



Pine Grove Area

SCHOOL DISTRICT

Science

5th Grade Science

April 15, 2009

I. PHILOSOPHY

The fifth grade science course of the Pine Grove Area School District engages students in active investigations of scientific concepts. The curriculum reflects the belief that the best science education for students is one that gradually introduces them to the knowledge, methods, skills, and attitudes of scientists, while simultaneously recognizing and respecting the educational and developmental needs of all students.

II. CORE CONCEPTS

1. Introduction to the Scientific Method – utilize the steps of the scientific method to answer questions and solve problems.
2. Solar System and Beyond – investigate the components of a solar system, stars, galaxies, and beyond.
3. Populations and Ecosystems – examine living things and their relationships with each other and their environment.
4. Meteorology-describe basic elements and processes of meteorology through identifying factors that determine weather patterns while interpreting weather data and symbols.
5. Geology & Landforms- examine the composition and structure of rocks and the Earth's structure.
6. Properties of Light and Sound- discover the nature of light and sound and interaction with matter.

III. COURSE OF STUDY

A. Course Name: *Science*

B. Grade Level: 5

C. Length of Course: *one year*

1. Frequency: *daily*

2. Duration: *approximately 60 minutes per class*

D. Academic Level: 5th Grade

E. Credits: none

F. Prerequisites: none

G. Course Description:

This course is an introduction to basic science concepts that meet PA State Assessment Standards. Students use the scientific method to make observations and participate in hands-on investigations that focus on higher level thinking skills. Topics covered in this curriculum include scientific method, solar system, ecology, meteorology, geology and landforms, and properties of light and sound.

IV. CONTENT: Grade 5 Science

CORE CONCEPT 1: Introduction to the Scientific Method

MAJOR OBJECTIVE: utilize the steps of the scientific method to answer questions and solve problems

CURRICULUM STANDARD:			
PA State Standard/Student Expectation	Specific Content	Assessments	Resources/Materials
<p>PA STANDARD 3.1.7.A Explain the parts of a simple system and their relationship to each other.</p> <ul style="list-style-type: none"> Describe a system as a group of related parts that work together to achieve a desired result. Explain the importance of order in a system 	<p>Teacher will guide students to:</p> <p>Explain how biotic and abiotic factors interact with each other in environments to form ecosystems.</p> <p>Explain the importance of order in a system through diagramming several versions of one system in differing order.</p>	<p>Teacher Evaluation of:</p> <ul style="list-style-type: none"> Student notebooks/journals Group projects Partner projects Individual projects Homework Class work Teacher observations/questions Tests/Quizzes Independent activities Cooperative activities written responses Teacher demonstration and student observations Student demonstrations whole class discussion Oral presentations Oral questions and answers Worksheets Concept maps/graphic organizer Diagrams/charts Portfolio Rubrics 	<ul style="list-style-type: none"> Student textbook Instructor textbook Textbook resources Instructor generated resources Internet sites Science videos Laser disc presentations Software programs Newspapers and magazines Cable in the Classroom Lab materials for instructor demonstrations Lab materials for student demonstrations Lab materials for class activities Library/AV resources Student developed resources Outside presenters Community resources

CONTENT: Grade 5 Science

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<p>PA STANDARD 3.1.7.B Describe the use of models as an application of scientific or technological concepts.</p> <ul style="list-style-type: none"> Identify and describe different types of models and their functions. 	<p>Teacher will guide students to:</p> <p>Construct and utilize scale models to compare planetary sizes and distances.</p>	<p>Teacher Evaluation of:</p> <ul style="list-style-type: none"> Student notebooks/journals Group projects Partner projects Individual projects Homework Class work Teacher observations/questions Tests/Quizzes Independent activities Cooperative activities written responses Teacher demonstration and student observations Student demonstrations whole class discussion Oral presentations Oral questions and answers Worksheets Concept maps/graphic organizer Diagrams/charts Portfolio Rubrics 	<ul style="list-style-type: none"> Student textbook Instructor textbook Textbook resources Instructor generated resources Internet sites Science videos Laser disc presentations Software programs Newspapers and magazines Cable in the Classroom Lab materials for instructor demonstrations Lab materials for student demonstrations Lab materials for class activities Library/AV resources Student developed resources Outside presenters Community resources

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<p>PA STANDARD 3.1.7.C Identify patterns as repeated processes or recurring elements in science and technology.</p> <ul style="list-style-type: none"> Identify different forms of patterns and use them to group and classify specific objects. 	<p>Teacher will guide students to:</p> <p>Compare and contrast characteristics of inner and outer planets in terms of temperature, size, ring systems, orbit size, moons, composition, etc.</p>	<p>Teacher Evaluation of:</p> <ul style="list-style-type: none"> Student notebooks/journals Group projects Partner projects Individual projects Homework Class work Teacher observations/questions Tests/Quizzes Independent activities Cooperative activities written responses Teacher demonstration and student observations Student demonstrations whole class discussion Oral presentations Oral questions and answers Worksheets Concept maps/graphic organizer Diagrams/charts Portfolio Rubrics 	<ul style="list-style-type: none"> Student textbook Instructor textbook Textbook resources Instructor generated resources Internet sites Science videos Laser disc presentations Software programs Newspapers and magazines Cable in the Classroom Lab materials for instructor demonstrations Lab materials for student demonstrations Lab materials for class activities Library/AV resources Student developed resources Outside presenters Community resources

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<p>PA STANDARD 3.1.7.D Explain scale as a way of relating concepts and ideas to one another by some measure.</p> <ul style="list-style-type: none"> • Apply various applications of size and dimensions of scale to scientific, mathematical, and technological applications. • Describe scale as a form of ration and apply to a life situation. 	<p>Teacher will guide students to:</p> <p>Construct and utilize a scale model to compare planetary sizes and distances.</p> <p>Utilize a scale model to calculate distance (ie, map)</p>	<p>Teacher evaluation of:</p> <ul style="list-style-type: none"> <input type="checkbox"/> Student notebooks/journals <input type="checkbox"/> Group projects <input type="checkbox"/> Partner projects <input type="checkbox"/> Individual projects <input type="checkbox"/> Homework <input type="checkbox"/> Class work <input type="checkbox"/> Teacher observations/questions <input type="checkbox"/> Tests/Quizzes <input type="checkbox"/> Independent activities <input type="checkbox"/> Cooperative activities <input type="checkbox"/> written responses <input type="checkbox"/> Teacher demonstration and student observations <input type="checkbox"/> Student demonstrations <input type="checkbox"/> whole class discussion <input type="checkbox"/> Oral presentations <input type="checkbox"/> Oral questions and answers <input type="checkbox"/> Worksheets <input type="checkbox"/> Concept maps/graphic organizer <input type="checkbox"/> Diagrams/charts <input type="checkbox"/> Portfolio <input type="checkbox"/> Rubrics 	<ul style="list-style-type: none"> <input type="checkbox"/> Student textbook <input type="checkbox"/> Instructor textbook <input type="checkbox"/> Textbook resources <input type="checkbox"/> Instructor generated resources <input type="checkbox"/> Internet sites <input type="checkbox"/> Science videos <input type="checkbox"/> Laser disc presentations <input type="checkbox"/> Software programs <input type="checkbox"/> Newspapers and magazines <input type="checkbox"/> Cable in the Classroom <input type="checkbox"/> Lab materials for instructor demonstrations <input type="checkbox"/> Lab materials for student demonstrations <input type="checkbox"/> Lab materials for class activities <input type="checkbox"/> Library/AV resources <input type="checkbox"/> Student developed resources <input type="checkbox"/> Outside presenters <input type="checkbox"/> Community resources

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<p>PA STANDARD 3.2.7.A Explain and apply scientific and technological knowledge.</p> <ul style="list-style-type: none"> • Distinguish between a scientific theory and a belief. • Answer “What if” questions based on observation, inference or prior knowledge or experience. • Explain how skepticism about an accepted scientific explanation led to a new understanding. • Explain how new information may change existing theories and practice. 	<p>Teacher will guide students to:</p> <p>Describe the Expanding Universe as a theory developed by Edwin Hubble.</p> <p>Hypothesize the effects on Earth if there was no Sun.</p> <p>Compare the geocentric and heliocentric models of the solar system.</p> <p>Compare the geocentric and heliocentric models of the solar system.</p>	<p>Teacher evaluation of:</p> <ul style="list-style-type: none"> <input type="checkbox"/> Student notebooks/journals <input type="checkbox"/> Group projects <input type="checkbox"/> Partner projects <input type="checkbox"/> Individual projects <input type="checkbox"/> Homework <input type="checkbox"/> Class work <input type="checkbox"/> Teacher observations/questions <input type="checkbox"/> Tests/Quizzes <input type="checkbox"/> Independent activities <input type="checkbox"/> Cooperative activities <input type="checkbox"/> written responses <input type="checkbox"/> Teacher demonstration and student observations <input type="checkbox"/> Student demonstrations <input type="checkbox"/> whole class discussion <input type="checkbox"/> Oral presentations <input type="checkbox"/> Oral questions and answers <input type="checkbox"/> Worksheets <input type="checkbox"/> Concept maps/graphic organizer <input type="checkbox"/> Diagrams/charts <input type="checkbox"/> Portfolio <input type="checkbox"/> Rubrics 	<ul style="list-style-type: none"> <input type="checkbox"/> Student textbook <input type="checkbox"/> Instructor textbook <input type="checkbox"/> Textbook resources <input type="checkbox"/> Instructor generated resources <input type="checkbox"/> Internet sites <input type="checkbox"/> Science videos <input type="checkbox"/> Laser disc presentations <input type="checkbox"/> Software programs <input type="checkbox"/> Newspapers and magazines <input type="checkbox"/> Cable in the Classroom <input type="checkbox"/> Lab materials for instructor demonstrations <input type="checkbox"/> Lab materials for student demonstrations <input type="checkbox"/> Lab materials for class activities <input type="checkbox"/> Library/AV resources <input type="checkbox"/> Student developed resources <input type="checkbox"/> Outside presenters <input type="checkbox"/> Community resources

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<p>PA STANDARD 3.2.7.B Apply process knowledge to make and interpret observations.</p> <ul style="list-style-type: none"> • Measure materials using a variety of scales. • Describe relationships by making inferences and predictions. • Communicate, use space / time relationships, define operationally, raise questions, formulate hypotheses, test and experiment. 	<p>Teacher will guide students to:</p> <p>Utilize scale to measure various materials.</p> <p>Infer and predict relationships using prior knowledge and data.</p> <p>Utilize the steps of the scientific method to answer questions or solve problems.</p>	<p>Teacher evaluation of:</p> <ul style="list-style-type: none"> <input type="checkbox"/> Student notebooks/journals <input type="checkbox"/> Group projects <input type="checkbox"/> Partner projects <input type="checkbox"/> Individual projects <input type="checkbox"/> Homework <input type="checkbox"/> Class work <input type="checkbox"/> Teacher observations/questions <input type="checkbox"/> Tests/Quizzes <input type="checkbox"/> Independent activities <input type="checkbox"/> Cooperative activities <input type="checkbox"/> written responses <input type="checkbox"/> Teacher demonstration and student observations <input type="checkbox"/> Student demonstrations <input type="checkbox"/> whole class discussion <input type="checkbox"/> Oral presentations <input type="checkbox"/> Oral questions and answers <input type="checkbox"/> Worksheets <input type="checkbox"/> Concept maps/graphic organizer <input type="checkbox"/> Diagrams/charts <input type="checkbox"/> Portfolio <input type="checkbox"/> Rubrics 	<ul style="list-style-type: none"> <input type="checkbox"/> Student textbook <input type="checkbox"/> Instructor textbook <input type="checkbox"/> Textbook resources <input type="checkbox"/> Instructor generated resources <input type="checkbox"/> Internet sites <input type="checkbox"/> Science videos <input type="checkbox"/> Laser disc presentations <input type="checkbox"/> Software programs <input type="checkbox"/> Newspapers and magazines <input type="checkbox"/> Cable in the Classroom <input type="checkbox"/> Lab materials for instructor demonstrations <input type="checkbox"/> Lab materials for student demonstrations <input type="checkbox"/> Lab materials for class activities <input type="checkbox"/> Library/AV resources <input type="checkbox"/> Student developed resources <input type="checkbox"/> Outside presenters <input type="checkbox"/> Community resources

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<p>PA STANDARD 3.2.7.C Identify and use the elements of scientific inquiry to solve problems.</p> <ul style="list-style-type: none"> • Generate questions about objects, organisms or events that can be answered through scientific investigations. • Evaluate the appropriateness of questions. • Communicate appropriate conclusions from the experiment. 	<p>Teacher will guide students to:</p> <p>Utilize the steps of the scientific method to answer questions or solve problems.</p> <p>Explain conclusions based on analysis of data observed and recorded from experiments.</p> <p>Evaluate questions for appropriate focus and content in order to clarify experiment</p>	<p>Teacher Evaluation of:</p> <ul style="list-style-type: none"> <input type="checkbox"/> Student notebooks/journals <input type="checkbox"/> Group projects <input type="checkbox"/> Partner projects <input type="checkbox"/> Individual projects <input type="checkbox"/> Homework <input type="checkbox"/> Class work <input type="checkbox"/> Teacher observations/questions <input type="checkbox"/> Tests/Quizzes <input type="checkbox"/> Independent activities <input type="checkbox"/> Cooperative activities <input type="checkbox"/> written responses <input type="checkbox"/> Teacher demonstration and student observations <input type="checkbox"/> Student demonstrations <input type="checkbox"/> whole class discussion <input type="checkbox"/> Oral presentations <input type="checkbox"/> Oral questions and answers <input type="checkbox"/> Worksheets <input type="checkbox"/> Concept maps/graphic organizer <input type="checkbox"/> Diagrams/charts <input type="checkbox"/> Portfolio <input type="checkbox"/> Rubrics 	<ul style="list-style-type: none"> <input type="checkbox"/> Student textbook <input type="checkbox"/> Instructor textbook <input type="checkbox"/> Textbook resources <input type="checkbox"/> Instructor generated resources <input type="checkbox"/> Internet sites <input type="checkbox"/> Science videos <input type="checkbox"/> Laser disc presentations <input type="checkbox"/> Software programs <input type="checkbox"/> Newspapers and magazines <input type="checkbox"/> Cable in the Classroom <input type="checkbox"/> Lab materials for instructor demonstrations <input type="checkbox"/> Lab materials for student demonstrations <input type="checkbox"/> Lab materials for class activities <input type="checkbox"/> Library/AV resources <input type="checkbox"/> Student developed resources <input type="checkbox"/> Outside presenters <input type="checkbox"/> Community resources

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<p>PA STANDARD 3.2.7.D Know and use the technological design process to solve problems.</p> <ul style="list-style-type: none"> • Define different types of problems. • Define all aspects of the problem, necessary information and questions that must be answered. • Propose the best solution. 	<p>Teacher will guide students to:</p> <p>Explain different types of problems.</p> <p>Utilize the steps of the scientific method to answer questions or solve problems.</p> <p>Explain conclusions based on analysis of data observed and recorded from experiments.</p>	<p>Teacher Evaluation of:</p> <ul style="list-style-type: none"> <input type="checkbox"/> Student notebooks/journals <input type="checkbox"/> Group projects <input type="checkbox"/> Partner projects <input type="checkbox"/> Individual projects <input type="checkbox"/> Homework <input type="checkbox"/> Class work <input type="checkbox"/> Teacher observations/questions <input type="checkbox"/> Tests/Quizzes <input type="checkbox"/> Independent activities <input type="checkbox"/> Cooperative activities <input type="checkbox"/> written responses <input type="checkbox"/> Teacher demonstration and student observations <input type="checkbox"/> Student demonstrations <input type="checkbox"/> whole class discussion <input type="checkbox"/> Oral presentations <input type="checkbox"/> Oral questions and answers <input type="checkbox"/> Worksheets <input type="checkbox"/> Concept maps/graphic organizer <input type="checkbox"/> Diagrams/charts <input type="checkbox"/> Portfolio <input type="checkbox"/> Rubrics 	<ul style="list-style-type: none"> <input type="checkbox"/> Student textbook <input type="checkbox"/> Instructor textbook <input type="checkbox"/> Textbook resources <input type="checkbox"/> Instructor generated resources <input type="checkbox"/> Internet sites <input type="checkbox"/> Science videos <input type="checkbox"/> Laser disc presentations <input type="checkbox"/> Software programs <input type="checkbox"/> Newspapers and magazines <input type="checkbox"/> Cable in the Classroom <input type="checkbox"/> Lab materials for instructor demonstrations <input type="checkbox"/> Lab materials for student demonstrations <input type="checkbox"/> Lab materials for class activities <input type="checkbox"/> Library/AV resources <input type="checkbox"/> Student developed resources <input type="checkbox"/> Outside presenters <input type="checkbox"/> Community resources

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CORE CONCEPT 2: Solar System and Beyond

MAJOR OBJECTIVE: Investigate the components of a solar system, stars, galaxies, and beyond.

CURRICULUM STANDARD:

State Standard/Student Expectation	Specific Content	Assessments	Resources/Materials
<p>STANDARD 3.4.7.D Describe essential ideas about the composition and structure of the universe and the earth’s place in it.</p> <ul style="list-style-type: none"> • Compare various planets’ characteristics. • Describe basic star types and identify the sun as a star type. • Describe and differentiate comets, asteroids and meteors. • Identify gravity as the force that keeps planets in orbit around the sun and governs the rest of the movement of the solar system and the universe. • Illustrate how the positions of stars and constellations change in relation to the Earth during an evening and from month to month. • Identify equipment and instruments that explore the universe. • Identify the accomplishments and contributions provided by selected past and present scientists in the field of astronomy. • Identify and articulate space program efforts to investigate possibilities of living in space and on other planets. 	<p>Teacher will guide students to:</p> <p>Compare and contrast various planets’ characteristics through the use of models, texts, and technology resources.</p> <p>Classify stars by characteristics such as, color, size, temperature, age, etc.</p> <p>Distinguish between comets, asteroids, and meteors focusing on the formation process.</p> <p>Investigate gravity as the force that governs the movements of the planets, solar system, and universe.</p> <p>Simulate how the positions of stars and constellations change throughout the night and year using a planisphere.</p> <p>Differentiate between reflecting and refracting telescopes and their developments through time.</p> <p>Evaluate the accomplishments and contributions of scientists in the field of astronomy.</p> <p>Discuss and describe possibilities of living in space and on other planets by duplicating cycles found on Earth.</p>	<p>Teacher evaluation of:</p> <ul style="list-style-type: none"> <input type="checkbox"/> Student notebooks/journals <input type="checkbox"/> Group projects <input type="checkbox"/> Partner projects <input type="checkbox"/> Individual projects <input type="checkbox"/> Homework <input type="checkbox"/> Class work <input type="checkbox"/> Teacher observations/questions <input type="checkbox"/> Tests/Quizzes <input type="checkbox"/> Independent activities <input type="checkbox"/> Cooperative activities <input type="checkbox"/> written responses <input type="checkbox"/> Teacher demonstration and student observations <input type="checkbox"/> Student demonstrations <input type="checkbox"/> whole class discussion <input type="checkbox"/> Oral presentations <input type="checkbox"/> Oral questions and answers <input type="checkbox"/> Worksheets <input type="checkbox"/> Concept maps/graphic organizer <input type="checkbox"/> Diagrams/charts <input type="checkbox"/> Portfolio <input type="checkbox"/> Rubrics 	<ul style="list-style-type: none"> <input type="checkbox"/> Student textbook <input type="checkbox"/> Instructor textbook <input type="checkbox"/> Textbook resources <input type="checkbox"/> Instructor generated resources <input type="checkbox"/> Internet sites <input type="checkbox"/> Science videos <input type="checkbox"/> Laser disc presentations <input type="checkbox"/> Software programs <input type="checkbox"/> Newspapers and magazines <input type="checkbox"/> Cable in the Classroom <input type="checkbox"/> Lab materials for instructor demonstrations <input type="checkbox"/> Lab materials for student demonstrations <input type="checkbox"/> Lab materials for class activities <input type="checkbox"/> Library/AV resources <input type="checkbox"/> Student developed resources <input type="checkbox"/> Outside presenters <input type="checkbox"/> Community resources

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CORE CONCEPT 3: Populations and Ecosystems

MAJOR OBJECTIVE: Examine living things and their relationships with each other and their environment.

CURRICULUM STANDARD:

State Standard/Student Expectation	Specific Content	Assessments	Resources/Materials
<p>PA Standard 4.6.7.A Explain the flows of energy and matter from organism to organism within an ecosystem.</p> <ul style="list-style-type: none"> • Identify and explain the characteristics of biotic and abiotic. • Describe and explain the adaptations of plants and animals to their environment. • Demonstrate the dependency of living components in the ecosystem on the nonliving components. • Explain energy flow through a food web. • Explain the importance of the predator/prey relationship and how it maintains the balances within ecosystems. • Compare and contrast different biomes and their characteristics. 	<p>Teacher will guide students to:</p> <p>Utilize photographs and other forms of media to identify and explain characteristics of biotic and abiotic factors in different ecosystems.</p> <p>Illustrate plant and animal adaptations using models, texts, and technology resources to explain the reasons for the adaptations.</p> <p>Compare and contrast the dependency of living components on nonliving components in various ecosystems.</p> <p>Link organisms with their food source to develop food webs.</p> <p>Dissect owl pellets to infer the importance of predator/prey relationships and how it balances the ecosystems.</p> <p>Illustrate special features that differentiate one biome from another presented through models, texts, and technology resources</p>	<p>Teacher evaluation of:</p> <ul style="list-style-type: none"> <input type="checkbox"/> Student notebooks/journals <input type="checkbox"/> Group projects <input type="checkbox"/> Partner projects <input type="checkbox"/> Individual projects <input type="checkbox"/> Homework <input type="checkbox"/> Class work <input type="checkbox"/> Teacher observations/questions <input type="checkbox"/> Tests/Quizzes <input type="checkbox"/> Independent activities <input type="checkbox"/> Cooperative activities <input type="checkbox"/> written responses <input type="checkbox"/> Teacher demonstration and student observations <input type="checkbox"/> Student demonstrations <input type="checkbox"/> whole class discussion <input type="checkbox"/> Oral presentations <input type="checkbox"/> Oral questions and answers <input type="checkbox"/> Worksheets <input type="checkbox"/> Concept maps/graphic organizer <input type="checkbox"/> Diagrams/charts <input type="checkbox"/> Portfolio <input type="checkbox"/> Rubrics 	<ul style="list-style-type: none"> <input type="checkbox"/> Student textbook <input type="checkbox"/> Instructor textbook <input type="checkbox"/> Textbook resources <input type="checkbox"/> Instructor generated resources <input type="checkbox"/> Internet sites <input type="checkbox"/> Science videos <input type="checkbox"/> Laser disc presentations <input type="checkbox"/> Software programs <input type="checkbox"/> Newspapers and magazines <input type="checkbox"/> Cable in the Classroom <input type="checkbox"/> Lab materials for instructor demonstrations <input type="checkbox"/> Lab materials for student demonstrations <input type="checkbox"/> Lab materials for class activities <input type="checkbox"/> Library/AV resources <input type="checkbox"/> Student developed resources <input type="checkbox"/> Outside presenters <input type="checkbox"/> Community resources

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<p>PA STANDARD 4.6.7.B Explain the concepts of cycles.</p> <ul style="list-style-type: none"> • Identify and explain cycles within an ecosystem. • Analyze the role of different cycles within an ecosystem. 	<p>Teacher will guide students to:</p> <p>Demonstrate the natural cycles that occur in ecosystems and explain the processes involved in each.</p> <p>Analyze the importance of natural cycles in ecosystems for survival.</p>	<p>Teacher evaluation of:</p> <ul style="list-style-type: none"> <input type="checkbox"/> Student notebooks/journals <input type="checkbox"/> Group projects <input type="checkbox"/> Partner projects <input type="checkbox"/> Individual projects <input type="checkbox"/> Homework <input type="checkbox"/> Class work <input type="checkbox"/> Teacher observations/questions <input type="checkbox"/> Tests/Quizzes <input type="checkbox"/> Independent activities <input type="checkbox"/> Cooperative activities <input type="checkbox"/> written responses <input type="checkbox"/> Teacher demonstration and student observations <input type="checkbox"/> Student demonstrations <input type="checkbox"/> whole class discussion <input type="checkbox"/> Oral presentations <input type="checkbox"/> Oral questions and answers <input type="checkbox"/> Worksheets <input type="checkbox"/> Concept maps/graphic organizer <input type="checkbox"/> Diagrams/charts <input type="checkbox"/> Portfolio <input type="checkbox"/> Rubrics 	<ul style="list-style-type: none"> <input type="checkbox"/> Student textbook <input type="checkbox"/> Instructor textbook <input type="checkbox"/> Textbook resources <input type="checkbox"/> Instructor generated resources <input type="checkbox"/> Internet sites <input type="checkbox"/> Science videos <input type="checkbox"/> Laser disc presentations <input type="checkbox"/> Software programs <input type="checkbox"/> Newspapers and magazines <input type="checkbox"/> Cable in the Classroom <input type="checkbox"/> Lab materials for instructor demonstrations <input type="checkbox"/> Lab materials for student demonstrations <input type="checkbox"/> Lab materials for class activities <input type="checkbox"/> Library/AV resources <input type="checkbox"/> Student developed resources <input type="checkbox"/> Outside presenters <input type="checkbox"/> Community resources

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<p>PA STANDARD 4.6.7.C Explain how ecosystems change over time.</p> <ul style="list-style-type: none"> • Explain how ecosystems change. • Identify the succession stages of a given ecosystem. 	<p>Teacher will guide students to:</p> <p>Differentiate between how nature and humans cause changes in ecosystems.</p> <p>Describe and sequence the stages of succession in the re-growth of an ecosystem from a natural disaster.</p>	<p>Teacher evaluation of:</p> <ul style="list-style-type: none"> <input type="checkbox"/> Student notebooks/journals <input type="checkbox"/> Group projects <input type="checkbox"/> Partner projects <input type="checkbox"/> Individual projects <input type="checkbox"/> Homework <input type="checkbox"/> Class work <input type="checkbox"/> Teacher observations/questions <input type="checkbox"/> Tests/Quizzes <input type="checkbox"/> Independent activities <input type="checkbox"/> Cooperative activities <input type="checkbox"/> written responses <input type="checkbox"/> Teacher demonstration and student observations <input type="checkbox"/> Student demonstrations <input type="checkbox"/> whole class discussion <input type="checkbox"/> Oral presentations <input type="checkbox"/> Oral questions and answers <input type="checkbox"/> Worksheets <input type="checkbox"/> Concept maps/graphic organizer <input type="checkbox"/> Diagrams/charts <input type="checkbox"/> Portfolio <input type="checkbox"/> Rubrics 	<ul style="list-style-type: none"> <input type="checkbox"/> Student textbook <input type="checkbox"/> Instructor textbook <input type="checkbox"/> Textbook resources <input type="checkbox"/> Instructor generated resources <input type="checkbox"/> Internet sites <input type="checkbox"/> Science videos <input type="checkbox"/> Laser disc presentations <input type="checkbox"/> Software programs <input type="checkbox"/> Newspapers and magazines <input type="checkbox"/> Cable in the Classroom <input type="checkbox"/> Lab materials for instructor demonstrations <input type="checkbox"/> Lab materials for student demonstrations <input type="checkbox"/> Lab materials for class activities <input type="checkbox"/> Library/AV resources <input type="checkbox"/> Student developed resources <input type="checkbox"/> Outside presenters <input type="checkbox"/> Community resources

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CURRICULUM STANDARD:

State Standard/Student Expectation	Specific Content	Assessments	Resources/Materials
<p>PA STANDARD 4.7.7.B Explain how species of living organisms adapt to their environment.</p> <ul style="list-style-type: none"> • Explain how an adaptation is an inherited structure or behavior that helps an organism survive and reproduce. • Describe how a particular trait may be selected over time and account for a species' adaptation. • Compare and contrast animals and plants that have very specific survival requirements with those that have more general requirements for survival. • Explain how living things respond to changes in their environment. • Explain how one species may survive an environmental change while another might not. 	<p>Teacher will guide students to:</p> <p>Compare/contrast past and present day pictures of adapted species. (ie: giraffe, penguin)</p> <p>Compare/contrast past and present day pictures of adapted species. (ie: giraffe, penguin)</p> <p>Compare/contrast past and present day pictures of adapted species. (ie: giraffe, penguin)</p> <p>Describe adaptation, migration, and death as response styles of living things to changes in their environments.</p> <p>Describe adaptation, migration, and death as response styles of living things to changes in their environments.</p>	<p>Teacher evaluation of:</p> <ul style="list-style-type: none"> <input type="checkbox"/> Student notebooks/journals <input type="checkbox"/> Group projects <input type="checkbox"/> Partner projects <input type="checkbox"/> Individual projects <input type="checkbox"/> Homework <input type="checkbox"/> Class work <input type="checkbox"/> Teacher observations/questions <input type="checkbox"/> Tests/Quizzes <input type="checkbox"/> Independent activities <input type="checkbox"/> Cooperative activities <input type="checkbox"/> written responses <input type="checkbox"/> Teacher demonstration and student observations <input type="checkbox"/> Student demonstrations <input type="checkbox"/> whole class discussion <input type="checkbox"/> Oral presentations <input type="checkbox"/> Oral questions and answers <input type="checkbox"/> Worksheets <input type="checkbox"/> Concept maps/graphic organizer <input type="checkbox"/> Diagrams/charts <input type="checkbox"/> Portfolio <input type="checkbox"/> Rubrics 	<ul style="list-style-type: none"> <input type="checkbox"/> Student textbook <input type="checkbox"/> Instructor textbook <input type="checkbox"/> Textbook resources <input type="checkbox"/> Instructor generated resources <input type="checkbox"/> Internet sites <input type="checkbox"/> Science videos <input type="checkbox"/> Laser disc presentations <input type="checkbox"/> Software programs <input type="checkbox"/> Newspapers and magazines <input type="checkbox"/> Cable in the Classroom <input type="checkbox"/> Lab materials for instructor demonstrations <input type="checkbox"/> Lab materials for student demonstrations <input type="checkbox"/> Lab materials for class activities <input type="checkbox"/> Library/AV resources <input type="checkbox"/> Student developed resources <input type="checkbox"/> Outside presenters <input type="checkbox"/> Community resources

CONTENT: Grade 5 Science

CORE CONCEPT 3: Populations and Ecosystems

MAJOR OBJECTIVE: Examine living things and their relationships with each other and their environment.

CURRICULUM STANDARD:

State Standard/Student Expectation	Specific Content	Assessments	Resources/Materials
<p>PA STANDARD 4.7.7.C Explain natural or human actions in relation to the loss of species.</p> <ul style="list-style-type: none"> • Identify natural or human impacts that cause habitat loss. • Explain how habitat loss can affect the interaction among species and the population of a species. • Analyze and explain the changes in an animal population over time. • Explain the differences among threatened, endangered and extinct species. • Identify Pennsylvania plants and animals that are on the threatened or endangered list. • Describe state laws passed regarding threatened and endangered species in Pennsylvania. • Explain why one species may be more susceptible to becoming endangered than another species. 	<p>Teacher will guide students to:</p> <p>Describe ways in which nature and man cause habitat destruction.</p> <p>Describe the effects of habitat destruction on biodiversity.</p> <p>Utilize a chart to determine the relationship between predator and prey.</p> <p>Distinguish between threatened, endangered, and extinct species and order the terms of increasing risk of a species vanishing.</p> <p>Research and illustrate threatened or endangered species in their environments.</p> <p>Explain ways humans can help to preserve species and biodiversity.</p> <p>Describe how environmental changes affect species differently.</p>	<p>Teacher evaluation of:</p> <ul style="list-style-type: none"> <input type="checkbox"/> Student notebooks/journals <input type="checkbox"/> Group projects <input type="checkbox"/> Partner projects <input type="checkbox"/> Individual projects <input type="checkbox"/> Homework <input type="checkbox"/> Class work <input type="checkbox"/> Teacher observations/questions <input type="checkbox"/> Tests/Quizzes <input type="checkbox"/> Independent activities <input type="checkbox"/> Cooperative activities <input type="checkbox"/> written responses <input type="checkbox"/> Teacher demonstration and student observations <input type="checkbox"/> Student demonstrations <input type="checkbox"/> whole class discussion <input type="checkbox"/> Oral presentations <input type="checkbox"/> Oral questions and answers <input type="checkbox"/> Worksheets <input type="checkbox"/> Concept maps/graphic organizer <input type="checkbox"/> Diagrams/charts <input type="checkbox"/> Portfolio <input type="checkbox"/> Rubrics 	<ul style="list-style-type: none"> <input type="checkbox"/> Student textbook <input type="checkbox"/> Instructor textbook <input type="checkbox"/> Textbook resources <input type="checkbox"/> Instructor generated resources <input type="checkbox"/> Internet sites <input type="checkbox"/> Science videos <input type="checkbox"/> Laser disc presentations <input type="checkbox"/> Software programs <input type="checkbox"/> Newspapers and magazines <input type="checkbox"/> Cable in the Classroom <input type="checkbox"/> Lab materials for instructor demonstrations <input type="checkbox"/> Lab materials for student demonstrations <input type="checkbox"/> Lab materials for class activities <input type="checkbox"/> Library/AV resources <input type="checkbox"/> Student developed resources <input type="checkbox"/> Outside presenters <input type="checkbox"/> Community resources

CONTENT: Grade 5 Science

CORE CONCEPT 4: Meteorology

MAJOR OBJECTIVE: Describe basic elements and processes of meteorology through identifying factors that determine weather patterns while interpreting weather data and symbols.

CURRICULUM STANDARD:

State Standard/Student Expectation	Specific Content	Assessments	Resources/Materials
<p>PA Standard 3.5.7.C Describe basic elements of meteorology.</p> <ul style="list-style-type: none"> • Explain weather forecasts by interpreting weather data and symbols. • Explain the oceans’ impact on local weather and the climate of a region. • Identify how cloud types, wind directions and barometric pressure changes are associated with weather patterns in different regions of the country. • Explain and illustrate the processes of cloud formation and precipitation. • Describe and illustrate the major layers of the earth’s atmosphere. • Identify different air masses and global wind patterns and how they relate to the weather patterns in different regions of the U.S. 	<p>Teacher will guide students to:</p> <p>Predict weather forecasts using weather data from satellites and maps.</p> <p>Investigate the causes of Earth’s climates.</p> <p>Analyze factors that are used in predicting weather.</p> <p>Explain ways that the amount of water vapor in the air affects the weather.</p> <p>Investigate the composition and characteristics of the atmosphere.</p> <p>Describe and illustrate how the air moves in response to uneven heating of land and water.</p>	<p>Teacher Evaluation of:</p> <ul style="list-style-type: none"> <input type="checkbox"/> Student notebooks/journals <input type="checkbox"/> Group projects <input type="checkbox"/> Partner projects <input type="checkbox"/> Individual projects <input type="checkbox"/> Homework <input type="checkbox"/> Class work <input type="checkbox"/> Teacher observations/questions <input type="checkbox"/> Tests/Quizzes <input type="checkbox"/> Independent activities <input type="checkbox"/> Cooperative activities <input type="checkbox"/> written responses <input type="checkbox"/> Teacher demonstration and student observations <input type="checkbox"/> Student demonstrations <input type="checkbox"/> whole class discussion <input type="checkbox"/> Oral presentations <input type="checkbox"/> Oral questions and answers <input type="checkbox"/> Worksheets <input type="checkbox"/> Concept maps/graphic organizer <input type="checkbox"/> Diagrams/charts <input type="checkbox"/> Portfolio <input type="checkbox"/> Rubrics 	<ul style="list-style-type: none"> <input type="checkbox"/> Student textbook <input type="checkbox"/> Instructor textbook <input type="checkbox"/> Textbook resources <input type="checkbox"/> Instructor generated resources <input type="checkbox"/> Internet sites <input type="checkbox"/> Science videos <input type="checkbox"/> Laser disc presentations <input type="checkbox"/> Software programs <input type="checkbox"/> Newspapers and magazines <input type="checkbox"/> Cable in the Classroom <input type="checkbox"/> Lab materials for instructor demonstrations <input type="checkbox"/> Lab materials for student demonstrations <input type="checkbox"/> Lab materials for class activities <input type="checkbox"/> Library/AV resources <input type="checkbox"/> Student developed resources <input type="checkbox"/> Outside presenters <input type="checkbox"/> Community resources

CONTENT: Grade 5 Science

CORE CONCEPT 5: Geology and Landforms

MAJOR OBJECTIVE: Examine the composition and structure of rocks and the Earth's structure.

CURRICULUM STANDARD:

State Standard/Student Expectation	Specific Content	Assessments	Resources/Materials
<p>PA Standard 3.5.7.A Describe earth features and processes.</p> <ul style="list-style-type: none"> • Describe major layers of the earth. • Describe the processes involved in the creation of geologic features (e.g., folding, faulting, volcanism, sedimentation) and that these processes seen today (e.g., erosion, weathering crustal plate movement) are similar to those in the past. • Describe the processes that formed Pennsylvania geologic structures and resources including mountains, glacial formations, water gaps and ridges. • Explain how the rock cycle affected rock formations in the state of Pennsylvania. • Distinguish between examples of rapid surface changes (e.g., landslides, earthquakes) and slow surface changes(e.g., weathering). • Identify living plants and animals that are similar to fossil forms. 	<p>Teacher will guide students to:</p> <p>Investigate the characteristics of Earth's layers using models, text, and technology resources.</p> <p>Make and utilize models of rock layers and observe the effects of movement on them.</p> <p>Make and utilize models of rock layers and observe the effects of movement on them.</p> <p>Describe the rock cycle, the forces that change rocks and the changes that occur.</p> <p>Explain how different forms of coal are created.</p> <p>Differentiate between rapid and slow surface changes through models and pictures.</p> <p>Examine and compare living plants and animals to their fossil forms using pictures, models, and fossil samples.</p>	<p>Teacher Evaluation of:</p> <ul style="list-style-type: none"> <input type="checkbox"/> Student notebooks/journals <input type="checkbox"/> Group projects <input type="checkbox"/> Partner projects <input type="checkbox"/> Individual projects <input type="checkbox"/> Homework <input type="checkbox"/> Class work <input type="checkbox"/> Teacher observations/questions <input type="checkbox"/> Tests/Quizzes <input type="checkbox"/> Independent activities <input type="checkbox"/> Cooperative activities <input type="checkbox"/> written responses <input type="checkbox"/> Teacher demonstration and student observations <input type="checkbox"/> Student demonstrations <input type="checkbox"/> whole class discussion <input type="checkbox"/> Oral presentations <input type="checkbox"/> Oral questions and answers <input type="checkbox"/> Worksheets <input type="checkbox"/> Concept maps/graphic organizer <input type="checkbox"/> Diagrams/charts <input type="checkbox"/> Portfolio <input type="checkbox"/> Rubrics 	<ul style="list-style-type: none"> <input type="checkbox"/> Student textbook <input type="checkbox"/> Instructor textbook <input type="checkbox"/> Textbook resources <input type="checkbox"/> Instructor generated resources <input type="checkbox"/> Internet sites <input type="checkbox"/> Science videos <input type="checkbox"/> Laser disc presentations <input type="checkbox"/> Software programs <input type="checkbox"/> Newspapers and magazines <input type="checkbox"/> Cable in the Classroom <input type="checkbox"/> Lab materials for instructor demonstrations <input type="checkbox"/> Lab materials for student demonstrations <input type="checkbox"/> Lab materials for class activities <input type="checkbox"/> Library/AV resources <input type="checkbox"/> Student developed resources <input type="checkbox"/> Outside presenters <input type="checkbox"/> Community resources

CONTENT: Grade 5 Science

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MAJOR OBJECTIVE: Examine the composition and structure of rocks and the Earth's structure.

CURRICULUM STANDARD:

State Standard/Student Expectation	Specific Content	Assessments	Resources/Materials
<p>PA Standard 3.5.7.B Recognize earth resources and how they affect everyday life.</p> <ul style="list-style-type: none"> • Identify and locate significant earth resources (e.g., rock types, oil, gas, coal deposits) in Pennsylvania. • Explain the processes involved in the formation of oil and coal in Pennsylvania. • Explain the value and uses of different earth resources (e.g., selected minerals, ores, fuel, sources, agricultural uses). • Compare the locations of human settlements as related to available resources. 	<p>Teacher will guide students to:</p> <p>Illustrate earth resources on Pennsylvanian map.</p> <p>Explain how different forms of coal are created.</p> <p>Evaluate the usefulness of different earth resources.</p> <p>Infer the relationship between location of human settlements and availability of resources.</p>	<p>Teacher Evaluation of:</p> <ul style="list-style-type: none"> <input type="checkbox"/> Student notebooks/journals <input type="checkbox"/> Group projects <input type="checkbox"/> Partner projects <input type="checkbox"/> Individual projects <input type="checkbox"/> Homework <input type="checkbox"/> Class work <input type="checkbox"/> Teacher observations/questions <input type="checkbox"/> Tests/Quizzes <input type="checkbox"/> Independent activities <input type="checkbox"/> Cooperative activities <input type="checkbox"/> written responses <input type="checkbox"/> Teacher demonstration and student observations <input type="checkbox"/> Student demonstrations <input type="checkbox"/> whole class discussion <input type="checkbox"/> Oral presentations <input type="checkbox"/> Oral questions and answers <input type="checkbox"/> Worksheets <input type="checkbox"/> Concept maps/graphic organizer <input type="checkbox"/> Diagrams/charts <input type="checkbox"/> Portfolio <input type="checkbox"/> Rubrics 	<ul style="list-style-type: none"> <input type="checkbox"/> Student textbook <input type="checkbox"/> Instructor textbook <input type="checkbox"/> Textbook resources <input type="checkbox"/> Instructor generated resources <input type="checkbox"/> Internet sites <input type="checkbox"/> Science videos <input type="checkbox"/> Laser disc presentations <input type="checkbox"/> Software programs <input type="checkbox"/> Newspapers and magazines <input type="checkbox"/> Cable in the Classroom <input type="checkbox"/> Lab materials for instructor demonstrations <input type="checkbox"/> Lab materials for student demonstrations <input type="checkbox"/> Lab materials for class activities <input type="checkbox"/> Library/AV resources <input type="checkbox"/> Student developed resources <input type="checkbox"/> Outside presenters <input type="checkbox"/> Community resources

CONTENT: Grade 5 Science

CORE CONCEPT 6: Properties of Light and Sound

MAJOR OBJECTIVE: Discover the nature of light and sound and the interaction with matter.

CURRICULUM STANDARD:

State Standard/Student Expectation	Specific Content	Assessments	Resources/Materials
<p>PA Standard 3.4.7.B Relate energy sources and transfers to heat and temperature.</p> <ul style="list-style-type: none"> • Identify and describe sound changes in moving objects. • Know that the sun is a major source of energy that emits wavelengths of visible light, infrared and ultraviolet radiation. 	<p>Teacher will guide students to:</p> <p>Investigate the Doppler effect.</p> <p>Compare and contrast various forms of electromagnetic radiation given off by the Sun.</p>	<p>Teacher Evaluation of:</p> <ul style="list-style-type: none"> <input type="checkbox"/> Student notebooks/journals <input type="checkbox"/> Group projects <input type="checkbox"/> Partner projects <input type="checkbox"/> Individual projects <input type="checkbox"/> Homework <input type="checkbox"/> Class work <input type="checkbox"/> Teacher observations/questions <input type="checkbox"/> Tests/Quizzes <input type="checkbox"/> Independent activities <input type="checkbox"/> Cooperative activities <input type="checkbox"/> written responses <input type="checkbox"/> Teacher demonstration and student observations <input type="checkbox"/> Student demonstrations <input type="checkbox"/> whole class discussion <input type="checkbox"/> Oral presentations <input type="checkbox"/> Oral questions and answers <input type="checkbox"/> Worksheets <input type="checkbox"/> Concept maps/graphic organizer <input type="checkbox"/> Diagrams/charts <input type="checkbox"/> Portfolio <input type="checkbox"/> Rubrics 	<ul style="list-style-type: none"> <input type="checkbox"/> Student textbook <input type="checkbox"/> Instructor textbook <input type="checkbox"/> Textbook resources <input type="checkbox"/> Instructor generated resources <input type="checkbox"/> Internet sites <input type="checkbox"/> Science videos <input type="checkbox"/> Laser disc presentations <input type="checkbox"/> Software programs <input type="checkbox"/> Newspapers and magazines <input type="checkbox"/> Cable in the Classroom <input type="checkbox"/> Lab materials for instructor demonstrations <input type="checkbox"/> Lab materials for student demonstrations <input type="checkbox"/> Lab materials for class activities <input type="checkbox"/> Library/AV resources <input type="checkbox"/> Student developed resources <input type="checkbox"/> Outside presenters <input type="checkbox"/> Community resources

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CURRICULUM STANDARD:

State Standard/Student Expectation	Specific Content	Assessments	Resources/Materials
<p>PA Standard 3.4.7.C Identify and explain the principles of force and motion.</p> <ul style="list-style-type: none"> • Explain how convex and concave mirrors and lens change light images. • Explain how sound and light travel in waves of differing speeds, sizes and frequencies. 	<p>Teacher will guide students to:</p> <p>Simulate how convex and concave mirrors and lenses reflect and refract light.</p> <p>Simulate how sound and light waves travel using various materials.</p>	<p>Teacher Evaluation of:</p> <ul style="list-style-type: none"> <input type="checkbox"/> Student notebooks/journals <input type="checkbox"/> Group projects <input type="checkbox"/> Partner projects <input type="checkbox"/> Individual projects <input type="checkbox"/> Homework <input type="checkbox"/> Class work <input type="checkbox"/> Teacher observations/questions <input type="checkbox"/> Tests/Quizzes <input type="checkbox"/> Independent activities <input type="checkbox"/> Cooperative activities <input type="checkbox"/> written responses <input type="checkbox"/> Teacher demonstration and student observations <input type="checkbox"/> Student demonstrations <input type="checkbox"/> whole class discussion <input type="checkbox"/> Oral presentations <input type="checkbox"/> Oral questions and answers <input type="checkbox"/> Worksheets <input type="checkbox"/> Concept maps/graphic organizer <input type="checkbox"/> Diagrams/charts <input type="checkbox"/> Portfolio <input type="checkbox"/> Rubrics 	<ul style="list-style-type: none"> <input type="checkbox"/> Student textbook <input type="checkbox"/> Instructor textbook <input type="checkbox"/> Textbook resources <input type="checkbox"/> Instructor generated resources <input type="checkbox"/> Internet sites <input type="checkbox"/> Science videos <input type="checkbox"/> Laser disc presentations <input type="checkbox"/> Software programs <input type="checkbox"/> Newspapers and magazines <input type="checkbox"/> Cable in the Classroom <input type="checkbox"/> Lab materials for instructor demonstrations <input type="checkbox"/> Lab materials for student demonstrations <input type="checkbox"/> Lab materials for class activities <input type="checkbox"/> Library/AV resources <input type="checkbox"/> Student developed resources <input type="checkbox"/> Outside presenters <input type="checkbox"/> Community resources

V. EXPECTED LEVELS OF ACHIEVEMENT

A. Students are expected to reach the fifth grade level of achievement in science. These skills include all of those noted in the specific content area of this curriculum.

B. Grading system for all fifth grade science classes is as follows:

Grading Scale	
A	90-100
B	80-89
C	70-79
D	60-69
F	0-59

C. Each student's grade will be determined at the conclusion of each marking period.