

8th Grade Science Learning Objectives

PHYSICS UNIT

*--By the end of the physics unit my students will know and be able to do the following things:

- 1) Understand, define, calculate, and give examples for the concept of speed.
- 2) Understand, define, calculate, and give examples for the concept of acceleration.
- 3) Understand, define, calculate, and give examples for the concept of potential energy.
- 4) Understand, define, calculate, and give examples for the concept of kinetic energy.
- 5) Understand, define, and be able to explain how friction affects moving objects.
- 6) Understand, define, and give examples for Newton's Laws of Motion.

CHANGE UNIT

*--By the end of the change unit, my students will know and be able to do the following things:

- 1) Understand the concept of physical change.
- 2) Understand why changes of state are considered physical change.
- 3) Understand the difference between a mixture and solution.
- 4) Understand the concept of saturation.
- 5) Discover and describe ways to separate a mixture or solution
- 6) Understand parts of an atom
- 7) Understand how chemical change occurs
- 8) Understand the behavior of atoms
- 9) Discover indicators of chemical change
- 10) Understand how the Periodic Table is set-up

EARTH SCIENCE UNIT

*--By the end of the earth science unit, my students will know and be able to do the following things:

- 1) Understand the three forms of heat transfer.
- 2) Recognize how convection affects air movement, weather, and climate.
- 3) Understand plate tectonic theory and surface movement/landforms that it creates
- 4) Demonstrate knowledge of weather concepts, severe weather, and weather maps
- 5) Understand the steps of the water cycle and groundwater.
- 6) Understand types of rocks found on the earth's crust.
- 7) Research and teach parts of our solar system.

MEASUREMENT UNIT

*--By the end of the measurement unit, my students will know and be able to do the following things:

- 1) Understand, define, measure and calculate the area of given objects
- 2) Understand, define, measure and calculate the total surface area of given objects
- 3) Understand, define, measure and calculate the volume of given objects
- 4) Understand, define, measure and calculate the density of given objects
- 5) Measure objects using the metric system
- 6) Convert units and understand prefixes within the metric system

CIRCULATORY/RESPIRATORY SYSTEM UNIT

*--By the end of the circulatory/respiratory system unit, my students will know and be able to do the following things:

- 1) Identify the parts of the circulatory system.
- 2) Understand jobs performed by parts of the circulatory system
- 3) Identify parts of the respiratory system
- 4) Understand jobs performed by parts of the respiratory system
- 5) Understand concepts of resting and exercise heart rates
- 6) Understand the difference between aerobic and anaerobic exercise and how they affect heart rates.

LEVERS/PULLEY UNIT

*--By the end of the levers/pulley unit, my students will know and be able to do the following things:

- 1) Understand the parts of a lever and pulley
- 2) Understand the three classes of levers
- 3) Understand the three types of pulleys
- 4) Calculate the mechanical advantage of lever/pulley
- 5) Manipulate a lever/pulley to increase and decrease mechanical advantage

WATER QUALITY UNIT

*--By the end of the water quality unit, my students will know and be able to do the following things:

- 1) Understand, define, and apply the concept of threshold
- 2) Understand, define, and apply the concept of concentrate
- 3) Understand, define, and apply the concept of dilute
- 4) Understand, define, and apply the concept of lethal dose
- 5) Understand, define, and apply the concept of acute toxicity
- 6) Understand, define, and apply the concept of chronic toxicity
- 7) Understand, define, and apply the concept of qualitative analysis
- 8) Understand, define, and apply the concept of quantitative analysis
- 9) Understand, define, and apply the concept of pH (acid, base, neutral)
- 10) Understand, define, and apply the concept of neutralization
- 11) Compare methods for cleaning drinking water

PROPERTIES OF MATERIALS UNIT

*--By the end of the properties of materials unit, my students will know and be able to do the following things:

- 1) Compare and contrast properties of metals and plastics/polymers
- 2) Understand concept and methods of corrosion
- 3) Understand how properties of materials affect waste management

SCIENCE FAIR UNIT

*--By the end of the science fair unit, my students will know and be able to do the following things:

- 1) Create an experiment to perform on a product using the scientific method
- 2) Collect and present data from experiment in an organized fashion
- 3) Conclude effectiveness of product based upon experiment results

ALTERNATE ENERGY FORMS UNIT

*--By the end of the alternate energy forms unit, my students will know and be able to do the following things:

- 1) Understand how solar energy works to create energy
- 2) Understand how wind energy works to create energy
- 3) Understand how hydroelectric energy works to create energy
- 4) Understand how nuclear energy works to create energy
- 5) Understand concepts and advantages/disadvantages of both renewable and non-renewable energy sources
- 6) Understand concept of passive solar heating
- 7) Understand three forms of heat transfer