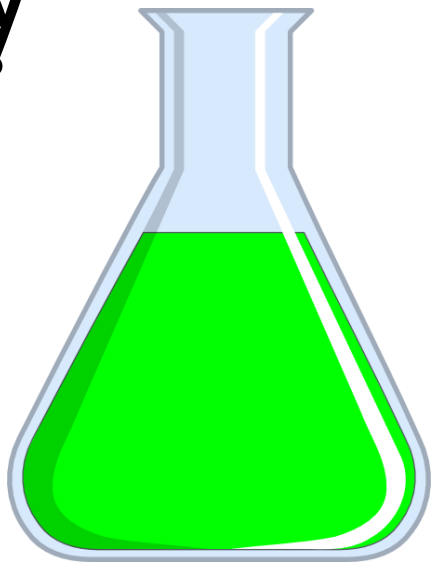
Chemistry

8th Grade Science

Standard 1



1. I can describe the chemical and physical properties of substances.

8. 1. a □ I can identify the differences between chemical and physical properties.

8. 1. b □ I can classify substances based on their chemical and physical properties (e.g. reacts/doesn't react to water).

8. 1. d □ I can investigate and share the chemical and physical properties of a substance.

2. I can observe and evaluate evidence of chemical and physical changes.

7. 2. a □ I can explain what is happening at the molecular level when a substance changes from one state to another.

7. 2. a □ I can give examples of physical changes and explain how I know they are physical changes.

7. 2. b □ I can give examples of chemical changes and explain how I know they are chemical changes.

7. 2. c , 4. b □ I can give examples of common chemical changes involving oxygen and explain how it is involved.

7. 2. d □ I can give examples of how a chemical change affects the physical properties of the materials involved.

Chemistry (cont.)

8th Grade Science

Standard 1

3.I can investigate and measure the effects of increasing/decreasing the amount of energy in a physical or chemical change.

8. 3. a □ I can identify the kinds of energy produced or taken in during a chemical reaction.

8. 3. b □ I can relate the amount of energy added or taken away from a substance to the motion of molecules in the substance.

8. 3. c □ I can measure and graph the temperature of water as it changes states. Using the graph, I can identify where the state changes occurred.

8. 3. d □ I can provide evidence that helps show how heat may be given off or taken away during a chemical change (e.g. striking a match)

8. 3. e □ I can plan and conduct an experiment, then report the effect of adding or removing energy during a chemical or physical change.

4. I can observe and evaluate evidence of chemical and physical changes.

8. 4. a □ I can distinguish between the products and reactants in a chemical change.

8. 4. c □ I can explain the Law of Conservation of Mass and evaluate a chemical equation to make sure it follows the law.

8. 4. d □ I can explain what influences the rate at which a chemical reaction occurs.

8. 4. e □ I can give examples of how changes in matter influence my life.

Ecology

8th Grade Science

Standard 2

1. I can compare ways that plants and animals obtain and use their energy.

8. 1. a □ I can describe photosynthesis and recognize its importance.

8. 1. b □ I can describe cellular respiration and recognize its importance.

8. 1. c □ I can trace the path of energy from the sun to mechanical energy in organisms as a result of photosynthesis and cellular respiration.

2. I can understand the dependent relationships between organisms.

8. 2. a □ I can explain and give examples of feeding relationships and symbiotic relationships between organisms.

8. 2. b □ I can model and diagram the flow of energy in food chains, food webs, and energy pyramids.

8. 2. c □ I can design and use an experiment that tests the affects of air, temperature, water, or light on plants.

8. 2. d □ I can describe what different scientists do when they study the same ecosystem.

3. I can determine human influence on the capacity of an environment to sustain living things.

8. 3. a □ I can describe how humans affect an ecosystem.

8. 3. b, c □ I can infer the potential effects of humans on a specific food web.

8. 3. d □ I can describe what extinction is, and argue for or against allowing a species to go extinct.

Geology

8th Grade Science

Standard 3

1. I can compare rocks and minerals to describe how they are related.

8. 1. a □ I can recognize that most rocks are composed of minerals.

8. 1. b □ I can observe and describe the minerals found in rocks (e.g. shape, color, texture, hardness).

8. 1. c □ I can categorize rock samples as sedimentary, metamorphic, or igneous.

2. I can describe the changes that rocks go through over long periods of time.

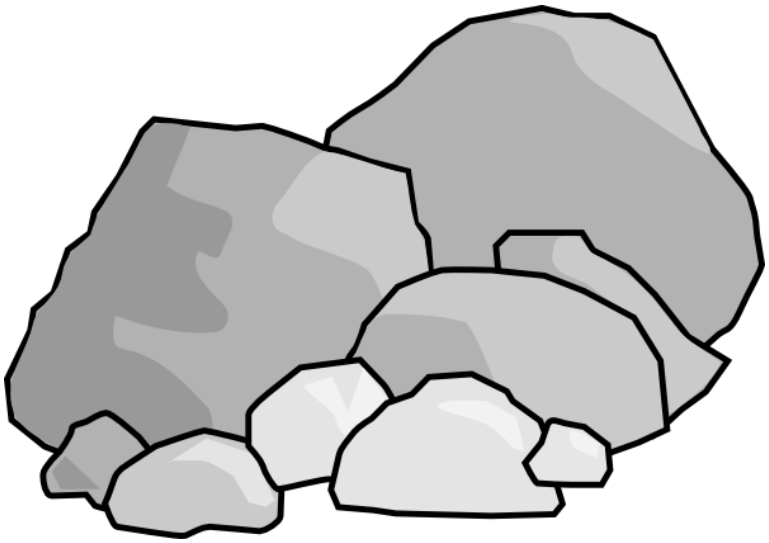
8. 2. a □ I can draw and explain the rock cycle and the multiple ways that one rock type changes to another.

8. 2. b □ I can explain different ways that energy changes rocks over time.

8. 2. c, d □ I can show and explain how gravity and erosion change the Earth's surface.

8. 2. e □ I can explain how weather helps make soil.

8. 2. f □ I can model and explain the different ways fossils are made.



Geology (cont.)

8th Grade Science

Standard 3

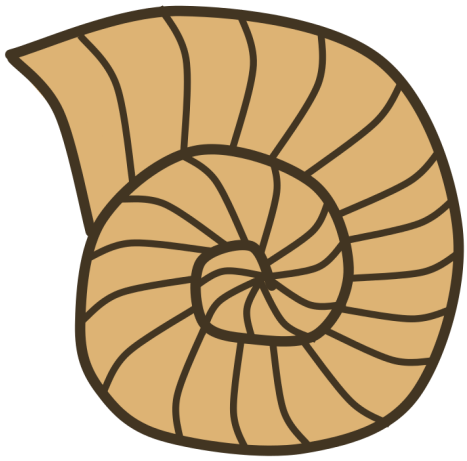
3. I can describe how rock and fossil evidence is used to infer Earth's history.

8. 3. a, c □ I can describe how sedimentary rock layers are deposited and why the youngest layers contain recent fossils while the older rock layers contain older fossils.

8. 3. b □ I can determine the relative ages of rock layers using diagrams or pictures.

8. 3. d □ I can describe how fossils show evidence of the changing surface of the Earth.

8. 3. e □ I can explain why younger rock layers contain recent fossils and older rock layers contain older fossils.



4. I can compare rapid and gradual changes to Earth's surface.

8. 4. a, b □ I can describe how earthquakes and volcanoes transfer energy from inside the Earth, causing changes to the Earth's surface.

8. 4. c □ I can show the process of energy buildup and release in earthquakes.

8. 4. d □ I can explain reasons why people don't always make decisions based on scientific findings.

8. 4. e □ I can show how small changes add up to big changes on Earth's surface.

Physics

8th Grade Science

Standard 4

1. I can investigate the transfer of energy through various materials.

8. 1. a □ I can identify the basic parts of a wave and how wave-length and frequency are related.

8. 1. b □ I can explain and give examples of different ways energy is transferred through waves.

8. 1. c □ I can explain how energy spreads out from its original source.

8. 1. d □ I can explain and give examples of heat transfer through conduction, convection, and radiation.

8. 1. e □ I can define white light and explain how it can be split into its different colors.

2. I can examine the force exerted on objects by gravity.

8. 2. a □ I can explain the difference between mass and weight.

8. 2. b, c □ I can explain how mass and distance influence the pull of gravity.

8. 2. d □ I can build a device that supports the weight of a load.

8. 2. e □ I can build a machine that uses gravity to function.

Physics (cont.)

8th Grade Science

Standard 4

3. I can investigate the application of force that acts on objects and the resulting motion.

8. 3. a □ I can label the parts of a level and calculate its mechanical advantage.

8. 3. b □ I can explain how levers and inclines planes create mechanical advantage and build a device to show this.

8. 3. c □ I can describe how friction affects motion and build a device that uses friction to control the motion of an object.

8. 3. d, e □ I can define work and explain how simple machines make work easier.

8. 3. d □ I can describe and recognize examples of 6 different types of simple machines.

8. 3. d □ I can build a device that can accomplish a specific task using more than one type of simple machine.

8. 3. e □ I can define and give examples of force.

8. 3. e □ I can explain how forces cause changes in motion.

4. I can analyze various forms of energy and how living things sense and respond to energy.

8. 4. a □ I can define and give examples of kinetic and potential energy.

8. 4. a □ I can describe and give examples of kinetic and potential energy cycles.

8. 4. b □ I can list the types of energy and explain how energy can be converted from one type to another.

8. 4. c, d □ I can explain and give examples of how various organisms respond to light, motion, and sound.

8. 4. e □ I can explain ways that people use devices to help them sense the energy around them.