8th Grade Integrated Science
Standard 4

Physics

Essential Understanding

Students will understand the relationships among energy, force, and motion.

	Objective #	Essential Learning Objectives
1	1a	I can identify the basic parts of a wave and how wavelength and frequency are related.
2	1b	I can explain and give examples of different ways energy is transferred through waves.
3	1c	I can explain how energy spreads out from its original source.
4	1d	I can explain and give examples of heat transfer through conduction, convection, and radiation.
5	1e	I can define white light and explain how it can be split into its different colors.
6	2a	I can explain the difference between mass and weight.
7	2b/2c	I can explain how mass and distance influence the pull of gravity.
8	2d	I can build a device that supports the weight of a load.
9	2e	I can build a machine that uses gravity to function.
10	3a	I can label the parts of a level and calculate its mechanical advantage.
11	3b	I can explain how levers and inclined planes create mechanical advantage and build a device to show this.
12	3c	I can describe how friction affects motion and build a device that uses friction to control the motion of an object.
13	3d/3e	I can define work and explain how simple machines make work easier.
14	3d	I can describe and recognize examples of 6 different types of simple machines.
15	3d	I can build a device that can accomplish a specific task using more than one type of simple machine.
16	3e	I can define and give examples of force.
17	3e	I can explain how forces cause changes in motion.
18	4a	I can define and give examples of kinetic energy and potential energy.
19	4a	I can give describe and give examples of how kinetic and potential energy cycles.
20	4b	I can list the types of energy and explain how energy can be converted from one type to another.
21	4c/4d	I can explain and give examples of how various organisms respond to light, motion, and, sound.
22	4e	I can explain ways that people use devices to help them sense the energy around them.

Science Language students should know and use	energy, potential energy, kinetic energy, force, gravity, complex machine, wave, friction, amplitude