Wallenpaupack Area School District

Course: Science

GRADE LEVEL: Fourth Grade

LENGTH OF COURSE: 36 Weeks/120 Minutes Per Week

TEXT: Scott Foresman Science – Fourth Grade

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COURSE DESCRIPTION:

This is a general science course which will allow students to explore topics in the areas of Life, Earth and Physical Science.

AREAS OF STUDY:

Animals and Plants
Matter
Energy, Force, and Motion
Space
Earth's Features
Weather

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Wallenpaupack Area School District

Course: Science
Unit: Unifying Themes

Grade Level: Grade 4
PA Standard: 3.1.4.A
3.1.4.B
3.1.4.C
3.1.4.E

Topics:	**Skills:**
Systems Models Patterns Scale Change	Identify and describe what parts make up a system Identify system parts that are natural and human made Describe the purpose of analyzing systems Know that technologies include physical technology systems, informational systems, and bio-chemical related systems Identify different types of models Identify and apply models as tools for prediction and insight Apply appropriate simple modeling tools and techniques Identify theories that serve as models Identify observable patterns Use knowledge of natural patterns to predict next occurrences Recognize change as fundamental to science and technology concepts Examine and explain change by using time and measurement Describe relative motion Describe the change to objects caused by heat, cold, light or chemicals
Activities:	**Performance Assessments:**
	Unifying Themes and Inquiry and Design are addressed throughout this curriculum as they are inherent to the teaching of science

Wallenpaupack Area School District

Course: Science
Unit: Inquiry and Design

Grade Level: Grade 4
PA Standard: 3.2.4.A
3.2.4.B
3.2.4.C
3.2.4.D

Topics:	**Skills:**
Nature of scientific knowledge Process knowledge Scientific method Problem solving in technology	Distinguish between a scientific and a belief Provide clear explanations that account for observations and results Relate how new information can change existing perceptions Recognize observational descriptors from each of the five senses Use observations to develop a descriptive vocabulary Generate questions about objects, organisms that can be answered through scientific Investigators Design an investigation Conduct an experiment State a conclusion that is consistent with the information Recognize and explain basic problems Identify possible solutions and their course of action Try a solution Describe the solution, identify its impacts and modify if necessary Show the steps taken and the results
Activities:	**Performance Assessments:**
	Unifying Themes and Inquiry and Design are addressed throughout this curriculum as they are inherent to the teaching of science

Course: Science
Unit: Technological Devices

Grade Level: Grade 4
PA Standard: 3.7.4.A
3.7.4.B

Topics:	**Skills:**
Tools Instruments Computer operations Computer software Computer communication systems	Describe the scientific principles on which various tools are based Group tools and machines by their function Select and safely apply appropriate tools and materials to solve simple problems Develop simple skills to measure, record, cut and fasten Explain appropriate instrument selection for specific tasks
Activities:	**Performance Assessments:**
	The use of Technological Devices is addressed throughout this curriculum as they are inherent to the teaching of Science

Course: Science
Unit: Plants and Animals

Grade Level: Grade 4
PA Standard: 3.3.4.A
3.3.4.B
3.3.4.C
3.3.4.D

Topics:	**Skills:**
Living things Characteristics Needs of plants and animals Inheritance Extinct life forms	Identify life processes of living things (e.g., growth, digestion, react to environment) Know that some organisms have similar external characteristics, appendages, type of covering, body segments, and that similarities and differences are related to environmental circumstances Describe basic needs of plants and animals Identify examples of unicellular and multi-cellular organisms Determine how different parts of a living thing work together to make the organism function Identify characteristics for animal and plant survival in different climates Distinguish between learned and inherited characteristics Compare extinct life forms with living organisms Know that difference in individuals of the same species may give some advantage in surviving reproducing
Activities:	**Performance Assessments:**
Identify uses of plants and animals Explore plant and animal classifications Examine flower parts and plant reproduction Examine life cycles Compare unicellular and multi-cellular organisms Investigate animal characteristics that are learned or inherited Explore plants and animal survival Explore various ecosystems	Rubrics Teacher made test Journal Teacher observations Projects Labs Poster

Course: Science
Unit: Plants and Animals

Grade Level: Grade 4
PA Standard: 3.3.6.A

Topics:	**Skills:**
Agriculture Industry Biotechnology	Identify agricultural and industrial production processes that involve plants and animals Describe how biotechnology has impacted various aspects of daily life (e.g., healthcare, agriculture, waste treatment)
Activities:	**Performance Assessments:**
Identify uses of plants and animals Explore plant and animal classifications Examine flower parts and plant reproduction Examine life cycles Compare unicellular and multi-cellular organisms Investigate animal characteristics that are learned or inherited Explore plants and animal survival Explore various ecosystems	Rubrics Teacher made test Journal Teacher observations Projects Labs Poster

Course: Science
Unit: Plants and Animals

Grade Level: Grade 4
PA Standard: 4.1.4.C
4.1.4.D
4.1.4.E

Topics:	**Skills:**
Fresh water animals and plants Habitats Wetlands and watersheds	Identify fish, insects, and amphibians that are found in fresh water Identify plants found in fresh water Identify different kinds of wetlands Identify plants and animals found in wetlands Explain wetlands as habitats for plants and animals Explain the role of watersheds in everyday life Identify the role of watersheds and wetlands for plants and animals
Activities:	**Performance Assessments:**
Identify uses of plants and animals Explore plant and animal classifications Examine flower parts and plant reproduction Examine life cycles Compare unicellular and multi-cellular organisms Investigate animal characteristics that are learned or inherited Explore plants and animal survival Explore various ecosystems	Rubrics Teacher made test Journal Teacher observations Projects Labs Poster

Course: Science
Unit: Plants and Animals

Grade Level: Grade 4
PA Standard: 4.3.4.A
4.3.4.C

Topics:	**Skills:**
Survival needs Pest controls Ecosystems	Know that all living things need air and water to survive Describe potentially dangerous pest controls used in the home Identify some of the organisms that live together in an ecosystem Understand that the components of a system all play a part in a healthy natural system Identify the effects of a healthy environment on the ecosystem
Activities:	**Performance Assessments:**
Identify uses of plants and animals Explore plant and animal classifications Examine flower parts and plant reproduction Examine life cycles Compare unicellular and multi-cellular organisms Investigate animal characteristics that are learned or inherited Explore plants and animal survival Explore various ecosystems	Rubrics Teacher made test Journal Teacher observations Projects Labs Poster

Course: Science
Unit: Plants and Animals

Grade Level: Grade 4
PA Standard: 4.4.4.A
4.4.4.B
4.4.4.C
4.4.4.D

Topics:	**Skills:**
Society's needs Agricultural science Agricultural systems Technology	Identify people's basic needs Explain the influence of agriculture on food, clothing, shelter and culture from one area to another Know how people depend on agriculture Identify common animals found on Pennsylvania farms Identify common plants found on Pennsylvania forms Identify the parts of important agricultural related plants (e.g., corn, soybeans, barley) Identify a fiber product from Pennsylvania farms Define and identify food and fiber Identify agricultural products that are local and regional Identify an agricultural product based on its origin Describe several products and tell their origins Describe the journey of a local agricultural product from production to the consumer Identify the various tools and machinery necessary for farming Identify the types of energy used in producing food and fiber Identify tools and machinery used in the production of agricultural products
Activities:	**Performance Assessments:**
Identify uses of plants and animals Explore plant and animal classifications Examine flower parts and plant reproduction Examine life cycles Compare unicellular and multi-cellular organisms Investigate animal characteristics that are learned or inherited Explore plants and animal survival Explore various ecosystems	Rubrics Teacher made test Journal Teacher observations Projects Labs Poster

Course: Science
Unit: Plants and Animals

Grade Level: Grade 4
PA Standard: 4.5.4.A
4.5.4.B
4.5.4.C

Topics:	**Skills:**
Pests Effects, benefits, impacts Health risks Management practices	Identify classifications of pests Identify and categorize pests Know how pests fit into a food chain Know reasons why people control pests Identify different methods for controlling specific pests in the home, school and community Identify chemical labels (e.g., caution, poison, warning) Identify integrated pest management practices in the home Identify integrated pest management practices outside the home
Activities:	**Performance Assessments:**
Identify uses of plants and animals Explore plant and animal classifications Examine flower parts and plant reproduction Examine life cycles Compare unicellular and multi-cellular organisms Investigate animal characteristics that are learned or inherited Explore plants and animal survival Explore various ecosystems	Rubrics Teacher made test Journal Teacher observations Projects Labs Poster

Course: Science
Unit: Plants and Animals

Grade Level: Grade 4
PA Standard: 4.6.4.A
4.6.4.B
4.6.4.C

Topics:	**Skills:**
Living and nonliving components Plant and animal habitats and food sources Food chain Ecosystem – local cycles	Identify and categorize living and non-living things Describe the basic needs of an organism Identify basic needs of a plant and an animal and explain how their needs are met Identify plants and animals with their habitat and food sources Identify environmental variables that affect plant growth Describe how animals interact with plants to meet their needs for shelter Describe how certain insects interact with soil for their needs Understand the components of a food chain Identify a local ecosystem and its living and non-living components Identify common soil textures Identify animals that live underground Explain the carbon dioxide/oxygen cycle (photosynthesis)
Activities:	**Performance Assessments:**
Identify uses of plants and animals Explore plant and animal classifications Examine flower parts and plant reproduction Examine life cycles Compare unicellular and multi-cellular organisms Investigate animal characteristics that are learned or inherited Explore plants and animal survival Explore various ecosystems	Rubrics Teacher made test Journal Teacher observations Projects Labs Poster

Course: Science
Unit: Plants and Animals

Grade Level: Grade 4
PA Standard: 4.7.4.A
4.7.4.B
4.7.4.C

Topics:	**Skills:**
Diversity Adaptation	Explain why plants and animals are different colors, shapes and sizes and how these differences relate to their survival Identify characteristics that living things inherit from their parents Explain why each of the four elements in a habitat is essential for survival Identify local plants or animals and describe their habitat Explain how specific adaptations can help a living organism to survive Explain what happens to a living thing when its food, water, shelter or space is changed Identify plants and animals that are extinct Explain why some plants and animals are extinct Know that there are local and state laws regarding plants and animal
Activities:	**Performance Assessments:**
Identify uses of plants and animals Explore plant and animal classifications Examine flower parts and plant reproduction Examine life cycles Compare unicellular and multi-cellular organisms Investigate animal characteristics that are learned or inherited Explore plants and animal survival Explore various ecosystems	Rubrics Teacher made test Journal Teacher observations Projects Labs Poster

Course: Science
Unit: Plants and Animals

Grade Level: Grade 4
PA Standard: 4.8.4.A
4.8.4.B

Topics:	**Skills:**
Societal needs Human impacts Environmental impacts	Explain how a dynamically changing environment provides for sustainability of living systems Know that environmental conditions influence where and how people live Explain the influence of climate on how and where people live
Activities:	**Performance Assessments:**
Identify uses of plants and animals Explore plant and animal classifications Examine flower parts and plant reproduction Examine life cycles Compare unicellular and multi-cellular organisms Investigate animal characteristics that are learned or inherited Explore plants and animal survival Explore various ecosystems	Rubrics Teacher made test Journal Teacher observations Projects Labs Poster

Course: Science
Unit: Matter

Grade Level: Grade 4
PA Standard: 3.4.4.A

Topics:	**Skills:**
Matter	Describe properties of matter (e.g., hardness, reactions to simple chemical tests) Know that combining two or more substances can make new materials with different properties Know different materials characteristics (e.g., texture, state of matter, solubility)
Activities:	**Performance Assessments:**
Explore mass and volume Identify properties of matter Explore mixtures and solutions Investigate physical and chemical change	Rubrics Teacher made tests Journals Teacher observations Project Labs Poster

Course: Science
Unit: Energy, Force and Motion

Grade Level: Grade 4
PA Standard: 3.4.4.B
3.4.4.C

Topics:	**Skills:**
Energy Force and motion	Identify energy forms and examples (e.g., sunlight, heat, stored motion) Know the concept of the flow of energy by measuring flow through an object or system Describe static electricity in terms of attraction, repulsion and sparks Apply knowledge of the basic electrical circuits to design and construct simple direct current circuits Classify materials as conductors and nonconductors Know and demonstrate the basic properties of heat by producing it in a variety of ways Know the characteristics of light (e.g., reflection, refraction, absorption) and use them to produce heat, color or a virtual image Identify characteristics of sound such as pitch, loudness and echoes Recognize forces that attract or repel other objects and demonstrate them Describe various types of motions Compare the relative movement of objects and describe types of motion that are evident Describe the position of an object by locating it relative to another object or the background (e.g., geographic direction, left, up)
Activities:	**Performance Assessments:**
Identify energy forms Explore electric current and circuits Investigate magnets Explore light and sound Identify and construct simple machines Investigate construction systems	Rubrics Teacher made tests Journals Teacher observations Projects Labs Poster

Course: Science
Unit: Energy, Force and Motion

Grade Level: Grade 4
PA Standard: 3.6.4.C

Topics:	**Skills:**
Construction systems Resources Waste and pollution Transportation technologies Simple machines	Identify and group a variety of construction tasks Identify the major construction systems present in a specific local building Identify specific construction systems that depend on each other in order to complete a project Know skills used in construction Identify examples of manufactured goods present in the home and school Identify basic resources needed to produce a manufactured item Identify basic component operation in a specific manufacturing enterprise (e.g., cutting, shaping, attaching) Identify waste and pollution resulting from a manufacturing enterprise Explain and demonstrate the concept of manufacturing (e.g., assemble a set of papers or ball point pens sequentially, mass produce an object) Identify transportation technologies of propelling, structuring, suspending, guiding, controlling and supporting Identify and experiment with simple machines used in transportation systems Explain how improved transportation systems have changed society (see Earth Science 3.5)
Activities:	**Performance Assessments:**
Identify energy forms Explore electric current and circuits Investigate magnets Explore light and sound Identify and construct simple machines Investigate construction systems	Rubrics Teacher made tests Journals Teacher observations Projects Labs Poster

Course: Science
Unit: Energy, Force and Motion

Grade Level: Grade 4
PA Standard: 3.8.4.A
3.8.4.B
3.8.4.C

Topics:	**Skills:**
Meeting human needs Consequences and impacts	Identify and describe positive and negative impacts that influence or result from new tools and techniques Identify how physical technology (e.g., construction, manufacturing, transportation), informational technology and biotechnology are used to meet human needs Describe how scientific discoveries and technological advancements are related Identify interrelationships among technology, people and their world Apply the technological design process to solve a simple problem Identify and distinguish between human needs and improving the quality of life Identify and distinguish between natural and human-made resources Describe a technological invention and the resources that were used to develop it Compare the positive and negative expected and unexpected impacts of technological change Identify and discuss examples of technological change in the community that have both positive and negative impacts
Activities:	**Performance Assessments:**
Identify energy forms Explore electric current and circuits Investigate magnets Explore light and sound Identify and construct simple machines Investigate construction systems	Rubrics Teacher made tests Journals Teacher observations Projects Labs Poster

Course: Science
Unit: Space

Grade Level: Grade 4
PA Standard: 3.4.4.D

Topics:	**Skills:**
Astronomy	Recognize earth's place in the solar system Explain and illustrate the causes of seasonal changes Identify planets in our solar systems and their general characteristics Describe the solar system motions and use them to explain time (e.g., days, seasons), major lunar phases and eclipses
Activities:	**Performance Assessments:**
Explore movement of the solar system Identify planet characteristics Recognize the effects of movement in the solar system	Teacher made tests Journals Teacher observations Posters Projects Rubrics

Course: Science
Unit: Earth's Features

Grade Level: Grade 4
PA Standard: 3.5.4.A
3.5.4.B
3.5.4.D

Topics:	**Skills:**
Land forms and processes Resources Fossils Classification	Describe Earth processes (e.g., rusting, weathering, erosion) that have affected selected physical features in students' neighborhoods Identify various Earth structures (e.g., mountains, faults and drainage basins) through the composition of soil as weathered rock and decomposed organic remains Describe fossils and the types of environment they lived in (e.g., tropical, aquatic, desert) Identify uses of various Earth materials (e.g., buildings, highways, fuels, growing plants) Identify and sort Earth's materials according to a classification key (e.g., soil/rock type) Know that approximately ¾ of the Earth is covered by water Describe locations of fresh and salt water near the state of Pennsylvania Recognize other resources available from water (e.g., energy, transportation, minerals, food)
Activities:	**Performance Assessments:**
Explore landforms Examine rusting, weathering, erosion Classify rocks and minerals Investigate natural resources Examine environmental law	Rubrics Teacher made tests Journals Teacher observations Projects Labs Posters

Course: Science
Unit: Earth's Features

Grade Level: Grade 4
PA Standard: 3.6.4.A

Topics:	**Skills:**
Waste management	Identify waste management treatment processes
Activities:	**Performance Assessments:**
Explore landforms Examine rusting, weathering, erosion Classify rocks and minerals Investigate natural resources Examine environmental law	Rubrics Teacher made tests Journals Teacher observations Projects Labs Posters

Course: Science
Unit: Earth's Features

Grade Level: Grade 4
PA Standard: 4.1.4.A

Topics:	**Skills:**
Lotic and lentic systems	Identify the lotic system (e.g., creeks, rivers, streams) Identify the lentic system (e.g., ponds, lakes, swamps)
Activities:	**Performance Assessments:**
Explore landforms Examine rusting, weathering, erosion Classify rocks and minerals Investigate natural resources Examine environmental law	Rubrics Teacher made tests Journals Teacher observations Projects Labs Posters

Course: Science
Unit: Earth's Features

Grade Level: Grade 4
PA Standard: 4.2.4.A
4.2.4.B
4.2.4.C
4.2.4.D

Topics:	**Skills:**
Natural resources Uses Availability Waste stream Recycling	Identify plants, animals, water, air, minerals and fossil fuels as naturals resources Explain air, water and nutrient cycles Identify how the environment provides for the needs of people Identify products made from trees Identify by-products of plants and animals Identify the sources of manmade products (e.g., plastics, metals, aluminum, fabrics, paper, cardboard) Identify renewable and non-renewable resources used in the local community Identify various means of conserving natural resources Know that natural resources have varying life spans Understand the waste stream Identify those items that can be recycled and those that can not Identify use of reusable products Identify the use of compost, landfills and incinerators
Activities:	**Performance Assessments:**
Explore landforms Examine rusting, weathering, erosion Classify rocks and minerals Investigate natural resources Examine environmental law	Rubrics Teacher made tests Journals Teacher observations Projects Labs Posters

Course: Science
Unit: Earth's Features

Grade Level: Grade 4
PA Standard: 4.3.4.A
4.3.4.B

Topics:	**Skills:**
Health issues Pollution	Identify things that cause sickness Identify different areas where health can be affected by air, water or land pollution Identify actions that can prevent or reduce waste pollution Identify pollutants Identify sources of pollution Identify letter and its effects on the environment Describe how people can reduce pollution
Activities:	**Performance Assessments:**
Explore landforms Examine rusting, weathering, erosion Classify rocks and minerals Investigate natural resources Examine environmental law	Rubrics Teacher made tests Journals Teacher observations Projects Labs Posters

Course: Science
Unit: Earth's Features

Grade Level: Grade 4
PA Standard: 4.8.4.A
4.8.4.C
4.8.4.D

Topics:	**Skills:**
Human impacts Supply and demand Conservation	Identify several ways that people use natural resources Identify everyday human activities and how they affect the environment Identify examples of how human activities within a community affect the natural environment Identify items used in daily life that come from natural resources Identify ways to conserve our natural resources Identify major land uses in the community
Activities:	**Performance Assessments:**
Explore landforms Examine rusting, weathering, erosion Classify rocks and minerals Investigate natural resources Examine environmental law	Rubrics Teacher made tests Journals Teacher observations Labs Posters

Course: Science
Unit: Earth's Features

Grade Level: Grade 4
PA Standard: 4.9.4.A

Topics:	**Skills:**
Laws and regulations	Identify local and state laws and regulations regarding the environment Explain how recycling law impacts the school and home Identify and describe the role of a local or state agency that deals with environmental laws and regulations
Activities:	**Performance Assessments:**
Explore landforms Examine rusting, weathering, erosion Classify rocks and minerals Investigate natural resources Examine environmental law	Rubrics Teacher made tests Journals Teacher observations Projects Labs Posters

Course: Science
Unit: Weather

Grade Level: Grade 4
PA Standard: 3.5.4.C
3.5.4.D
4.1.4.B
4.6.4.B

Topics:	**Skills:**
Weather patterns Seasons Water forms Evaporation and condensation Water cycle	Identify weather patterns from data charts (including temperature, wind direction and speed, and precipitation) and graphs of the data Explain how the different seasons affect plants, animals, food availability, and daily human life Identify examples of water in the form of solid, liquid and gas on or near the surface of the Earth Explain and illustrate evaporation and condensation Explain why water moves or does not move Identify types of precipitation Explain the water cycle
Activities:	**Performance Assessments:**
Measure weather Examine seasons Explore the water cycle Predict weather	Rubrics Teacher made tests Journals Teacher observations Projects Labs Posters