New Paltz Central School District

Science
Fourth Grade

TIME	CONTENT	SKILLS	ASSESSMENTS

September - November	**<u>Plants</u>**
	• What is the difference between the life span and the life cycle of a plant?
	• How do the parts of a plant function?
	• How do green plants make their own food?
	• What factors affect the rate of growth of plants?
	• How do plants adapt to their environment?
	- - -
	• Plants require air, water, nutrients, and light in order to live and thrive.
	• Living things grow, take in nutrients, breathe, reproduce, eliminate waste, and die.
	• Some traits of living things have been inherited (e.g., color of flowers and number of limbs of animals).
	• Plants and animals can transfer specific traits to their offspring when they reproduce.
	• Each plant has different structures that serve different functions in growth, survival, and reproduction:
	  ○ roots help support the plant and take in water and nutrients.
	  ○ leaves help plants utilize sunlight to make food for the plant.
	  ○ stems, stalks, trunks, and other similar structures provide support for the plant.
	  ○ some plants have flowers.
	  ○ flowers are reproductive structures of plants that produce fruit which contains seeds.
	  ○ seeds contain stored food that aids in germination and the growth of young plants.
		• Safely and accurately use a hand lens, ruler, thermometer, and measuring cups.
		• Select appropriate standard and nonstandard measurement tools for measurement activities.
		• Estimate, find, and communicate measurements, using standard and nonstandard units.
		• Use and record appropriate units for measured or calculated values.
		• Order and sequence objects and/or events.
		• Utilize senses optimally for making observations.
		• Observe, analyze, and report observations of objects and events.
		• Observe, identify, and communicate cause-and-effect relationships.
		•
			• Unit assessment
			• Student/teacher conferences
			• Quizzes
			• Vocabulary quizzes
			• Homework
			• Daily class work
			• Observation of process skills
			• Lab reports
			• Science journals

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	• In order to survive in their environment, plants and animals must be adapted to their environment:
	  ○ seeds disperse by plant's own mechanism and/or in a variety of ways that can include wind, water, and animals.
	  ○ leaf, flower, stem, and root adaptations may include variations in size, shape, thickness, color, smell, and texture.
	• All individuals have variations, and because of these variations, individuals of a species may have an advantage in surviving and reproducing.
	• Plants and animals have life cycles. These may include beginning of a life, development into an adult, reproduction as an adult, and eventually death.
	• Each kind of plant goes through its own stages of growth and development that may include seed, young plant, and mature plant.
	• The length of time from beginning of development to death of the plant is called its life span.
	• Life cycles of some plants include changes from seed to mature plant.
	• All living things grow, take in nutrients, breathe, reproduce, and eliminate waste.
	• Plants respond to changes in their environment. For example, the leaves of some green plants change position as the direction of light changes; the parts of some plants undergo seasonal changes that enable the plant to grow; seeds germinate, and leaves form and grow.
	• Plants manufacture food by utilizing air, water, and energy from the Sun.
		• Generate appropriate questions (teacher and student based) in response to observations, events, and other experiences.
		• Observe, collect, organize, and appropriately record data, then accurately interpret results.
		• Make predictions based on prior experience and/or information.
		• Collect and organize data, choosing the appropriate representation: journal entries; graphic representations; drawings/pictorial representations.
		• Identify and control variables/factors.
		• Communicate procedures and conclusions through oral and written presentations.	

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TIME	CONTENT	SKILLS	ASSESSMENTS
November - January	**<u>Magnetism and Electricity</u>** • What is electricity? How does it travel? • How do we use electricity? • What forms of energy generate electricity? • What are the properties of magnetism? • What is an electromagnet? - - - • The material(s) an object is made up of determine some specific properties of the object (sink/float, conductivity, magnetism). Properties can be observed or measured with tools such as hand lenses, metric rulers, thermometers, balances, magnets, circuit testers, and graduated cylinders. • Energy exists in various forms: heat, electric, sound, chemical, mechanical, light. *(Fourth grade focuses on electric and mechanical.)* • Energy can be transferred from one place to another. • Some materials transfer energy better than others (heat and electricity). • Energy and matter interact: water is evaporated by the Sun's heat; a bulb is lighted by means of electrical current; a musical instrument is played to produce sound; dark colors may absorb light, light colors may reflect light.	• Order and sequence objects and/or events. • Classify objects according to an established scheme. • Generate a scheme for classification. • Observe, identify, and communicate patterns. • Observe, identify, and communicate cause-and-effect relationships. • Generate appropriate questions (teacher and student based) in response to observations, events, and other experiences. • Observe, collect, organize, and appropriately record data, then accurately interpret results.	• Unit assessment • Student/teacher conferences • Quizzes • Vocabulary quizzes • Homework • Daily class work • Observation of process skills • Lab reports • Science journals

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	• Electricity travels in a closed circuit.
	• Interactions with forms of energy can be either helpful or harmful.
	• Humans utilize interactions between matter and energy:
	  ○ chemical to electrical, light, and heat: battery and bulb
	  ○ electrical to sound (e.g., doorbell buzzer).
	  ○ light to electrical (e.g., solar-powered calculator).
	• Magnetism is a force that may attract or repel certain materials.
	• The forces of gravity and magnetism can affect objects through gases, liquids, and solids.
	• The force of magnetism on objects decreases as distance increases.
		• Collect and organize data, choosing the appropriate representation: journal entries; graphic representations; drawings/pictorial representations.
		• Make predictions based on prior experiences and/or information.
		• Compare and contrast organisms/objects/events in the living and physical environments.
		• Identify and control variables/factors.
		• Plan, design, and implement a short-term and long-term investigation based on a student- or teacher-based problem.
		• Communicate procedures and conclusions through oral and written presentations.	

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March - April	**Balls and Ramps** • How does the slope of a ramp affect the speed of moving objects? • How does the mass of an object affect its speed down a ramp? • Where are ramps in our community? - - - • The force of gravity pulls objects toward the center of the Earth. • Mechanical energy may cause change in motion through the application of force and through the use of simple machines such as pulleys, levers, and inclined planes.	• Select appropriate standard and nonstandard measurement tools for measurement activities. • Estimate, find, and communicate measurements, using standard and nonstandard units. • Use and record appropriate units for measured or calculated values. • Observe, analyze, and report observations of objects and events. • Observe, identify, and communicate cause and effect relationships. • Observe, collect, organize, and appropriately record data, then accurately interpret results. • Make predictions based on prior experiences and/or information.	• Student/teacher conferences • Quizzes • Vocabulary quizzes • Homework • Daily class work • Observation of process skills • Lab reports • Science journals

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Science
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TIME	CONTENT	SKILLS	ASSESSMENTS
		• Identify and control variables/factors. • Plan, design, and implement a short-term and long-term investigation based on a student or teacher-posed problem. • Communicate procedures and conclusions through oral and written presentations.	

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TIME	CONTENT	SKILLS	ASSESSMENTS
May - June	**<u>Respiration and Circulation</u>** • How do all the systems in our bodies interact? • How does my body use oxygen? • Why do we have blood? - - - • Animals need air, water, and food in order to live and thrive. • Living things grow, take in nutrients, breathe, reproduce, eliminate waste, and die. • Humans need a variety of healthy foods, exercise, and rest in order to grow and maintain good health. • Good health habits include hand washing and personal cleanliness; avoiding harmful substances (including alcohol, tobacco, illicit drugs); eating a balanced diet; engaging in regular exercise.	• Safely and accurately use a timepiece. • Use and record appropriate units for measured or calculated values. • Observe, analyze, and report observations of objects and events. • Observe, identify, and communicate patterns. • Observe, identify, and communicate cause and effect relationships. • Generate appropriate questions in response to observations, events, and other experiences. • Make predictions based on prior experiences and/or information.	• Unit assessment • Student/teacher conferences • Quizzes • Vocabulary quizzes • Homework • Daily class work • Observation of process skills • Lab reports • Science journals