6th	Grade 6 SCIENCE: Content Map Quarter 1 2 3 4 Teacher:_____	Content (*Specific* text, chapter, lesson, etc.)

	PLATE TECTONICS	Weeks 1-3	Weeks 4-6	Weeks 7-9
1. Plate Tectonics	The surface of the earth o The surface of the earth is in constant movement. o The present features of earth come from its ongoing history. After the sun was formed, matter cooled creating the planets. The continents were once joined (Pangaea).			
	Layered structure of the earth o Crust: surface layer of mainly basalt or granite, 5 to 25 miles thick o Mantle: 1,800 miles thick, rock of intermediate density, moves very slowly o Outer core: liquid iron and nickel o Inner core: solid iron and nickel, 800 miles thick, about 7,000 degrees C			
	Crust movements o The surface of the earth is made up of rigid plates that are in constant motion. o Plates move because molten rock rises and falls under the crust causing slowly flowing currents under the plates. o Plates move at speeds ranging from 1 to 4 inches (5-10 centimeters) per year. o Earthquakes usually occur where stress has been built up by plates moving in opposite directions against each other. Earthquakes cause waves (vibrations) which have: • focus, the point below the surface where the quake begins • epicenter, the point on the surface above the focus o Severity of ground shaking is measured on the Richter scale; each unit on the scale represents a tenfold severity increase (approximately 31-fold increase in energy released.)			
	Volcanoes usually occur where plates are pulling apart or coming together, but some occur at holes (hot spots) in the crust away from plate boundaries. As plates move over these hot spots they cause chains of volcanoes and island chains like the Hawaiian Islands.			
	Evidence for long-term movement of plates includes matching of rock types, fit of the continents, location of earthquakes, mid-ocean ridges, ancient climate zones, and distribution of fossils.			
	OCEANS	**Weeks 1-3**	**Weeks 4-6**	**Weeks 7-9**
2. Oceans	Surface o The world ocean covers most of the earth's surface (71 percent). o Three major subdivision of the world ocean: Atlantic, Pacific, and Indian Oceans o Islands consist of high parts of submerged continents, volcanic peaks, coral atolls.			
	Subsurface land features o Continental shelf, continental slope, continental rise, abyssal plains o Mid-ocean ridges and trenches, plate tectonics • Mid-Atlantic Ridge, Mariana Trench			
	Ocean bottom: average depth of sediment .3 mile, consists of rock particles and organic remains			

2. Oceans (continued)	Composition of seawater: dilute solution of salts which come from weathering and erosion of continental rocks. o Sodium chloride is the main salt. o Elements needed for life, such as carbon and phosphorus, exist in relatively weak concentration and limit the amount of ocean life.			
	Currents, tides, and waves o Surface currents: large circular streams kept in motion by prevailing winds and rotation of the earth; Gulf Stream (North Atlantic), Kuroshio (North Pacific) o Subsurface currents are caused by upwelling from prevailing offshore winds (Peru, Chile) and density differences (Antarctica); the upwelling pushes up nutrients from ocean floor. o Tides are caused by gravitational forces of the sun and moon; there are two tides daily. o Waves are caused by wind on the ocean's surface. • Water molecules tend to move up and down in place and not move with wave. • Crest and trough, wave height and wavelength, shoreline friction • Tsunamis: destructive, fast-moving large waves caused mainly by earthquakes			
	Marine life o Life zones are determined by the depth to which light can penetrate making photosynthesis possible, and by the availability of nutrients. • The bottom (benthic zone) extends from sunlit continental shelf to dark sparsely populated depths. Shallow lighted water extending over continental shelf contains 90% of marine species. • Pelagic zone: water in open oceans o Classification of marine life • Bottom-living (bethic) such as kelp and mollusks • Free-swimming (nekton) such as fish and whales • Small drifting plants and animals (plankton), which are the dominant life and food source of the ocean o The basis for most marine life is phytoplankton (plant-plankton), which carry on photosynthesis near surface; contrast zooplankton (animal plankton). o Most deepwater life depends on rain of organic matter from above. The densest concentration of marine life is found in surface waters, such as those off Chile, where nutrient-rich water wells up to the bright surface.			
ASTRONOMY: GRAVITY, STARS, & GALAXIES		Weeks 1-3	Weeks 4-6	Weeks 7-9
3. Astronomy	Gravity: an attractive force between objects o Newton's law of universal gravitation: Between any two objects in the universe there is an attractive force, gravity, which grows greater as the objects move closer to each other. o How gravity keeps the planets in orbit.			

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3. Astronomy (continued)	Stars o The sun is a star o Kinds of stars (by size): giants, dwarfs, pulsars o Supernova; black holes o Apparent movement of stars caused by rotation of the earth o Constellations: visual groupings of stars, for example, Big Dipper, Orion o Astronomical distance measured in light years			
	Galaxies o The Milky Way is our galaxy; the Andromeda Galaxy is the closest to the Milky Way. o Quasars are the most distant visible objects (because the brightest).			
	ENERGY, HEAT, & ENERGY TRANSFER	Weeks 1-3	Weeks 4-6	Weeks 7-9
4A. Energy	Six forms of energy: mechanical, heat, electrical, wave, chemical, nuclear			
	The many forms of energy are interchangeable, for example, gasoline in a car, windmills, hydroelectric plants.			
	Sources of energy: for example, heat (coal, natural gas, solar, atomic, geothermal, and thermonuclear), mechanical motion (such as falling water, wind)			
	Fossil fuels: a finite resource o Carbon, coal, oil, natural gas o Environmental impact of fossil fuels: carbon dioxide and global warming theory, greenhouse effect, oil spills, acid rain			
	Nuclear energy o Uranium, fission, nuclear reactor, radioactive waste o Nuclear power plants: safety and accidents (for example, Three Mile Island, Chernobyl)			
4B. Heat	Heat and temperature: how vigorously atoms are moving and colliding			
	Three ways that heat energy can be transferred: conduction, convection, radiation o The direction of heat transfer			
4C. Physical Change: Energy Transfer	States of matter (solid, liquid, gas) in terms of molecular motion o In gases, loosely packed atoms and molecules move independently and collide often. Volume and shape change readily. o In liquids, atoms and molecules are more loosely packed than in solids and can move past each other. Liquids change shape readily but resist change in volume. o In solids, atoms and molecules are more tightly packed and can only vibrate. Solids resist change in shape and volume.			

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4C. Physical Change: Energy Transfer (continued)	Most substances are solid at low temperatures, liquid at medium temperatures, and gaseous at high temperatures.			
	A change of phase is a physical change (no new substance is produced).			
	Matter can be made to change phases by adding or removing energy.			
	Expansion and contraction o Expansion is adding heat energy to a substance, which causes the molecules to move more quickly and the substance to expand. o Contraction is when a substance loses heat energy, the molecules slow down, and the substance contracts. o Water as a special case: water expands when it changes from a liquid to a solid.			
	Changing phases: condensation; freezing; melting; boiling o Different amounts of energy are required to change the phase of different substances. o Each substance has its own melting and boiling point. o The freezing point and boiling point of water (in degrees Celsius and Fahrenheit)			
	Distillation: separation of mixtures of liquids with different boiling points.			
THE HUMAN BODY		Weeks 1-3	Weeks 4-6	Weeks 7-9
5. Human Body	The circulatory and lymphatic systems o Briefly review from grade 4: circulatory system o Lymph, lymph nodes, white cells, tonsils, blood pressure, hardening and clogging of arteries			
	The immune system fights infections from bacteria, viruses, fungi. o White cells, antibodies, antigens o Vaccines, communicable and non-communicable diseases, epidemics o Bacterial diseases: tetanus, typhoid, tuberculosis; antibiotics like penicillin, discovered by Alexander Fleming o Viral diseases: common cold, chicken pox, mononucleosis, rabies, polio, AIDS			
SCIENCE BIOGRAPHIES		Weeks 1-3	Weeks 4-6	Weeks 7-9
7. Biographies	o Marie Curie (Energy) o Lewis Howard Latimer o Isaac Newton (Astronomy: Gravity) o Alfred Wegener (Plate Tectonics)			