

## Force and Motion Study Sheet

**Force** is a push or a pull on an object that can cause it to change direction.

*Examples: pushing a swing, pulling a wagon*

**Force** can make an object **start moving, stop moving, go faster, go more slowly, or change direction.**

*Examples: peddling can make a bike go or go faster, braking a bike can make it slow down or stop, leaning can make a bike change direction*

**Gravity** is the force that pulls any two objects toward each other such as you being pulled toward the middle of the earth.

*Examples: a coin falling into a butter dish, a thrown ball falling to the earth*

**Inertia** is the tendency for a moving object to stay in motion and an object at rest to stay at rest until a force acts upon it.

*Examples: A space craft moving in outer space will continue on forever unless some force (like gravity from a star) act upon it, Mrs. Moser's desk will stay messy forever unless someone cleans it.*

**Friction** is a force that slows down moving objects.

**Energy** is the ability to do work. Energy comes in two kinds:

**Potential energy** - the energy of position or stored energy

*Examples: rock at the top of a hill, child at the top of swing arc*

**Kinetic energy**- the energy of motion

*Example: a rock rolling down the hill; child swinging at bottom of arc*

Energy comes in many **forms: Mechanical** (when some object is moving); **electrical** (when electricity is flowing); **Chemical** (when chemicals are doing a chemical reaction); **heat; sound; light.**

**Work** happens when force moves an object.

**Simple machines** are devices made of 1 or two moving parts that change the amount or direction of a force.

*Examples of simple machines are: wheel & axle, lever & fulcrum, inclined plane, screw, wedge, pulley, and toothed gears.*

A **compound machine** is a device made up of two or more simple machines.

*Examples: push lawn mover, garden shears, a bicycle.*

A **complex machine** is a device made up of many simple and compound machines.

*Examples: a car engine, a motorcycle*