Oxford Area School District Science Scope and Sequence - Quarter 1:

Grade 3

Biologic Science

3.1.3A

Organisms & Cells

- Describe characteristics of living things that help to identify and classify them.
- Describe the basic needs of living things and their dependence on light, food, air, water, and shelter.
- Illustrate how plants and animals go through predictable life cycles that include birth, growth, development, reproduction, and death.
- Identify the structures in plants that are responsible for food production, support, water transport, reproduction, growth, and protection.

*Science as Inquiry

Biologic Science

3.1.3B

Genetics

- Understand that plants and animals closely resemble their parents.
- PATTERNS Identify characteristics that appear in both parents and offspring.

*Science as Inquiry

Biologic Science

3.1.3C

Evolution

- Recognize that plants survive through adaptations, such as stem growth towards light and root growth downward in response to gravity.
- Recognize that many plants and animals can survive harsh environments because of seasonal behaviors (e.g. hibernation, migration, trees shedding leaves).
- Describe animal characteristics that are necessary for survival.
- CONSTANCY AND CHANGE Recognize that fossils provide us with information about living things that inhabited the Earth long ago

*Science as Inquiry

Oxford Area School Science Scope and Sequence – Quarter 2:

Grade 3

Physical Science

3.2.3A

Chemistry

- Differentiate between properties of objects such as size, shape, and weight and properties of materials that make up the objects such as color, texture, and hardness.
- Differentiate between the three states of matter, classifying a substance as a solid, liquid, or gas.
- Recognize that all objects and materials in the world are made of matter.
- Demonstrate how heating and cooling may cause changes in the properties of materials including phase changes.
- Use basic reactions to demonstrate observable changes in properties of matter (e.g., burning, cooking).
- CONSTANCY AND CHANGE Recognize that everything is made of matter.

*Science as Inquiry

Physical Science 3.2.3B Physics

- Explain how movement can be described in many ways.
- Explore energy's ability to cause motion or create change.
- Explore how energy can be found in moving objects, light, sound, and heat.
- Explore temperature changes that result from the addition or removal of heat.
- Identify and classify objects and materials that are conductors or insulators of electricity.
- Identify and classify objects and materials as magnetic or non-magnetic.
- Recognize that light travels in a straight line until it strikes an object or travels from one material to another.
- ENERGY Recognize that light from the sun is an important source of energy for living and nonliving systems and some source of energy is needed for all organisms to stay alive and grow.

*Science as Inquiry

Earth & Space Science 3.3.3A Earth Structure

- Explain and give examples of the ways in which **soil** is formed.
- Identify the physical properties of minerals and demonstrate how minerals can be tested for these different physical properties.
- Connect the various forms of precipitation to the weather in a particular place and time.
- Explain how air temperature, moisture, wind speed and direction, and precipitation make up the weather in a particular place and time.

*Science as Inquiry

Earth & Space Science 3.3.3B Origin & Evolution of the Universe

- Relate the rotation of the earth and day/night, to the apparent movement of the sun, moon, and stars across the sky.
- Describe the changes that occur in the observable shape of the moon over the course of a month.

*Science as Inquiry

Oxford Area School District Science Scope and Sequence – Quarter 3:

Grade 3

Technology & Engineering Education 3.4.3A Scope of Technology

- Identify how the natural made world and the human made world are different.
- Identify that some systems are found in nature and some systems are made by humans.
- Describe how various relationships exist between **technology** and other fields.

Technology & Engineering Education 3.4.3B Technology & Society

- Describe how using technology can be good or bad.
- Explain how materials are re-used or recycled.
- Identify and define products made to meet individual needs versus wants.
- Illustrate how people have made tools to provide food, clothing, and shelter.

Technology & Engineering Education 3.4.3C T & E Design

- Recognize **design** is a creative process and everyone can design solutions to problems
- Explain why the **design** process requires creativity and consideration of all ideas.
- Recognize that all products and **systems** are subject to failure; many products and systems can be fixed.

Technology & Engineering Education 3.4.3D Abilities for a Technological World

- Identify people's needs and wants and define some problems that can be solved through the design process.
- Observe, analyze and document how simple **systems** work.
- Collect information about everyday products and systems by asking questions.

Technology & Engineering Education 3.4.3E The Designed World

- Identify the technologies that support and improve quality of life.
- Identify some processes used in agriculture that require different procedures, products, or systems.
- Recognize that tools, machines, products, and systems use energy in order to do work.
- Recognize that information and communication technology is the transfer of messages among people and/or machines over distances through the use of technology.
- Understand that transportation has many parts that work together to help people travel.
- Explain how manufacturing systems design and produce products in quantity.
- Recognize that people live, work, and go to school in buildings which are different types of structures.

Oxford Area School District Science Scope and Sequence – Quarter 4:

Grade 3

Environment & Ecology 4.1.3 Ecology

- Differentiate between the living and non-living components in an **environment.**
- Identify sources of energy.
- Identify **organisms** that are dependent on one another in a given **ecosystem.**
- Define **habitat** and explain how a change in **habitat** affects an **organism.**
- Identify changes in the **environment** over time.

*Science as Inquiry

Environment & Ecology 4.2.3 Watersheds & Wetlands

- Define the term **watershed**.
- Identify the **watersheds** in which you reside.
- Identify plants and animals found in a **wetland.**

*Science as Inquiry

Environment & Ecology 4.3.3 Natural Resources

- Identify the **natural resources** used to make various products.
- Identify local **natural resources.**

*Science as Inquiry

Environment & Ecology 4.4.3 Agriculture & Society

- Identify Pennsylvania crops that provide food for the table and **fiber** for **textiles.**
- Explain how **agriculture** meets the basic needs of humans.
- Use scientific inquiry to investigate what animals and plants need to grow.
- Identify **technology** used in **agriculture**.
- Identify tools and machinery used in agricultural processes.

*Science as Inquiry

Environment & Ecology 4.5.3 Humans & the Environment

- Identify resources humans take from the **environment** for their survival.
- Define the term **pest** and identify various plants and animals that humans may call **pests.**
- Identify different types of pollution and their sources.
- Describe how waste is generated. Identify and propose a solution for a waste issue in the school setting (e.g., litter in the hallway).

*Science as Inquiry

***Science as Inquiry**

- Distinguish between scientific fact and opinion.
- Ask questions about objects, organisms, and events.
- Understand that all scientific investigations involve asking and answering questions and comparing the answer with what is already known.
- Plan and conduct a simple investigation and understand that different questions require different kinds of investigations.
- Use simple equipment (tools and other technologies) to gather data and understand that this allows scientists to collect more information than relying only on their senses to gather information.
- Use data/evidence to construct explanations and understand that scientists develop explanations based on their evidence and compare them with their current scientific knowledge.
- Communicate procedures and explanations giving priority to evidence and understanding that scientists make their results public, describe their investigations so they can be reproduced, and review and ask questions about the work of other scientists.

Science Curriculum – Grade 3-Growth and Development of Organisms

Big Idea –

Organisms have characteristic structures, functions, and behaviors that allow them to grow, reproduce, and die.

Essential Question-

How do the structures of organisms enable life's functions?

Concepts/Standards	Science and Engineering Practices Disciplinary Core Ideas Crosscutting Concepts	Resources	Assessments
• 3.1.3.A Develop models to describe that organisms have unique and diverse life cycles but all have in common birth, growth, reproduction, and death	• Reproduction is essential to the continued existence of every kind of organism. Plants and animals have unique and diverse life cycles. • Patterns of change can be used to make predictions. • Develop models to describe phenomena.	HMH Into Science	Unit quizzes and tests

Vocabulary: organisms, diverse, life cycles, reproduction

Science Curriculum-Grade 3-Social Interactions and Group Behavior			
Big Idea –Many species, live in groups which can increase the chances of survival for individuals and their relatives.			
Essential Question- How do organisms interact in groups so as to benefit individuals?			
Concepts/Standards	**Science and Engineering Practices Disciplinary Core Ideas Crosscutting Concepts**	**Resources**	**Assessments**
• 3.1.3.B Construct an argument that some animals form groups that help members survive	• Being part of a group helps animals obtain food, defend themselves, and cope with changes. Groups may serve different functions and vary dramatically in size. • Cause and effect relationships are routinely identified and used to explain change. • Construct an argument with evidence, data, and/or a model.	HMH Into Science	Unit quizzes and tests
Vocabulary: organism, microscopic organism, reproduce, survive			

Science Curriculum-Grade 3-Inheritance of Traits			
Big Idea – Offspring resemble, but are not identical to, their parents due to traits being passed from one generation to the next via genes.			
Essential Question- How are the characteristics of one generation related to the previous generation?			
Concepts/Standards	**Science and Engineering Practices Disciplinary Core Ideas Crosscutting Concepts**	**Resources**	**Assessments**
• 3.1.3.C Analyze and interpret data to provide evidence that plants and animals have traits inherited from parents and that variation of these traits exists in a group of similar organisms.	• Analyze and interpret data to make sense of phenomena using logical reasoning. • Many characteristics of organisms are inherited from their parents. • Different organisms vary in how they look and function because they have different inherited information. • Different organisms vary in how they look and function because they have different inherited information.	HMH Into Science	Unit quizzes and tests
Vocabulary: inherited, variations			

Science Curriculum– Grade 3-Variation of Traits

- **Big Idea –** Variation among individuals of the same species can be explained by both genetic and environmental factors.

Essential Question- Why do individuals of the same species vary in how they look, function, and behave?

Concepts/Standards	Science and Engineering Practices Disciplinary Core Ideas Crosscutting Concepts	Resources	Assessments
• 3.1.3.D Use evidence to support the explanation that traits can be influenced by the environment.	• Use evidence (e.g., observations, patterns) to support an explanation. • Other characteristics result from individuals' interactions with the environment, which can range from diet to learning. Many characteristics involve both inheritance and environment. • The environment also affects the traits that an organism develops	HMH Into Science	Unit quizzes and tests

Vocabulary: traits, inheritance

Science Curriculum – Grade 3-Evidence of Common Ancestry and Diversity			
Big Idea – Comparisons between species provides evidence that species evolved from common ancestors which explains the similarities and differences between species.			
Essential Question- What evidence shows that different species are related?			
Concepts/Standards	**Science and Engineering Practices** **Disciplinary Core Ideas** **Crosscutting Concepts**	**Resources**	**Assessments**
• 3.1.3.E Analyze and interpret data from fossils to provide evidence of the organisms and the environments in which they lived long ago.	• Analyze and interpret data to make sense of phenomena using logical reasoning. • Some kinds of plants and animals that once lived on Earth are no longer found anywhere. • Observable phenomena exist from very short to very long time periods.	HMH Into Science	Unit quizzes and tests
Vocabulary: fossils, organisms, environments			

Science Curriculum– Grade 3- Natural Selection			
Big Idea – In any particular environment individuals with particular traits may be more likely than others to survive and produce offspring.			
Essential Question- How does genetic variation among organisms affect survival and reproduction?			
Concepts	**Science and Engineering Practices Disciplinary Core Ideas Crosscutting Concepts**	**Resources**	**Assessments**
• 3.1.3.F Use evidence to construct an explanation for how the variations in characteristics among individuals of the same species may provide advantages in surviving, finding mates, and reproducing.	• Use evidence (e.g., observations, patterns) to construct an explanation. • Sometimes the differences in characteristics between individuals of the same species provide advantages in surviving, finding mates, and reproducing. • Cause and effect relationships are routinely identified and used to explain change.	HMH Into Science	Unit quizzes and tests
Vocabulary: variations, species, survival, mates, reproduce			

Science Curriculum– Grade 3-Adaptation			
Big Idea – When the environment changes, some individuals in a population may have traits that provide a reproductive advantage which over many generations can change the make-up of a population.			
Essential Question- How does the environment influence populations of organisms over multiple generations?			
Concepts/Standards	**Science and Engineering Practices Disciplinary Core Ideas Crosscutting Concepts**	**Resources**	**Assessments**
• 3.1.3.G Construct an argument with evidence that in a particular habitat some organisms can survive well, some survive less well, and some cannot survive at all.	• Construct an argument with evidence. • For any particular environment, some kinds of organisms survive well, some survive less well, and some cannot survive at all. • Cause and effect relationships are routinely identified and used to explain change.	HMH Into Science	Unit quizzes and tests
Vocabulary: habitat, survival			

Science Curriculum – Grade 3-Biodiversity and Humans			
Big Idea – Humans depend on biodiversity, the variety of species and ecosystems, for resources and human actions can impact the diversity of species.			
Essential Question- What is biodiversity, how do humans affect it, and how does it affect humans?			
Concepts/Standards	**Science and Engineering Practices Disciplinary Core Ideas Crosscutting Concepts**	**Resources**	**Assessments**
• 3.1.3.H Make a claim supported by evidence about the merit of a solution to a problem caused when the environment changes and the types of plants and animals that live there may change.	• Make a claim about the merit of a solution to a problem by citing relevant evidence about how it meets the criteria and constraints of the problem. • When the environment changes in ways that affect a place's physical characteristics, temperature, or availability of resources, some organisms survive and reproduce, others move to new locations. • Populations live in a variety of habitats and change in those habitats affects the organisms living there.	HMH Into Science	Unit quizzes and tests
Vocabulary: systems, biodiversity, changes			

Science Curriculum – Grade 3-Forces and Motion			
Big Idea – A change in motion of interacting objects can be explained and predicted by forces.			
Essential Question- How can one predict an object's continued motion, changes in motion, or stability?			
Concepts/Standards	**Science and Engineering Practices Disciplinary Core Ideas Crosscutting Concepts**	**Resources**	**Assessments**
• 3.2.3.A Make and communicate observations and/or measurements of an object's motion to provide evidence that a pattern can be used to predict future motion.	• Make observations and/or measurements to produce data to serve as the basis for evidence for an explanation of a phenomenon or test a design solution. • Science findings are based on recognizing patterns. • The patterns of an object's motion in various situations can be observed and measured; when that past motion exhibits a regular pattern, future motion can be predicted from it. • Patterns of change can be used to make predictions.	HMH Into Science	Unit quizzes and tests
Vocabulary: motion, pattern, balanced forces, unbalanced forces, prediction			

Science Curriculum – Grade 3-Forces and Motion			
Big Idea – A change in motion of interacting objects can be explained and predicted by forces.			
Essential Question- How can one predict an object's continued motion, changes in motion, or stability?			
Concepts/Standards	**Science and Engineering Practices Disciplinary Core Ideas Crosscutting Concepts**	**Resources**	**Assessments**
• 3.2.3.B Plan and conduct an investigation to provide evidence of the effects of balanced and unbalanced forces on the motion of an object.	• Plan and conduct an investigation collaboratively to produce data to serve as the basis for evidence, using fair tests in which variables are controlled and the number of trials considered. • Science investigations use a variety of methods, tools, and techniques • Ask questions that can be investigated based on patterns such as cause and effect relationships. • Cause and effect relationships are routinely identified.	HMH Into Science	Unit quizzes and tests
Vocabulary: motion, pattern, balanced forces, unbalanced forces			

Science Curriculum – Grade 3-Types of Interactions			
Big Idea – All forces between objects, regardless of size or direction, arise from only a few types of interactions.			
Essential Question- What underlying forces explain the variety of interactions observed?			
Concepts/Standards	**Science and Engineering Practices Disciplinary Core Ideas Crosscutting Concepts**	**Resources**	**Assessments**
• 3.2.3.C Ask questions to determine cause and effect relationships of electric or magnetic interactions between two objects not in contact with each other.	• Ask questions that can be investigated based on patterns such as cause and effect relationships. • Electric, and magnetic forces between a pair of objects do not require that the objects be in contact. The sizes of the forces in each situation depend on the properties of the objects and their distances apart and, for forces between two magnets, on their orientation relative to each other. • Cause and effect relationships are routinely identified, tested, and used to explain change.	HMH Into Science	Unit quizzes and tests
Vocabulary: electric interactions, magnetic interactions			

Science Curriculum – Grade 3-Types of Interactions			
Big Idea – All forces between objects, regardless of size or direction, arise from only a few types of interactions.			
Essential Question-What underlying forces explain the variety of interactions observed?			
Concepts/Standards	**Science and Engineering Practices Disciplinary Core Ideas Crosscutting Concepts**	**Resources**	**Assessments**
• 3.2.3.D Define a simple design problem that can be solved by applying scientific ideas about magnets.	• Define a simple problem that can be solved through the development of a new or improved object or tool. • Electric, and magnetic forces between a pair of objects do not require that the objects be in contact. The sizes of the forces in each situation depend on the properties of the objects and their distances apart and, for forces between two magnets, on their orientation relative to each other • Scientific discoveries about the natural world can often lead to new and improved technologies, which are developed through the engineering design process.	HMH Into Science	Unit quizzes and tests
Vocabulary: design, magnetic forces, magnet, forces, interaction, solution			

Subject Curriculum – Grade 3- Weather and Climates			
Big Idea – Weather and climate are shaped by complex interactions involving sunlight, the ocean, the atmosphere, ice, landforms, and living things.			
Essential Question- What regulates weather and climate?			
Concepts/Standards	**Science and Engineering Practices Disciplinary Core Ideas Crosscutting Concepts**	**Resources**	**Assessments**
• 3.3.3.A Represent data in tables and graphical displays to describe typical weather conditions expected during a particular season.	• Represent data in tables and various graphical displays (bar graphs and pictographs) to reveal patterns that indicate relationships. • Scientists record patterns of the weather across different times and areas so that they can make predictions about what kind of weather might happen next. • Patterns of change can be used to make predictions.	HMH Into Science	Unit quizzes and tests
Vocabulary: weather, season, climates, regions			

Subject Curriculum – Grade 3- Weather and Climates			
Big Idea – Weather and climate are shaped by complex interactions involving sunlight, the ocean, the atmosphere, ice, landforms, and living things.			
Essential Question-What regulates weather and climate?			
Concepts/Standards	**Science and Engineering Practices Disciplinary Core Ideas Crosscutting Concepts**	**Resources**	**Assessments**
• 3.3.3.B Obtain and combine information to describe climates in different regions of the world	• Obtain and combine information from books and other reliable media to explain phenomena. • Climate describes a range of an area's typical weather conditions and the extent to which those conditions vary over years. • Patterns of change can be used to make predictions.	HMH Into Science	Unit quizzes and tests
Vocabulary: weather, season, climates, regions			

Subject Curriculum – Grade 3- Natural Hazards

Big Idea – Natural processes can cause sudden or gradual changes to Earth's systems, some of which may adversely affect humans.

Essential Question-How do natural hazards affect individuals and societies?

Concepts/Standards	Science and Engineering Practices Disciplinary Core Ideas Crosscutting Concepts	Resources	Assessments
• 3.3.3.C Make a claim supported by evidence about the merit of a design solution that reduces the impacts of a weather-related hazard.	• Make a claim about the merit of a solution to a problem by citing relevant evidence about how it meets the criteria and constraints of the problem. A variety of natural hazards result from natural processes. Humans cannot eliminate natural hazards but can take steps to reduce their impacts • Cause and effect relationships are routinely identified, tested, and used to explain change. • Engineers improve existing technologies or develop new ones to increase their benefits (e.g., better artificial limbs), decrease known risks (e.g., seatbelts in cars), and meet societal demands (e.g., cell phones) • Science affects everyday life.	HMH Into Science	Unit quizzes and tests

Vocabulary: hazard, atmosphere, data, weather