

Galway Science 6th Grade Curriculum Guide

NYS PI	Major Understandings: The Living Environment
4.2	Explain the role of sperm and egg cells in sexual reproduction.
4.2a	The male sex cell is the sperm. The female sex cell is the egg. The fertilization of an egg by a sperm results in a fertilized egg.

NYS PI	Major Understandings: The Physical Setting
1.1	Explain daily, monthly, and seasonal changes on Earth.
1.1a	Earth's Sun is an average-sized star. The Sun is more than a million times greater in volume than Earth.
1.1b	Other stars are like the Sun but are so far away that they look like points of light. Distances between stars are vast compared to distances within our solar system.
1.1c	The Sun and the planets that revolve around it are the major bodies in the solar system. Other members include comets, moons, and asteroids. Earth's orbit is nearly circular.
1.1d	Gravity is the force that keeps planets in orbit around the Sun and the Moon in orbit around the Earth.
1.1e	Most objects in the solar system have a regular and predictable motion. These motions explain such phenomena as a day, a year, phases of the Moon, eclipses, tides, meteor showers, and comets.
1.1f	The latitude/longitude coordinate system and our system of time are based on celestial observations.
1.1g	Moons are seen by reflected light. Our Moon orbits Earth, while Earth orbits the Sun. The Moon's phases as observed from Earth are the result of seeing different portions of the lighted area of the Moon's surface. The phases repeat in a cyclic pattern in about one month.
1.1h	The apparent motions of the Sun, Moon, planets, and stars across the sky can be explained by Earth's rotation and revolution. Earth's rotation causes the length of one day to be approximately 24 hours. This rotation also causes the Sun and Moon to appear to rise along the eastern horizon and to set along the western horizon. Earth's revolution around the Sun defines the length of the year as 365 1/4 days.
1.1i	The tilt of Earth's axis of rotation and the revolution of Earth around the Sun cause seasons on Earth. The length of daylight varies depending on latitude and season.
1.1j	The shape of Earth, the other planets, and stars is nearly spherical.
2.1	Explain how the atmosphere (air), hydrosphere (water), and lithosphere (land) interact, evolve, and change.
2.1a	Nearly all the atmosphere is confined to a thin shell surrounding Earth. The atmosphere is a mixture of gases, including nitrogen and oxygen with small amounts of water vapor, carbon dioxide, and other trace gases. The atmosphere is stratified into layers, each having distinct properties. Nearly all weather occurs in the lowest layer of the atmosphere.
2.1b	As altitude increases, air pressure decreases.
2.1c	The rock at Earth's surface forms a nearly continuous shell around Earth called the lithosphere.
2.1d	The majority of the lithosphere is covered by a relatively thin layer of water called the hydrosphere.
2.1e	Rocks are composed of minerals. Only a few rock-forming minerals make up most of the rocks of Earth. Minerals are identified on the basis of physical properties such as streak, hardness, and reaction to acid.
2.1f	Fossils are usually found in sedimentary rocks. Fossils can be used to study past climates and environments.
2.1g	The dynamic processes that wear away Earth's surface include weathering and erosion.
2.1h	The process of weathering breaks down rocks to form sediment. Soil consists of sediment, organic material, water, and air.
2.1i	Erosion is the transport of sediment. Gravity is the driving force behind erosion. Gravity can act directly or through agents such as moving water, wind, and glaciers.
2.1j	Water circulates through the atmosphere, lithosphere, and hydrosphere in what is known as the water cycle.
2.2	Describe volcano and earthquake patterns, the rock cycle, and weather and climate changes.
2.2a	The interior of Earth is hot. Heat flow and movement of material within Earth cause sections of Earth's crust to move. This may result in earthquakes, volcanic eruption, and the creation of mountains and ocean basins.
2.2b	Analysis of earthquake wave data (vibrational disturbances) leads to the conclusion that there are layers within Earth. These layers-the crust, mantle, outer core, and inner core-have distinct properties.
2.2c	Folded, tilted, faulted, and displaced rock layers suggest past crustal movement.

Based on NYS Core Curriculum Performance Indicators and Major Understandings. Prepared with teacher input summer curriculum work 2008.

NYS PI	Major Understandings: The Physical Setting continued
2.2d	Continents fitting together like puzzle parts and fossil correlations provided initial evidence that continents were once together.
2.2e	The Theory of Plate Tectonics explains how the “solid” lithosphere consists of a series of plates that “float” on the partially molten section of the mantle. Convection cells within the mantle may be the driving force for the movement of the plates.
2.2f	Plates may collide, move apart, or slide past one another. Most volcanic activity and mountain building occur at the boundaries of these plates, often resulting in earthquakes.
2.2g	Rocks are classified according to their method of formation. The three classes of rocks are sedimentary, metamorphic, and igneous. Most rocks show characteristics that give clues to their formation conditions.
2.2h	The rock cycle model shows how types of rock or rock material may be transformed from one type of rock to another.
2.2i	Weather describes the conditions of the atmosphere at a given location for a short period of time.
2.2j	Climate is the characteristic weather that prevails from season to season and year to year.
2.2k	The uneven heating of Earth’s surface is the cause of weather.
2.2l	Air masses form when air remains nearly stationary over a large section of Earth’s surface and takes on the conditions of temperature and humidity from that location. Weather conditions at a location are determined primarily by temperature, humidity, and pressure of air masses over that location.
2.2m	Most local weather condition changes are caused by movement of air masses.
2.2n	The movement of air masses is determined by prevailing winds and upper air currents.
2.2o	Fronts are boundaries between air masses. Precipitation is likely to occur at these boundaries.
2.2p	High-pressure systems generally bring fair weather. Low-pressure systems usually bring cloudy, unstable conditions. The general movement of highs and lows is from west to east across the United States.
2.2q	Hazardous weather conditions include thunderstorms, tornadoes, hurricanes, ice storms, and blizzards. Humans can prepare for and respond to these conditions if given sufficient warning.
2.2r	Substances enter the atmosphere naturally and from human activity. Some of these substances include dust from volcanic eruptions and greenhouse gases such as carbon dioxide, methane, and water vapor. These substances can affect weather, climate, and living things.
4.4e	Electrical circuits provide a means of transferring electrical energy.
4.4f	Without touching them, material that has been electrically charged attracts uncharged material, and may either attract or repel other charged material.
4.4g	Without direct contact, a magnet attracts certain materials and either attracts or repels other magnets. The attractive force of a magnet is greatest at its poles.
5.2	Observe, describe, and compare effects of forces (gravity, electric current, and magnetism) on the motion of objects.
5.2a	Every object exerts gravitational force on every other object. Gravitational force depends on how much mass the objects have and on how far apart they are. Gravity is one of the forces acting on orbiting objects and projectiles.
5.2b	Electric currents and magnets can exert a force on each other.

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