energy that travel in waves.
- **Thermal energy** is created by the movement of the particles that make up matter.
- **Nuclear energy** is energy stored in the nucleus of an atom; it is the energy that holds the nucleus together.



- **Radiation** is energy that is given off in the form of particles or rays. This form of energy can be used for research and for medical reasons as well. Radiation can be used to fight against certain cancers in humans.

Conduction is the transfer of heat energy from one object to another.

- A **conductor** is a material that allows heat to run through it.
- An **insulator** is a material that does not allow heat to run through it.



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