

**TUNKHANNOCK AREA SCHOOL DISTRICT
SCIENCE CURRIULUM
GRADE 2**

Chapter 4 (How Living Things Grow and Change)

- 3.1.2.C.2. Explain that living things can only survive if their needs are being met.
- 3.1.2.A.3. Identify similarities and difference in the life cycles of plants and animals.
- 3.1.3.A.2. Describe the basic needs of living things and their dependence on light, food, air, water, and shelter.

- Students will be able to use their learning independently to:***
- Describe how organisms change as they grow and mature.
 - Understand the living things can reproduce, and non living things cannot reproduce.
 - Know that living things have offspring that resemble their parents.

Big Idea(s)	Essential Questions
<ul style="list-style-type: none"> • Living things have different life cycles. A life cycle is the way a living thing grows and changes. Some plants grow from seeds. Young plants eventually grow into adult plants. Some animals hatch from eggs and some grow inside of their mothers and are born live. Some young animals look like their parents. Other young animals, such as young insects, look different from their parents. 	<ul style="list-style-type: none"> • How do sea turtles grow and change? • What is the life cycle of a dragonfly? • What is the life cycle of a horse? • How are young animals like their parents? • What is the life cycle of a bean plant? • How are young plants like their parents? • How do people grow and change?
Knowledge	Skills
<ul style="list-style-type: none"> • Life cycle • Nymph • Seed coat • Germinate • Seedling 	<ul style="list-style-type: none"> • Identify life cycles of different organisms. • Describe how organisms change and grow.

Chapter 1 (All About Plants)

- 3.1.2.A.3. Identify similarities and difference in the life cycles of plants and animals.
- 3.1.2.A.5. Explain how difference parts of a plant work together to make the organism function.
- 3.1.3.A.2. Describe the basic needs of living things and their dependence on light, food, air, water, and shelter.

Students will be able to use their learning independently to:

- Know the basic needs of all things.
- Identify the main parts of plants.
- Understand the correlation between the size of an organism and the amount of food, water, space, and shelter it needs.

Big Idea(s)	Essential Questions
<ul style="list-style-type: none">• Plants need water, air, sunlight, space, and nutrients to live. Parts such as roots, stems, leaves, flowers, and seeds to help plants survive. Plants can be grouped into two kinds, those with flowers and those without flowers. Plants have adaptations that help them live in different environments such as the woods, prairies, or desert. These adaptations may help plants live in hot, cold, wet, or dry environments.	<ul style="list-style-type: none">• What are the parts of a plant?• How are seeds scattered?• How are plants grouped?• How are some woodland plants adapted?• How are some prairie plants adapted?• How are some desert plants adapted?• How are some marsh plants adapted?
Knowledge	Skills
<ul style="list-style-type: none">• Nutrients• Stem• Flower• Roots• Leaves• Environment• Adapted• Prairie	<ul style="list-style-type: none">• Identify types of habitats.• Identify which animals coexist in each habitat.• Describe what occurs to an organism when its habitat is altered.

Chapter 2 (All About Animals)

- 3.1.7.A.1 Describe the similarities and differences of physical characteristics in diverse organisms.
- 3.1.2.C.2. Explain that living things can only survive if their needs are being met.

Students will be able to use their learning independently to:

- Compare and contrast structural characteristics of plants and animals.
- Compare the characteristics of things that live on land, in the water, and in the air.
- Know some characteristics of the vertebrate groups.
- Identify the characteristics of things that live on land, in the water and in the air.

Big Idea(s)	Essential Questions
<ul style="list-style-type: none">• Animals different from one another in many ways. Some animals have backbones and some animals do not have backbones. Mammals, birds, fish, reptiles, and amphibians all have backbones. Insects and other animals, such as octopuses, do not have backbones. Animals live in different places and are adapted to their environments in different ways.	<ul style="list-style-type: none">• What are some animals with backbones?• What are some ways mammals are adapted?• What are some ways birds are adapted?• What are some ways fish are adapted?• What are some ways reptiles are adapted?• What are some ways amphibians are adapted?• What are some animals without backbones?
Knowledge	Skills
<ul style="list-style-type: none">• Mammals• Reptiles• Amphibians• Birds• Fish• Camouflage• Gills• Insects	<ul style="list-style-type: none">• Compare and contrast structural characteristics of plants and animals.• Compare the characteristics of things that live on land, in the water, and in the air.• Know some characteristics of the vertebrate groups.• Identify the characteristics of things that live on land, in the water and in the air.

Chapter 3 (How Plants and Animals Live Together)

- 3.1.2.C.4. See Science as Inquiry in the Introduction for grade level indicators.
- 4.1.2.A. Describe how a plant or animal is dependent on living or non living things.
- 4.1.2.D. Identify differences in living things.
- 4.1.2.E. Identify how living things survive changes in their environment.

Students will be able to use their learning independently to:

- Make connections and inferences based on text and prior knowledge.
- Understand that there is an interdependency of plants and animals that can be shown in a food web.
- Know that plants and animals are dependent upon each other for survival.

Big Idea(s)	Essential Questions
<ul style="list-style-type: none">• Living things help each other in different ways. Animals eat plants and/or other animals for food. Animals may get shelter from plants such as trees or they may use smaller plant parts to build nests. Animals may provide protection to plants and other animals.	<ul style="list-style-type: none">• What do plants and animals need?• How do plants and animals get food in a grassland?• How do plants and animals get food in an ocean?• What can cause a food web to change?
Knowledge	Skills
<ul style="list-style-type: none">• Producer• Consumer• Food chain• Predator• Prey	<ul style="list-style-type: none">• Make connections and inferences based on text and prior knowledge.• Understand that there is an interdependency of plants and animals that can be shown in a food web.• Know that plants and animals are dependent upon each other for survival.

Chapter 5 (Natural Resources)

- 4.3.2.A. Describe the jobs/hobbies people have in the community that relate to natural resources.
- 4.3.2.B. Identify products and by-products derived from renewable resources.
- 3.1.2.C.3. Consistency and Change – Describe some plants and animals that once lived on Earth, but cannot be found anymore. Compare them to now living things that resemble them in some way.
- 4.4.2.A. Identify agriculture as a living system and that food and fiber originate from plants and animals.
- 4.4.2.B. Explain how agriculture supports jobs in Pennsylvania.
- 4.5.2.A Identify the natural resources used to make various products.
- 4.5.2.C. Identify how people can reduce pollution.
- 4.5.2.D. Describe how people can help the environment by reducing, reusing, recycling, and composting.

Students will be able to use their learning independently to:

- Identify a variety of tools that scientists and technologists use.
- Know selected resources used by people for food, water, and shelter are limited and necessary for their survival.
- Recognize that the Earth is composed of all different types of solid materials that come in all sizes.
- Know that selected resources used by people for water, food, and shelter are limited and necessary for their survival.
- Understands that processes of weathering and erosion.
- Know that human beings cause changes in their environment, and these changes can be positive or negative?

Big Idea(s)	Essential Questions
<ul style="list-style-type: none"> • Sunlight, water, and air are natural resources that can never be used up. Oil and coal are natural resources that can be used up. Rocks and minerals are natural resources that come from Earth. Plants are natural resources used for food, shelter, and clothing. 	<ul style="list-style-type: none"> • What are natural resources? • What are rocks and soil like? • How do people use plants? • How does Earth change? • How can people help protect Earth?
Knowledge	Skills
<ul style="list-style-type: none"> • Natural resource • Boulder • Sand • Minerals • Erosion • Weathering 	<ul style="list-style-type: none"> • Identify a variety of tools that scientists and technologists use. • Know selected resources used by people for food, water, and shelter are limited and necessary for their survival. • Recognize that the Earth is composed of all different types of solid materials that come in all sizes. • Know that selected resources used by people for water, food, and

- Pollution
- Recycle

- shelter are limited and necessary for their survival.
- Understands that processes of weathering and erosion.
 - Know that human beings cause changes in their environment, and these changes can be positive or negative?

Chapter 6 (Weather and Seasons)

- 3.3.2.A.4. Explore and describe that water exists in solid (ice) and liquid (water) form. Explain and illustrate evaporation and condensation.
- 3.3.2.B.1. Observe and record location of the Sun and the Moon in the sky over a day; changes in the appearance of the Moon over a month.

Students will be able to use their learning independently to:

- Know that weather conditions occur in patterns over time.
- Recognize that most natural events occur in patterns.
- Recognize that weather conditions occur in patterns over time.

Big Idea(s)	Essential Questions
<ul style="list-style-type: none"> • Weather can be hot or cold, wet or dry. Rain, sleet, hail, and snow are types of wet weather. A drought can occur when rain does not fall. The water cycle follows the flow of water from Earth, to the atmosphere, and back to Earth again. Weather changes throughout the seasons of spring, summer, fall, and winter. Some types of bad weather include thunderstorms, tornadoes, and hurricanes. 	<ul style="list-style-type: none"> • What are some kinds of weather? • What is the water cycle? • What is spring? • What is summer? • What is fall? • What is winter? • What are some kinds of bad weather?
Knowledge	Skills
<ul style="list-style-type: none"> • Water cycle • Evaporate • Condense • Migrate • Hibernate • Lightning • Tornado • Hurricane 	<ul style="list-style-type: none"> • Know that weather conditions occur in patterns over time. • Recognize that most natural events occur in patterns. • Recognize that weather conditions occur in patterns over time.

Chapter 8 (Properties of Matter)

- 3.2.2.A.3 Demonstrate how heating and cooling may cause changes in the properties of materials.
- 3.2.2.A.4. Experiment and explain what happens when two or more substances are combined.
- 3.2.2.A.5. Recognize that everything is made of matter.

Students will be able to use their learning independently to:

- Use metric and standard English units to measure distance, volume, mass, and temperature.
- Know that common objects are composed of parts that are too small to be seen without magnification.
- Identify ways objects can be grouped according to similarities or differences of their physical characteristics.
- Identify examples of solids, liquids, and gases.
- Recognize that not all materials respond to the same way to outside forces.
- Understand ways energy and matter interact.

Big Idea(s)	Essential Questions
<ul style="list-style-type: none">• Matter is anything that has mass and takes up space. Matter is made of parts that are very small. Matter can take the form of a solid, a liquid, or a gas. The properties and state of matter can change. Different types of matter can be mixed together.	<ul style="list-style-type: none">• What is matter?• What are the states of matter?• How can matter be changed?• How can cooling and heating change matter?
Knowledge	Skills
<ul style="list-style-type: none">• Mass• Property• States of matter• Solid• Liquid• Gas• Mixture	<ul style="list-style-type: none">• Use Metric and Standard English units to measure distance, volume, mass, and temperature.• Know that common objects are composed of parts that are too small to be seen without magnification.• Identify ways objects can be grouped according to similarities or differences of their physical characteristics.• Identify examples of solids, liquids, and gases.• Recognize that not all materials respond to the same way to outside forces.• Understand ways energy and matter interact.

Chapter 9 (Energy)

- 3.2.2.B.6. 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.
- 3.2.2.B.2. Explore and describe how different forms of energy cause changes.

Students will be able to use their learning independently to:

- Know that a thermometer measure the amount of heat absorbed by an object.
- Recognize that it is the Sun that supplies heat and light energy to Earth.
- Understand the relationship of food to the need for energy for daily activities.
- Name different head sources.
- Understand the ways energy and matter interact.

Big Idea(s)	Essential Questions
<ul style="list-style-type: none"> • Energy is anything that can cause change or do work. Solar energy is energy from the Sun. Energy can be stored in food. Heat, light, and electricity are other kinds of energy. 	<ul style="list-style-type: none"> • What is energy? • How do living things use energy? • What are some sources of heat? • How does light move? • What are other kinds of energy?
Knowledge	Skills
<ul style="list-style-type: none"> • Energy • Solar energy • Source • Fuel • Conductor • Reflect • Shadow 	<ul style="list-style-type: none"> • Know that a thermometer measure the amount of heat absorbed by an object. • Recognize that it is the Sun that supplies heat and light energy to Earth. • Understand the relationship of food to the need for energy for daily activities. • Name different head sources. • Understand the ways energy and matter interacts.

Chapter 10 (Forces and Motion)

- 3.2.2.A.3. Demonstrate how heating and cooling may cause changes in the properties of materials.
- 3.2.2.B.2. Explore and describe how different forms of energy cause changes.

Students will be able to use their learning independently to:

- Know that objects exhibit different kinds of motion.
- Know that the amount and direction of the force exerted on an object.
- Identify relationships between force and motion.
- Identifies different heat sources.
- Knows examples of simple machines and understands how they change effort.
- Explain ways that simple machines make work easier.
- Recognize that objects may be moved by being pushed and pulled with magnets.

Big Idea(s)	Essential Questions
<p>• A force is a push or a pull. An object at rest will not move and a moving object will not stop moving unless a force is applied to it. Gravity is a force that pulls objects toward the ground. Friction is a force that acts opposite to the direction that an object is moving. A magnet applies a force that attracts or repels certain other objects. Whenever a force causes an object to move some distance, work is done.</p>	<ul style="list-style-type: none"> • Know that objects exhibit different kinds of motion. • Know that the amount and direction of the force exerted on an object. • Identify relationships between force and motion. • Identifies different heat sources. • Knows examples of simple machines and understands how they change effort. • Explain ways that simple machines make work easier. • Recognize that objects may be moved by being pushed and pulled with magnets.
Knowledge	Skills
<ul style="list-style-type: none"> • Motion • Force • Gravity • Work • Friction • Simple machine • Attract • Repel 	<ul style="list-style-type: none"> • Compare the amount of pushing and pulling required to move objects of various sizes across the floor. • Know that objects exhibit different kinds of motion. • Recognize that the amount and direction of the force exerted on an object determines how much the object will move. • Identify the relationship between force and motion. • Identify different heat sources. • Knows examples of simple machines and understands how they

	change effort.
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Chapter 7 (Fossils and Dinosaurs)

- 3.1.2.C.3. Consistency and Change – Describe some plants and animals that once lived on Earth, but cannot be found anymore. Compare them to now living things that resemble them in some way.

Students will be able to use their learning independently to:

- Sort objects according to their characteristics.
- Describe how fossils are formed.
- Explain how fossils give information about plants and animals that lived on Earth long ago.
- Identify different dinosaurs that lived on Earth long ago.
- Explain how new discoveries are made by paleontologists.

Big Idea(s)	Essential Questions
<ul style="list-style-type: none"> • We learn about the past by studying fossils. Scientists who study fossils are called paleontologist. Some fossils are of plants and animals that are extinct, or no longer living on Earth. Dinosaurs were animals that lived long ago. All dinosaurs are now extinct. Paleontologists found fossil eggs from the dinosaur Oviraptor. The paleontologists studied the fossil of eggs to learn more about the life of the Oviraptor. 	<ul style="list-style-type: none"> • How can we learn about the past? • What can we learn from fossils? • What were dinosaurs like? • What are some new discoveries?
Knowledge	Skills
<ul style="list-style-type: none"> • Fossil • Paleontologists • Extinct • Dinosaurs 	<ul style="list-style-type: none"> • Sort objects according to their characteristics. • Describe how fossils are formed. • Explain how fossils give information about plants and animals that lived on Earth long ago. • Identify different dinosaurs that lived on Earth long ago. • Explain how new discoveries are made by paleontologists.

Chapter 12 (Earth and Space Science)

- 3.3.2.B.1. Observe and record location of the Sun and the Moon in the sky over a day; changes in the appearance of the Moon over a month. Observe, describe, and predict seasonal patterns of sunrise and sunset.

Students will be able to use their learning independently to:

- Know that people use scientific processes including hypothesis, making inferences, and recording and communicating data when exploring the natural world.
- Know that the Sun supplies heat and light energy to Earth.
- Know that each time the Earth completes one rotation, one day has passed and that this takes 24 hours.
- Know that the appearance of sunrise and sunset is due to the rotation of Earth every 24 hours.
- Recognize that the stars and planets are always in the sky.
- Know that the Moon moves around the Earth, the Earth moves around the Sun, and the Moon is visible when it reflects the light from the Sun.
- Identify there are many objects in the sky that are only visible at night.

Big Idea(s)	Essential Questions
<ul style="list-style-type: none"> • Earth spins, or rotates, on its axis. It also revolves, or moves in an orbit, around the Sun. Earth’s movements cause day and night as well as the seasons of the year. As Earth moves around the Sun, people on Earth can see different constellations throughout the year. 	<ul style="list-style-type: none"> • What is the Sun? • What causes day and night? • What causes seasons to change? • What can you see in the night sky? • Why does the Moon seem to change? • What is the solar system?
Knowledge	Skills
<ul style="list-style-type: none"> • Axis • Rotation • Orbit • Constellation • Crater • Phase • Solar system 	<ul style="list-style-type: none"> • Know that people use scientific processes including hypothesis, making inferences, and recording and communicating data when exploring the natural world. • Know that the Sun supplies heat and light energy to Earth. • Know that each time the Earth completes one rotation, one day has passed and that this takes 24 hours. • Know that the appearance of sunrise and sunset is due to the rotation of Earth every 24 hours. • Recognize that the stars and planets are always in the sky. • Know that the Moon moves around the Earth, the Earth moves

around the Sun, and the Moon is visible when it reflects the light from the Sun.

- Identify there are many objects in the sky that are only visible at night.

Chapter (Aquatic Life)

- 4.2.2.C. Identify and describe the basic needs of plants and animals in an aquatic ecosystem.
- 4.1.2.A. Describe how a plant or an animal is dependent on living and nonliving things in an aquatic habitat.
- 4.1.2.C. Identify sources of energy in an aquatic habitat.
- 4.4.2.C. Examine life cycles of plants and animals in an aquatic habitat.

Students will be able to use their learning independently to:

- Identify plants and animals in an aquatic ecosystem.
- Identify needs of plants and animals in an aquatic ecosystem.
- Recognize sources of energy in an aquatic ecosystem.
- Understand different life cycles in aquatic ecosystems.

Big Idea(s)	Essential Questions
<ul style="list-style-type: none">• Aquatic environments are dependent on several factors. These factors are: temperature, current, sunlight, and plant and animal life.	<ul style="list-style-type: none">• What types of aquatic environments are there?• Which animals are found in these environments?• What plants are found in these environments?• What is the life cycle of animals in these environments?• What is the life cycle of plants in these environments?
Knowledge	Skills
<ul style="list-style-type: none">• Algae• Lily• Seaweed• Kelp• Oxygenation• Fish• Mammals• Amphibians• Reptiles• Ocean• Stream• Lake• Pond	<ul style="list-style-type: none">• Understand that people influence the quality of life in these areas.• Identify ways that changes in technology have ruined and improved aquatic ecosystems.• Identify ways that technology affects aquatic life.• Identify and describe several different aquatic environments.

• Swamp	
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