

Connecticut Curriculum Standards (2010)	ESS Presentations	K-2 Product
Kindergarten		3-5 Product
K.1 - Objects have properties that can be observed and used to describe similarities and differences		
K.1.a. Some properties can be observed with the senses, and others can be discovered by using simple tools or tests.		
1. Match each of the five senses with its associated body part and the kind of information it perceives.		
2. Make scientific observations using the senses, and distinguish between an object's observable properties and its name or its uses.	Senses	
3. Classify organisms or objects by one and two observable properties and explain the rule used for sorting (e.g., size, color, shape, texture or flexibility).	Marvellous Materials Materials Matter	
4. Use simple tools and nonstandard units to estimate or predict properties such as size, heaviness, magnetic attraction and float/sink.		
5. Describe properties of materials such as wood, plastic, metal, cloth or paper, and sort objects by the material from which they are made.	Marvellous Materials Materials Matter	
6. Count, order and sort objects by their observable properties.	Marvellous Materials Materials Matter	
K.2 — Many different kinds of living things inhabit the earth.		
K.2.a. Living things have certain characteristics that distinguish them from nonliving things, including growth, movement, reproduction and response to stimuli.		
1. Observe and describe differences between living and nonliving things in terms of growth, offspring and need for energy from "food."	Living Things Growing Up	
2. Sort, count, and classify living and nonliving things in the classroom, the schoolyard and in pictures.		
3. Use nonstandard measures to estimate and compare the height, length or weight of different kinds of plants and animals.		
4. Observe and write, speak or draw about similarities and differences between plants and animals.	Animals and Plants Living Things	
5. Match pictures or models of adults with their offspring (animals and plants).	Growing Up	
6. Classify varied individuals of the same species by one and two attributes (e.g., rabbits or cats with different fur colors; rabbits or dogs with upright or floppy ears, etc.).		
K.3 — Weather conditions vary daily and seasonally.		
K.3.a. Daily and seasonal weather conditions affect what we do, what we wear and how we feel.		

1. Use the senses to observe daily weather conditions and record data systematically using organizers such as tables, charts, picture graphs or calendars.	Weather
2. Analyze weather data collected over time (during the day, from day to day, and from season to season) to identify patterns and make comparisons and predictions.	
3. Observe, compare and contrast cloud shapes, sizes and colors, and relate the appearance of clouds to fair weather or precipitation.	
4. Write, speak or draw ways that weather influences humans, other animals and plants.	Weather
5. Make judgments about appropriate clothing and activities based on weather conditions.	
K.4 — Some objects are natural, while others have been designed and made by people to improve the quality of life.	
K.4.a. Humans select both natural and man-made materials to build shelters based on local climate conditions, properties of the materials, and their availability in the environment.	
1. Conduct simple tests to compare the properties of different materials and their usefulness for making roofs, windows, walls or floors (e.g., waterproof, transparent, strong).	Materials Matter
2. Seek information in books, magazines and pictures that describes materials used to build shelters by people in different regions of the world.	
3. Compare and contrast the materials used by humans and animals to build shelters.	
Grade One	
1.1 — The sun appears to move across the sky in the same way every day, but its path changes gradually over the seasons.	
1.1.a. An object's position can be described by locating it relative to another object or the background.	
1. Compare and contrast the relative positions of objects using words (in front of, behind, next to, inside of, above or below) and numbers (by measuring its distance from another object).	
1.1.b. An object's motion can be described by tracing and measuring its position over time.	
2. Apply direct and indirect pushes and pulls to cause objects to move (change position) in different ways (e.g., straight line, forward and backward, zigzag, in a circle).	Feel the Force
3. Classify objects by the way they move (e.g., spinning, rolling, bouncing).	
4. Conduct simple experiments and evaluate different ways to change the speed and direction of an object's motion.	Feel the Force

5. Observe, record and predict the sun's position at different times of day (morning, noon, afternoon or night).	Shadows
6. Conduct simple investigations of shadows and analyze how shadows change as the relative position of the sun (or an artificial light source) changes.	Shadows
1.2 — Living things have different structures and behaviors that allow them to meet their basic needs.	
1.2.a. Animals need air, water and food to survive.	
1. Infer from direct observation and print or electronic information that most animals and plants need water, food and air to stay alive.	Living Things
2. Identify structures and behaviors used by mammals, birds, amphibians, reptiles, fish and insects to move around, breathe and obtain food and water (e.g., legs/wings/fins, gills/lungs, claws/fingers, etc.)	
1.2.b. Plants need air, water and sunlight to survive.	
3. Sort and classify plants (or plant parts) by observable characteristics (e.g., leaf shape/size, stem or trunk covering, flower or fruit).	Living Things Growing Plants
4. Use senses and simple measuring tools to measure the effects of water and sunlight on plant growth.	Growing Plants
5. Compare and contrast information about animals and plants found in fiction and nonfiction sources.	
1.3 — Organisms change in form and behavior as part of their life cycles.	
1.3.a. Some organisms undergo metamorphosis during their life cycles; other organisms grow and change, but their basic form stays essentially the same.	
1. Explain that living things experience a life cycle that includes birth, growth, reproduction and death.	Growing Up Growing Plants
2. Distinguish between animals that are born alive (e.g., humans, dogs, cows) and those that hatch from eggs (e.g., chickens, sea turtles, crocodiles).	Growing Up
3. Compare and contrast the changes in structure and behavior that occur during the life cycles of animals that undergo metamorphosis with those that do not.	Growing Up
4. Analyze recorded observations to compare the metamorphosis stages of different animals and make predictions based on observed patterns.	Growing Up
1.4 — The properties of materials and organisms can be described more accurately through the use of standard measuring units.	
1.4.a. Various tools can be used to measure, describe and compare different objects and organisms.	
1. Use nonstandard and standard measurements to describe and compare the weight, length, and size of objects and organisms.	

2. Show approximate size of a centimeter, meter, inch, foot and yard using referents such as a finger, a hand or a book.	
3. Select appropriate tools for measuring length, height, weight or liquid volume.	
4. Use metric and customary rulers to measure length, height or distance in centimeters, meters, inches, feet and yards.	Springs Growing Plants
5. Use balances and scales to compare and measure the heaviness of objects and organisms in kilograms, grams, pounds and ounces.	
6. Use graduated cylinders, beakers and measuring cups to measure the volume of liquids in milliliters, liters, cups and ounces.	Soil
7. Use thermometers to measure air and water temperature in degrees Celsius and degrees Fahrenheit.	Weather
8. Make graphs to identify patterns in recorded measurements such as growth or temperature over time.	
Grade Two	
2.1 — Materials can be classified as solid, liquid or gas based on their observable properties.	
2.1.a. Solids tend to maintain their own shapes, while liquids tend to assume the shapes of their containers, and gases fill their containers fully.	
1. Compare and contrast the properties that distinguish solids, liquids and gases.	Changing State
2. Classify objects and materials according to their state of matter.	Changing State
3. Measure and compare the sizes of different solids.	
4. Measure and compare the volume of a liquid poured into different containers.	
5. Design a fair test to compare the flow rates of different liquids and granular solids.	
2.2 — Plants change their forms as part of their life cycles.	
2.2.a. The life cycles of flowering plants include seed germination, growth, flowering, pollination and seed dispersal.	
1. Use senses and simple tools to observe and describe the roots, stems, leaves, flowers and seeds of various plants (including trees, vegetables and grass.)	Growing Plants
2. Use magnifiers to observe and diagram the parts of a flower.	
3. Describe the functions of roots, stems, leaves, flowers and seeds in completing a plant's life cycle.	Growing Plants Plant Reproduction
4. Record observations and make conclusions about the sequence of stages in a flowering plant's life cycle.	Plant Reproduction
5. Compare and contrast how seeds of different plants are adapted for dispersal by water, wind or animals.	Plant Reproduction

6. Conduct a fair test to explore factors that affect seed germination and plant growth.	Living Things Growing Plants Plant Reproduction
2.3 — Earth materials have varied physical properties that make them useful in different ways.	
2.3.a. Soils can be described by their color, texture and capacity to retain water.	
1. Use senses and simple tools (e.g., sieves and settlement tests) to separate soil into components such as rock fragments, water, air and plant remains.	Soil
2. Classify soils by properties such as color, particle size (sand, silt or clay), or amount of organic material (loam).	Soil
2.3.b. Soils support the growth of many kinds of plants, including those in our food supply.	
3. Explain the importance of soil to plants, animals and people.	
4. Evaluate the quality of different soils in terms of observable presence of air, water, living things and plant remains.	
5. Conduct fair tests to investigate how different soil types affect plant growth and write conclusions supported by evidence.	
2.4 — Human beings, like all other living things, have special nutritional needs for survival.	
2.4.a. The essential components of balanced nutrition can be obtained from plant and animal sources.	
1. Explain that food is a source of carbohydrates, protein and fats —nutrients that animals (including humans) convert to energy they use to stay alive and grow.	
2. Classify foods into groups based on their source, and relate common foods to the plant or animal from which they come.	Growing Plants
3. Give examples of ways people can improve soil quality and crop growth (e.g., irrigation, fertilizer, pest control).	
4. Compare and contrast how different cultures meet needs for basic nutrients by consuming various foods.	
2.4.b. People eat different foods in order to satisfy nutritional needs for carbohydrates, proteins and fats.	
5. Evaluate the nutritional value of different foods by analyzing package labels.	
Grade Three	
3.1 — Materials have properties that can be identified and described through the use of simple tests.	
3.1.a. Heating and cooling cause changes in some of the properties of materials.	

1. Compare and contrast the properties of solids, liquids and gases.	Changing State
2. Demonstrate that solids, liquids and gases are all forms of matter that take up space and have weight.	Changing State
3. Carry out simple tests to determine if materials dissolve, sink or float in water, conduct heat or attract to magnets.	Magnets Separating Mixtures Insulators and Conductors
4. Classify materials based on their observable properties, including state of matter.	Changing State
5. Design and conduct fair tests to investigate the absorbency of different materials, write conclusions based on evidence, and analyze why similar investigations might produce different results.	Soil
6. Explain the role of heating and cooling in changing matter from one state to another during freezing, melting, evaporation and condensation.	Changing State
3.2 — Organisms can survive and reproduce only in environments that meet their basic needs.	
3.2.a. Plants and animals have structures and behaviors that help them survive in different environments.	
1. Compare and contrast the external features and behaviors that enable different animals and plants (including those that are extinct) to get food, water and sunlight; find mates; and be protected in specific land and water habitats.	Fossils Habitats Adaptations
2. Explain how behaviors such as hibernation, dormancy and migration give species advantages for surviving unfavorable environmental conditions.	Adaptations
3. Give examples of ways animals benefit from camouflage.	Adaptations
4. Evaluate whether an adaptation gives a plant or animal a survival advantage in a given environment.	Adaptations
5. Design a model of an organism whose adaptations give it an advantage in a specific environment.	Habitats
3.3 — Earth materials have different physical and chemical properties.	
3.3.a. Rocks and minerals have properties that may be identified through observation and testing; these properties determine how earth materials are used.	
1. Differentiate between rocks and minerals.	
2. Use the senses and simple measuring tools to gather data about various rocks and classify them based on observable properties (e.g., shape, size, color, weight, visible markings).	Rocks

3. Conduct simple tests to determine properties of different minerals (e.g. color, odor, streak, luster, hardness, magnetism), organize data in a table, and use the data and other resources to identify unknown mineral specimens.	
4. Summarize nonfiction text to compare and contrast the conditions under which igneous, metamorphic and sedimentary rocks are formed.	
5. Observe and analyze rock properties (e.g., crystal size or layers) to infer the conditions under which the rock was formed.	
6. Evaluate the usefulness of different rock types for specific applications (e.g., buildings, sidewalks, stone walls, statues or monuments).	Rocks
3.4 — Earth materials provide resources for all living things, but these resources are limited and should be conserved.	
3.4.a. Decisions made by individuals can affect the global supply of many resources.	
1. Describe ways people use earth materials, such as fossil fuels, trees, water, soils and rocks as natural resources to improve their lives.	Rocks
2. Summarize nonfiction text to explain how humans use technology to access and use natural resources to produce electricity or other products (e.g., paper or concrete).	
3. Explain advantages and disadvantages of renewable and nonrenewable energy sources that can be used for making electricity, fueling cars or heating homes.	
4. Design and conduct experiments to evaluate the effectiveness of different insulating materials for keeping a substance (or space) warm or cold (i.e., conducting heat).	
5. Use mathematics to estimate, measure and graph the quantity of a natural resource (e.g., water, paper) used by an individual (or group) in a certain time period.	Pollution
6. Evaluate the environmental advantages and disadvantages of reducing, reusing, recycling and replacing as conservation methods.	Pollution
Grade Four	
4.1 — The position and motion of objects can be changed by pushing or pulling.	
4.1.a. The size of the change in an object's motion is related to the strength of the push or pull.	
1. Demonstrate that a force can cause an object to start moving, stop, or change speed or direction.	Forces
2. Use measurement tools and standard units to compare and contrast the motion of common objects such as toy cars, balls, model rockets or planes in terms of change in position, speed and direction.	Forces
4.1.b. The more massive an object is, the less effect a given force will have on its motion.	

3. Design and conduct experiments to determine how the motion of an object is related to the mass of the object and the strength of the force applied.	Forces Gravity
4. Describe how friction forces caused by air resistance or interactions between surface materials affect the motion of objects.	Friction Forces
5. Predict the effect of an object's mass on its motion.	Forces Gravity
4.2 — All organisms depend on the living and nonliving features of the environment for survival.	
4.2.a. When the environment changes, some organisms survive and reproduce, and others die or move to new locations.	
1. Give examples of ways that living and nonliving things are interdependent within an ecosystem.	Habitats Interdependence
2. Draw diagrams showing how the sun's energy enters and is transferred from producers to consumers in a local land or aquatic food chain.	Food Chains
3. Design and conduct simple investigations to record interactions among producers, consumers, herbivores, carnivores, omnivores and decomposers in an ecosystem.	Food Chains Interdependence
4. Analyze food webs to describe how energy is transferred from plants to various animals in an ecosystem.	Food Chains
5. Distinguish between naturally occurring changes in ecosystems and those caused by human activity	Adaptations Pollution Interdependence
6. Predict the effect an environmental change, such as drought or forest destruction, might have on the community of living things.	Adaptations Habitats
4.3 — Water has a major role in shaping the earth's surface.	
4.3.a. Water circulates through the earth's crust, oceans and atmosphere.	
1. Describe the role of heat energy (i.e., heating and cooling) in the continuous cycling of water between the earth and the atmosphere through evaporation, condensation and precipitation.	Water Cycle
2. Use models to demonstrate that topography causes precipitation landing on Earth to move in streams and rivers from higher to lower elevations.	
3. Design and conduct simple investigations to determine how moving water (flowing downhill or in ocean waves) causes changes to the land, the coastline or the course of a stream or river.	Erosion, Transportation and Deposition
4. Pose testable questions and employ simple equipment and measuring tools to collect data about factors that affect erosion (e.g., type of earth material in an area, volume of moving water, slope of land, vegetation coverage).	

5. Present evidence to support a scientific claim about the relationship between the amount and speed of moving water and the size of earth materials moved (e.g., sand, silt, pebbles, boulders).	Erosion, Transportation and Deposition
4.4 — Electrical and magnetic energy can be transferred and transformed.	
4.4.a. Electricity in circuits can be transformed into light, heat, sound and magnetic effects.	
1. Construct complete (closed) and incomplete (open) series circuits in which electrical energy is transformed into heat, light, sound and/or motion energy.	Circuits Energy Forms
2. Draw labeled diagrams of complete and incomplete circuits, explain necessary components and how components can be arranged to make a complete circuit.	Circuits
3. Predict whether diagrammed circuit configurations will light a bulb.	Circuits
4. Develop a method for testing conductivity and analyze data to generalize that metals are generally good electrical conductors and nonmetals are not.	Insulators and Conductors
5. Observe magnetic effects associated with electricity and investigate factors that affect the strength of an electromagnet.	Electromagnets
4.4.b. Magnets can make objects move without direct contact between the object and the magnet.	
6. Describe materials that are attracted by magnets.	Magnets Electromagnets
7. Design procedures to move objects and separate mixtures of solids using magnets.	Magnets
8. Investigate how magnets react with other magnets and analyze findings to identify patterns in the interactions between north and south poles of magnets.	Magnets Electromagnets
9. Give examples of uses of magnets (e.g., motors, generators, household devices).	Electromagnets
Grade Five	
5.1 — Sound and light are forms of energy.	
5.1.a. Sound is a form of energy that is produced by the vibration of objects and is transmitted by the vibration of air and objects.	
1. Generalize that vibrating objects produce sound if the vibrations are transferred from the object through another material (e.g., air, a solid, or a liquid).	Sounds
2. Demonstrate how the loudness, pitch and quality/timbre of sound can be varied.	Sounds
3. Design and conduct investigations to determine factors that affect pitch.	Sounds
4. Describe the properties of materials that reflect or absorb sound.	
5. Analyze properties of materials that cause sound to be reflected or absorbed, then apply findings to design a device that reflects or absorbs sound.	
6. Construct simple musical instruments (e.g., rubber band guitars, drums, etc.) that produce sounds with various pitches, volume and timbres.	Sounds

5.1.b. Light is a form of energy that travels in a straight line and can be reflected by a mirror, refracted by a lens, or absorbed by objects.	
7. Provide evidence that light travels in straight lines away from a source in all directions.	Reflection and Refraction
8. Investigate how light is refracted as it passes through a lens or through one transparent material to another.	Reflection and Refraction
9. Demonstrate that white light is composed of many colors.	
10. Explain that all visible objects are reflecting some light to the human eye.	Reflection and Refraction
11. Contrast the way light is reflected by a smooth, shiny object (e.g., mirror or pool of water) and how light is reflected by other objects.	Reflection and Refraction
12. Measure angles to predict the path of light reflected by a mirror.	Reflection and Refraction
13. Determine whether a material is opaque, transparent or translucent based on how light passes through it.	Shadows
14. Design and conduct light absorption experiments that vary the size, length, direction and clarity of a shadow by changing the position of the light-blocking object or the light source.	Shadows
5.2 —Perceiving and responding to information about the environment is critical to the survival of organisms.	
5.2.a The sense organs perceive stimuli from the environment and send signals to the brain through the nervous system.	
1. Explain the role of sensory organs in perceiving stimuli (e.g., light/dark, heat/cold, flavors, pain, etc.)	Reflection and Refraction
2. Pose testable questions and design experiments to determine factors that affect human reaction time.	
3. Conduct simple tests to explore the capabilities of the human senses.	
4. Summarize nonfiction text to explain the role of the brain and spinal cord in responding to information received from the sense organs.	
5. Identify the major structures of the human eye, ear, nose, skin and tongue, and explain their functions.	
6. Draw diagrams showing the straight path of light rays from a source to a reflecting object to the eye, allowing objects to be seen.	Reflection and Refraction
7. Describe the properties of different materials and the structures in the human eye enable humans to perceive color.	
5.3 — Most objects in the solar system are in a regular and predictable motion.	
5.3.a. The positions of the earth and moon relative to the sun explain the cycles of day and night, and the monthly moon phases.	

1. Explain the motion of the earth relative to the sun that causes Earth to experience cycles of day and night.	Days and Seasons
2. Construct models demonstrating Earth's rotation on its axis, the moon's revolution around the earth, and the earth and moon revolving around the sun.	Days and Seasons The Moon Our Solar System
3. Distinguish between the sun as a source of light and the moon as a reflection of that light.	Our Solar System The Moon
4. Observe and record the moon's appearance over time and analyze findings to describe the cyclical changes in its appearance from Earth (moon phases).	The Moon
5. Relate the moon phases to changes in the moon's position relative to the earth and sun during its 29-day revolution around the earth.	The Moon
5.4 — Humans have the capacity to build and use tools to advance the quality of their lives.	
5.4.a. Advances in technology allow individuals to acquire new information about the world.	
1. Generalize that optical tools, such as binoculars, telescopes, eyeglasses or periscopes, change the path of light by reflecting or refracting it.	
2. Construct simple periscopes and telescopes, and analyze how the placement of their lenses and mirrors affects the quality of the image formed.	
3. Evaluate the best optical instrument to perform a given task.	
4. Design and conduct simple investigations to determine how the shape of a lens or mirror (concave, convex, flat) affects the direction in which light rays travel.	
5. Explain how eyeglasses or contact lenses improve vision by changing the path of light to the retina.	
6. Analyze the similarities and differences between structures of the human eye and those of a simple camera.	