Kenmore-Tonawanda Union Free School District
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Science - Grade 4

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Options	Standards	Essential Questions	Content	Skills	Suggested Resources	Assessment	Resources
		Life Science **SUGGESTED TIME: 8-10 WEEKS (2-3 lessons per week)** **This unit focuses on classifying which is a heavily tested subject. Students should also master ideas about interactions in the ecosystem, living and non-living things. Note: Body systems are not standards-based concepts and are not core items. They may be omitted from your science lessons.** **Mealworms need to be ordered ahead of time for the inquiry.**					Gr 2 - 4 Does Light Go Through opaq,trans.doc Gr 2 - 4 snow.doc Gr 2 - 4 Volume & Capacity Gr 2 -4 Bouncing Variables.doc Gr 2 -4 Shadow Length.doc Gr 2- 5 Solid, Liquid, Gas-orangebrew.doc Gr 2-4 Liquid lasagna.doc Gr 3 - 4 Absorbing Experiment.doc Gr 4 ELECTRICAL CONDUCTIVITY.doc Gr 4 Macaroni Madness.doc Gr 4 MAGNETS.doc Gr 4 Variables.doc Gr 4 volume and gradcyl.doc Gr 4-volwater.doc Gr. 2 - 4 ball&ramp.doc
		What are some ways to classify living things?	Building blocks of life Grouping Living Things Classification of Plants	lOCATE the following in a diagram: cell, nucleus, cytoplasm, chloroplast, genus, species,	Chapter 1: Classifying Plants and Animals Directed Inquiry: What are living things made of?		

			Classification of Animals Animal adaptation	vertebrates, invertebrates Describe similar structures shared by living things Describe the life cycles of various animals Describe how all living things compete for Earth's natural resources Recognize that many characteristics of an organism are inherited from its parents	Lesson 1: Building Blocks of Life Lesson 2: How are living things grouped should be development only. Do not spend time on mastery of this information. Lesson 3: How are plants classified? Lesson 4: How are animals classified? (**OVERVIEW only)** Guided Inquiry: Classifying objects using a chart		
		What features help plants make their own food and reproduce?	Plants' characteristics The parts of plants Plant reproduction The life cycle of a plant	Plants' characteristics The parts of plants Plant reproduction The life cycle of a plant	Define the following: photosynthesis, chlorophyll, sepal, pistil, stamen, ovary, fertilization, dormant Explain how the Sun's energy can be captured as a source of heat and light on Earth Describe how green plants use carbon dioxide, water, and sunlight energy for growth, survival, and reproduction	Ch. 2: Energy from Plants Directed Inquiry: Do plants need light? Lesson 1: Plant Characteristics Lesson 2: Parts of Plants Lesson 3: Plant Reproduction Lesson 4: Life Cycle of Plants (OMIT Grafting!) Guided Inquiry : Growing a Potato without a seed	

					List plant structures and explain their functions		
		How do organisms interact with each other and with their environment?	The parts of ecosystems Energy flow through ecosystems Matter flow through ecosystems	Define the following: ecosystem, population, community, , herbivores, carnivores, omnivores, decomposers Describe the basic characteristics of an ecosystem Explain the interactions and interdependency of living things in an ecosystem Describe the energy flow in an ecosystem Identify the basic patterns, sequences and cycles occurring in nature	Ch. 3: Ecosystems Directed Inquiry: Earthworm Habitat Lesson 1: Parts of Ecosystems Lesson 2: Energy flow in ecosystems Lesson 3: Matter Flow in Ecosystems Guided Inquiry: What do decomposers do? Full Inquiry: Do mealworms prefer damp or dry places?		
		How do changes in ecosystems affect our world?	How ecosystems are balanced The interaction of organisms in an ecosystem How environments change in an ecosystem How people disturb the balance of ecosystems	Define the following: competition, , extinct, endangered, hazardous waste Explain the relationship between population size and available resources within its community Identify characteristics that allow members within a species to	Chapter 4: Changes in Ecosystems Lesson 1: Ecosystem Balance Lesson 2: Energy from Plants Omit Lesson #3: The section dealing with Succession		

				survive and reproduce Recognize that changes in an ecological system usually affect the whole system Relate the variations in water, temperature and soil content to the existence of different organisms and population densities in an ecosystem Recognize that complex animals have specialized organs to carry out life processes	Lesson 3: Changing Environment Lesson 4: How people disturb the ecosystem balance Ch. 5 Systems of the Body: This is an extended chapter only, not a core element The elementary standards do not address the body systems. They are covered in depth in 5th grade and again in 6th grade.		
		Earth Science SUGGESTED TIME: 4-6 Weeks (2-3 Lessons per week) The following items are highly tested from this unit: water cycle, erosion, earths changes, the effects of organisms on their environment. The concept of natural resources should be integrated with social studies.					
		How does Earth's water affect weather?	Earth's Water: Location How water and air affect weather Air Masses The prediction and measurement of weather	Define the following: evaporation, condensation, precipitation, humidity, front, meteorologist, barometer, anemometer, wind vane Identify salt as the major difference between fresh and ocean water and explain why some oceans are more salty than others	Ch. 6: Water Cycle and Weather Directed Inquiry: How can you make fresh water from salt water? Lesson 1: Where is the earth's water? Lesson 2: How do water and air affect weather? Guided Inquiry: How does water change state?		

				Explain the water cycle and how it is affected by temperature, pressure and land features Describe how air masses and clouds form and how warm and cold fronts affect weather Recognize how meteorologists track and predict the weather			
		How is Earth's surface shaped and reshaped?	The wearing away of Earth's surface Movement of weathered materials How Earth's surface changes rapidly	Define the following: landform, weathering, erosion, deposition, landslide, volcano, fault, earthquake, epicenter Distinquish between changes in the Earth's surface due to slow processes vs. changes due to rapid processes Explain how weathering and erosion constantly change the surface of the Earth Recognize that the surface of the Earth is in a continuous state of change	Chapter 9: Changes to Earth's surface Directed Inquiry: How can you observe a mineral wear away? Lesson 1: How does the Earth's surface wear away? Lesson 2: How do weathered materials move? Lesson 3: How can Earth's surface change rapidly?		
		How can living things always have the natural resources they need?	How can living things always have the natural resources they need?	How resources are used for energy Define the	Ch. 10 Natural Resources Lesson 1: Whatt		

				following: solar energy, fossil fuels, , conservation, recycling Explain how the Sun's energy can be captured as a source of heat and light	are natural resources? Lesson 2: How are resources used for energy?		
		Physical Science SUGGESTED TIME: 10-12 WEEKS (2-3 Lessons per week) The NYS science test has a heavy focus on properties of matter, heat, electricity,magnetism and simple machines. These topics should be mastered in 4th grade. As such this unit should be a major focus of the 4th grade science curriculum.					
		How can matter be compared, measured, and combined?	Matter The measurement of matter How substances mix How matter changes	Define the following: density, mixture, physical change, chemical change Recognize that materials may be made of parts too small to be seen Compare and contrast the physical properties of matter using a variety of measurements Show how the combination of different substances	Ch. 11: Properties of Matter Directed Inquiry: What causes liquid to form layers? Lesson 1: What is matter? Lesson 2: How is matter measured? Lesson 3: How do substances mix? Lesson 4: How does matter change? Guided Inquiry: How can you change the properties of glue		Gr 4 volume and gradcyl.doc Gr 4-volwater.doc Gr 2 - 4 Does Light Go Through opaq.trans.doc Gr 2 - 4 snow.doc Gr 2 - 4 Volume & Capacity Gr 2 -4 Bouncing Variables.doc Gr 2 -4 Shadow Length.doc Gr 2- 5 Solid, Liquid, Gas-orangebrew.doc Gr 2-4 Liquid lasagna.doc Gr 3 - 4 Absorbing Experiment.doc Gr. 2 - 4 ball&ramp.doc

				creates different materials Describe the cause of a phase change			
		How does heat energy move from one object to another?	Why matter has energy How heat moves	Define the following: , conduction, conductor, insulator, convection current, radiation Describe the cause of a phase change List ways that energy can be transformed Illustrate how heat moves Explain that most objects that emit light emit heat	Ch. 12: Heat Directed Inquiry: How can you make things warmer? Lesson 1: Why does matter have energy? Lesson 2: How does heat move? DO NOT DO GUIDED INQUIRY		
		What are some ways that energy can be changed from one type to another?	What are some ways that energy can be changed from one type to another?	How matter becomes charged The flow of electric charges Magnetic fields How electricity is transformed to magnetism How magnetism is transformed to electricity	Define the following: static electricity, electric current, magnetism State ways that energy can be transformed List various forms of energy State what a magnet does Explain magnetic forces and electric currents	Ch. 13 Electricity and Magnetism These topics are both test items on the performance test. Parallel tasks should be completed to allow students to master the information. Directed Inquiry: How does static electricity affect objects? Lesson 2: How do electric charges flow? Take it to the Net	Gr 4 ELECTRICAL CONDUCTIVITY.doc Gr 4 MAGNETS.doc

						Games Physical Science Ch.13 -Parallel Circuit -Magnetic Fields	
		How does light travel?	Light energy How light and matter interact	Define the following: reflection, absorption, transparent, List sources of light	Ch. 14: Light Lesson 3: What is light energy? Lesson 4: How do light and matter interact? Guided Inquiry: How is light reflected and refracted?		
		What causes motion and how does it affect us?	Motion Force's affect on moving objects The relationship between force, mass, and energy	Define the following: speed, velocity, force, friction, gravity, work, kinetic energy, potential energy Explain that the motion of an object can be described and measured Describe how force affects an object Illustrate how energy can be stored and converted to a different form of energy	Ch. 15 Objects in Motion This is a heavily tested topic. Students should master this information for the **performance test** as well as the **written test**. Directed Inquiry: What can change a marble's speed? Lesson1: What is motion? Lesson 2: How does force affect moving objects? Lesson 3: How are force, mass and energy related? Guided Inquiry: How does friction affect motion?		
		How do simple					

		machines make work easier?	Machines How machines work together	Describe or draw the following: lever, wheel and axle, pulley, inclined plane, wedge, screw State how simple machines are used to make tasks possible	Ch. 16 Simple Machines This topic is often the subject of written test questions Lesson 1: What is a machine Lesson 2: How can machines work together? FULL INQUIRY: How is motion affected by mass? An experiment which encourages exploration toward the performance test Take it to the Net Games Physical Science Ch.15 -Transfer of Motion Ch.16 -Simple Machines Scott Foresman Unit C Performance Test Investigating Simple Machines		
		Space **SUGGESTED TIME: 2-3 Weeks (2-3 Lessons per week)** **Only Space needs to be completed. The technology chapter in the Scott Foresman series is not standards-based, tested**					

		material.					
		How are cycles on Earth affected by the Sun and the Moon?	How Earth Moves Patterns in the sky	Define the following: axis, rotation, orbit, ellipse, eclipse, lunar eclipse, solar eclipse, Explain the reason for the apparent movement of objects across the sky Relate the tilt of the Earth to the change of seasons, length of day, and amount of energy available Describe the cause of the phases of the Moon State the positional relationship between the Earth, Moon, and Sun	CH. 17 Earth's Cycles Lesson 1: How does Earth move? Lesson 2: What patterns can you see in the sky?		
		How is Earth different from other planets in our solar system?	The universe The inner planets The outer planets and beyond	Define the following: universe, galaxy, astronomy, solar system, craters, space probe, satellite Describe the Sun and its location in the Universe Explain gravity as a force in our Solar System Illustrate the arrangement of planets in our Solar System Describe the planets in our Solar System regarding their	Ch. 18: The Inner and Outer Planets Directed inquiry : Compare the size of planets Lesson 1: What makes up the universe? Lesson 2: What are the inner planets Lesson 3-4 GENERAL OVERVIEW of PLANETS Students do not need to master information. This is exposure only.		

				size, characteristics, and composition			

Last updated: 8/8/2011