Grade 2 curriculum roadmap
Physical Science

Module- FOSS Solids and Liquids (Next Gen)

Investigation #	Focus Question	Description	Objectives	# of sessions	Vocabulary	IN Standard #	IN Standard Text	Cross Cutting Concepts	Practices	Notes
1 Part 1	How can solid objects be described?	After identifying three states of matter (solid, liquid, gas), students observe a variety of solid objects. After a period of free exploration, students describe properties of the objects and develop vocabulary in order to communicate their thinking about those properties.	Solid is one state or phase of matter. Objects are described and identified by their properties.	Active Inv. 1 Session Reading 1 Session	solids, liquids, gases, matter, objects, observe, properties, flat, straight, points, soft, rubbery, bendy, flexible, rigid, hard, rough, smooth, textures, curved, colors, shapes,	2.PS.1, SEPS.3, SEPS.8	Plan and conduct an investigation to describe and classify different kinds of materials by their observable properties.	Patterns Systems and system models Structure and function	Planning and carrying out investigations Obtaining, evaluating, and communicating information	
									Obtaining, evaluating, and communicating information	
1 Part 2	What are solid objects made of?	Students observe eight similar rectangular objects that vary in the material from which they are made (fabric, plastic, rubber, wood, metal, paper, leather, ceramic). Students examine the objects used in Part 1, as well as classroom objects, to determine their materials.	Objects are made of one or more materials.	Active Inv. 1 Session Reading 1 Session	material, wood, paper, fabric, metal, plastic, leather, ceramic,	2.PS.1, SEPS.3, SEPS.4	Plan and conduct an investigation to describe and classify different kinds of materials by their observable properties.	Patterns Systems and system models Structure and function	Planning and carrying out investigations Analyzing and interpreting data	

Grade 2 curriculum roadmap
Physical Science

Module- FOSS Solids and Liquids (Next Gen)

Investigation #	Focus Question	Description	Objectives	# of sessions	Vocabulary	IN Standard #	IN Standard Text	Cross Cutting Concepts	Practices	Notes
1 Part 3	Can two or more objects have the same property?	Students group solid objects in a variety of ways to discover that many objects can have the same property and that different objects can be made of the same material.	Solids can be sorted by their properties.	Active Inv. 1 Session	group, grouping, sort	2.PS.1, SEPS.3, SEPS.6, SEPS.7	Plan and conduct an investigation to describe and classify different kinds of materials by their observable properties.	Patterns Systems and system models Structure and function	Planning and carrying out investigations Constructing explanations Engaging in argument from evidence	
1 Part 4	What are the properties of successful towers?	Students use solid materials to build towers (at least 45 cm tall), using the best objects and the best materials at each level of the tower to provide strength and stability. After building towers, students take the structures apart and use the same materials to construct bridges.	Some properties of solid objects and materials make them appropriate for tower construction. Engineers use knowledge of material properties to design structures that solve problems.	Active Inv. 3 Sessions	engineers, build, tower,	2.PS.4, SEPS.2, SEPS.3, SEPS.6	Analyze data obtained from testing different materials to determine which materials have the properties that are best suited for an intended purpose.	Patterns Systems and system models Structure and function	Developing and using models Planning and carrying out investigations Constructing explanations and designing solutions	
1 Part 5	Are there solid objects outdoors?	Students take a field trip to discover solid objects in the schoolyard environment. They sort the found objects into two groups—natural and human-made.	Natural and human-made objects occur outdoors.	Active Inv. 1–2 Sessions Assessment 1 Session	natural, human-made	2.PS.1, SEPS.1, SEPS.3, SEPS.7	Plan and conduct an investigation to describe and classify different kinds of materials by their observable properties.	Patterns Systems and system models Structure and function	Planning and carrying out investigations Analyzing and interpreting data Engaging in argument from evidence	not essential to standards

Grade 2 curriculum roadmap
Physical Science

Module- FOSS Solids and Liquids (Next Gen)

Investigation #	Focus Question	Description	Objectives	# of sessions	Vocabulary	IN Standard #	IN Standard Text	Cross Cutting Concepts	Practices	Notes
2 Part 1	How are liquids different from each other?	Students working at a learning center investigate seven different liquids to develop the concept of liquid. They tip, swirl, shake, roll, and otherwise investigate the liquids in plastic bottles: plain water, corn syrup, liquid dish soap, liquid hand soap, cooking oil, fabric softener (or laundry starch), and water with color.	Liquid is one common state of matter. Liquids move freely in containers.	Active Inv. 1 Session	liquids, pours, flows, shakes, bubbles, foam, thick, thin	2.PS.1, SEPS.1, SEPS.3, SEPS.8	Plan and conduct an investigation to describe and classify different kinds of materials by their observable properties.	Patterns Cause and effect Scale, proportion, and quantity	Asking questions Planning and carrying out investigations Obtaining, evaluating, and communicating information	
2 Part 2	How can liquids be described?	Students observe the seven liquids and describe their properties in their own words. Their descriptive language is used as a springboard to develop precise vocabulary for properties of liquids. Vocabulary is supported by posters and practiced with liquid-properties card activities.	Liquids have many properties that help identify them.	Active Inv. 1 Session	transparent, translucent, viscous, has color, colorless, oil, syrup, fabric softener, starch, dish soap, hand soap	2.PS.1, SEPS.6, SEPS.7	Plan and conduct an investigation to describe and classify different kinds of materials by their observable properties.	Patterns Cause and effect Scale, proportion, and quantity	Constructing explanations Engaging in argument from evidence	

Grade 2 curriculum roadmap
Physical Science

Module- FOSS Solids and Liquids (Next Gen)

Investigation #	Focus Question	Description	Objectives	# of sessions	Vocabulary	IN Standard #	IN Standard Text	Cross Cutting Concepts	Practices	Notes
2 Part 3	How do liquids change in containers?	Students pour a measured volume (one vial) of water in different containers. They observe that liquids fill different containers to different heights and that liquids always have flat, level surfaces. Students practice these concepts with representational tasks: recording the shape, location, and appearance of liquid in a bottle as the bottle rotates; and sequencing images of a bottle of liquid as it falls onto its side.	Liquids take the shapes of their containers. The surfaces of liquids are flat and level.	Active Inv. 1–2 Sessions Reading 1 Session	level, surface, gravity	2.PS.1, SEPS.2, SEPS.3, SEPS.4, SEPS.5, SEPS.6, SEPS.8	Plan and conduct an investigation to describe and classify different kinds of materials by their observable properties.	Patterns Cause and effect Scale, proportion, and quantity	Developing and using models Planning and carrying out investigations Analyzing and interpreting data Using mathematics and computational thinking Constructing explanations Obtaining, evaluating, and communicating information	not essential to standards-but critical for real-world application
2 Part 4	Where are liquids outdoors?	Students search their schoolyard for puddles. If they find puddles, they observe the water closely and describe its properties. Students try to make a puddle by choosing a likely site and pouring water. In the process, they learn two more key characteristics of liquids: they pour and flow.	Liquids pour and flow.	Active Inv. 1 Session Assessment 1 Session	puddle, prediction	2.PS.1, SEPS.1, SEPS.3, SEPS.4	Plan and conduct an investigation to describe and classify different kinds of materials by their observable properties.	Patterns Cause and effect Scale, proportion, and quantity	Asking questions Planning and carrying out investigations Analyzing and interpreting data	not essential to standards

Grade 2 curriculum roadmap
Physical Science

Module- FOSS Solids and Liquids (Next Gen)

Investigation #	Focus Question	Description	Objectives	# of sessions	Vocabulary	IN Standard #	IN Standard Text	Cross Cutting Concepts	Practices	Notes
3 Part 1	Are these materials solid or liquid?	Students work at learning centers with solid materials representing five particle sizes: cornmeal, rice, and three different kinds of beans. Students investigate the properties of the materials, one at a time, by pouring them from one container to another.	Solid materials can occur as masses of small particles. A mass of particulate matter can form piles and support a more dense object on its surface.	Active Inv. 1 Session	cornmeal, mung beans, lima beans, rice, pinto beans, funnel, scoop, piles, grains, powder, particles, different sizes, smallest, largest,	2.PS.1, SEPS.3, SEPS.4, SEPS.6, SEPS.7	Plan and conduct an investigation to describe and classify different kinds of materials by their observable properties.	Patterns Cause and effect	Planning and carrying out investigations Analyzing and interpreting data Constructing explanations Engaging in argument from evidence	not essential to standards
3 Part 2	How can mixtures of particles be separated?	Students use screens of three sizes to separate a mixture of five particulate materials: cornmeal, rice, mung beans, pinto beans, and lima beans.	Particulate solids can be separated by size (with screens).	Active Inv. 1 Session	mixture, separated, screens, mix	2.PS.1, SEPS.3, SEPS.2, SEPS.4, SEPS.6, SEPS.8	Plan and conduct an investigation to describe and classify different kinds of materials by their observable properties.	Patterns Cause and effect	Planning and carrying out investigations Developing and using models Analyzing and interpreting data Constructing explanations Obtaining, evaluating, and communicating information	not essential to standards
3 Part 3	How do particles of solids move in bottles?	Students use funnels to put four particulate solid materials into clear bottles with caps. They observe how the particulate materials look, sound, and move when they shake and roll the bottles. Students compare the properties of particulate solid materials to liquids.	Masses of particulate matter can pour. The surface of a mass of particles is not flat and level.	Active Inv. 1 Session		2.PS.1, SEPS.3, SEPS.4, SEPS.6, SEPS.7	Plan and conduct an investigation to describe and classify different kinds of materials by their observable properties.	Patterns Cause and effect	Planning and carrying out investigations Analyzing and interpreting data Constructing explanations Engaging in argument from evidence	not essential to standards

Grade 2 curriculum roadmap
Physical Science

Module- FOSS Solids and Liquids (Next Gen)

Investigation #	Focus Question	Description	Objectives	# of sessions	Vocabulary	IN Standard #	IN Standard Text	Cross Cutting Concepts	Practices	Notes
3 Part 4	What is a general rule for using screens to separate a mixture of small objects?	Students use representations of screens of different mesh sizes to determine which screens can be used to separate mixtures of beads of two sizes. The concepts of solid and liquid are reinforced with a reading.	Particulate solids can be separated by size (with screens).	Active Inv. 1 Session Reading 1 Session	model	SEPS.2, SEPS.4, SEPS.6, SEPS.8		Patterns Cause and effect	Developing and using models Analyzing and interpreting data Constructing explanations Obtaining, evaluating, and communicating information	not essential to standards
3 Part 5	Are there little pieces of solid material outdoors?	Students go outdoors to search for particulate solid materials. They compare the behaviors of the particulate materials with water and observe differences in their appearances when poured on a flat surface.	Particulate matter occurs naturally in the outdoors. Masses of particulate matter can pour. The surface of a mass of particles is not flat and level.	Active Inv. 1 Session Reading 1 Session Assessment 1 Session		2.PS.1, SEPS.3, SEPS.4, SEPS.6	Plan and conduct an investigation to describe and classify different kinds of materials by their observable properties.	Patterns Cause and effect	Planning and carrying out investigations Analyzing and interpreting data Constructing explanations	not essential to standards
4 Part 1	What happens when solids are mixed with water?	Students investigate mixtures made of water and familiar solid materials. They observe and discuss the changes that occur immediately and set the mixtures aside for a day. They observe the mixtures, note changes, and graph the changes. Students attempt to return the solids to their starting conditions by drying.	Some solids change when mixed with water; others do not. Some solids dissolve in water. Water mixtures can be separated using evaporation.	Active Inv. 3 Sessions	mixture, changed, dark, disappear, bigger, reversible, evaporates, crystal	2.PS.2, SEPS.1, SEPS.3, SEPS.4, SEPS.6	Predict the result of combining solids and liquids in pairs. Mix, observe, gather, record, and discuss evidence of whether the result may have different properties than the original materials.	Cause and effect	Asking questions Planning and carrying out investigations Analyzing and interpreting data Constructing explanations	

Grade 2 curriculum roadmap
Physical Science

Module- FOSS Solids and Liquids (Next Gen)

Investigation #	Focus Question	Description	Objectives	# of sessions	Vocabulary	IN Standard #	IN Standard Text	Cross Cutting Concepts	Practices	Notes
4 Part 2	What happens when liquids are mixed with water?	Students add water to bottles of familiar liquids. They observe changes that occur immediately, then tip the bottles gently, and finally shake them vigorously. Students observe and record the results of the mixing after a day of settling.	Some liquids mix with water; others form layers.	Active Inv. 2 Sessions Reading 1 Session	layers, float, sink	2.PS.2, SEPS.1, SEPS.4, SEPS.6	Predict the result of combining solids and liquids in pairs. Mix, observe, gather, record, and discuss evidence of whether the result may have different properties than the original materials.	Cause and effect Energy and matter Stability and change	Planning and carrying out investigations Analyzing and interpreting data Constructing explanations	
4 Part 3	Is toothpaste solid or liquid?	Students apply their knowledge of solids and liquids to determine if toothpaste is solid or liquid. Students observe its behavior in water before and after shaking. They let the mixture settle and observe again. They let a sample of the mixture evaporate and observe the results before reaching a conclusion.	Some materials are mixtures of solids and liquids.	Active Inv. 3 Sessions		SEPS.1, SEPS.3, SEPS.4, SEPS.6, SEPS.7, SEPS.8		Cause and effect	Asking questions Planning and carrying out investigations Analyzing and interpreting data Constructing explanations Engaging in argument from evidence Obtaining, evaluating, and communicating information	not essential to standards

Grade 2 curriculum roadmap
Physical Science

Module- FOSS Solids and Liquids (Next Gen)

Investigation #	Focus Question	Description	Objectives	# of sessions	Vocabulary	IN Standard #	IN Standard Text	Cross Cutting Concepts	Practices	Notes
4 Part 4	How do properties of materials change when they are heated or cooled?	Students use a hot-water bath to see if they can change small samples of ice, margarine, and chocolate. They find that heat can melt some materials. They put liquids in a freezer to find that some materials freeze in the cold.	Melting occurs when material changes from solid to liquid. Freezing occurs when material changes from liquid to solid. Heat causes materials to melt; cold causes them to freeze. Some changes are reversible; some changes are irreversible.	Active Inv. 2 Sessions Reading 1 Sessions	hot, cold, heated, melting, freezing	2.PS.3, SEPS.3, SEPS.4, SEPS.6, SEPS.8	Construct an argument with evidence that some changes caused by heating and cooling can be reversed and some cannot.	Cause and effect	Planning and carrying out investigations Analyzing and interpreting data Constructing explanations Obtaining, evaluating, and communicating information	
4 Part 5	What happens when you mix water with solid plant material collected outdoors?	Students collect materials outdoors and mix them with water to see if they can make “tea.” Students look for changes in the color and clarity of the water as evidence that something from the solid material is mixed with the water.	Water can dissolve materials from natural solids found in the outdoor environment.	Active Inv. 2 Sessions Assessment 1 Sessions		2.PS.3, SEPS.3, SEPS.4	Construct an argument with evidence that some changes caused by heating and cooling can be reversed and some cannot.	"Cause and effect Energy and matter Stability and change"	Planning and carrying out investigations Analyzing and interpreting data	

Grade 2 curriculum roadmap
Earth Science

Module Title: Air and Weather (FOSS 3rd Ed)

Investigation #	Focus Question	Description	Objectives	# of Sessions	Vocabulary	IN Standard #	IN Standard Text	Cross cutting Concepts	Practices	Notes
1 Part 1	What can Air do?	Students work with objects to see how objects can be moved by and through air.	1. Air is a gas and is all around us. 2. Air is matter and takes up space. 3. Air makes objects move. 4. Air moves from place to place. Moving Air is wind.	1 active	air, matter, gases, move, blow	SEPS.1, SEPS.3		Cause and Effect	Asking Questions and Defining Problems, Planning and Carrying out Investigations	not essential to standards
1 Part 2	How does a parachute use air?	Students construct and observe parachutes dropping through air. They think about how air slows the descent of the parachute.	1. Air is a gas and is all around us. 2. Air resistance affects how things move.	1-2 active sessions 1 reading session	air resistance, push, parachute, wind	SEPS.1, SEPS.3, SEPS.2		Cause and Effect, System and System Models	Asking Questions and Defining Problems, Planning and Carrying out Investigations, Developing and Using Models	not essential to standards
1 Part 3	What happens when air is pushed into a smaller space?	Students use syringes to investigate air. They discover that air can be compressed and that air under pressure can push objects around.	1. Air is matter and takes up space. 2. Air can be compressed. 3. The pressure from compressed air can move things, including water.	1 active	barrel, compress, plunger, pressure, syringe, system, tube	SEPS.1, SEPS.3, SEPS.2		Cause and Effect, System and System Models	Asking Questions and Defining Problems, Planning and Carrying out Investigations, Developing and Using Models	not essential to standards
1 Part 4	How can water be used to show that air takes up space?	Students put together tubes, a bottle, water, a rubber stopper, and two syringes to create a system. They add water and use air pressure to push the water around the system.	1. Air is matter and takes up space. 2. The pressure from compressed air can move things, including water.	2 active	bubbles	SEPS.1, SEPS.3, SEPS.2		Cause and Effect, System and System Models	Asking Questions and Defining Problems, Planning and Carrying out Investigations, Developing and Using Models	not essential to standards
1 Part 5	How can compressed air be used to make a balloon rocket?	Students set up a balloon rocket system and find out how far the air in the balloon will propel the system along a flight line.	1. Air can be compressed. 2. The pressure from compressed air can move things, including water.	1 active session 1 assessment section	rocket, distance	SEPS.1, SEPS.3, SEPS.2		Cause and Effect, System and System Models	Asking Questions and Defining Problems, Planning and Carrying out Investigations, Developing and Using Models	not essential to standards
2 Part 1	What is the weather today?	The class shares what they know about the weather and how it relates to air. Rotating class meteorologists begin recording daily weather observations on a class calendar. Students use symbols to indicate five basic types of weather.	1. Weather describes conditions in the air outside. 2. Meteorologists are scientists who study the weather.	1-2 sessions to introduce, one for each student to be meteorologist	meteorologist, overcast, partly cloudy, rainy, record, snowy, sunny, symbol, weather, weather conditions	2.ESS.1, SEPS.4, SEPS.7	Record detailed weather observations, including cloud cover, cloud type, and type of precipitation on a daily basis over a period of weeks and correlate observations to the time of year. Chart and graph collected data.	Patterns, Systems and System Models	Analyzing and Interpreting Data, Engaging in Argument from Evidence, Science Knowledge is Based on Empirical Evidence	

Grade 2 curriculum roadmap
Earth Science

Module Title: Air and Weather (FOSS 3rd Ed)

Investigation #	Focus Question	Description	Objectives	# of Sessions	Vocabulary	IN Standard #	IN Standard Text	Cross cutting Concepts	Practices	Notes
2 Part 2	What does a thermometer tell us about the weather?	Students learn to use a thermometer and take turns measuring and recording the temperature. They construct a model thermometer and practice reading various temperatures.	1. Temperature describes how hot or cold the air is. 2. Temperature is measured with a thermometer. 3. The unit used to measure temperature is degrees Celsius (C) or degrees Farenheit (F).	1 active session	cold, cool, degrees Celsius, degrees Farenheit, hot, measure, temperature, thermometer, warm, weather instrument	2.ESS.1, SEPS.4, SEPS.7	Record detailed weather observations, including cloud cover, cloud type, and type of precipitation on a daily basis over a period of weeks and correlate observations to the time of year. Chart and graph collected data.	Patterns, Systems and System Models	Analyzing and Interpreting Data, Engaging in Argument from Evidence, Science Knowledge is Based on Empirical Evidence	
2 Part 3	What types of clouds are in the sky today?	Students observe and compare several types of clouds and discuss how they move across the sky.	1. There are three main types of clouds: cirrus, cumulus, and stratus. 2. Clouds are made of liquid water drops that fall to Earth as rain. 3. Wind moves clouds in the sky.	1 active session 1 reading session	cirrus, cloud, cumulus, describe, stratus	2.ESS.1, SEPS.4, SEPS.7	Record detailed weather observations, including cloud cover, cloud type, and type of precipitation on a daily basis over a period of weeks and correlate observations to the time of year. Chart and graph collected data.	Patterns, Systems and System Models	Analyzing and Interpreting Data, Engaging in Argument from Evidence, Science Knowledge is Based on Empirical Evidence	

Grade 2 curriculum roadmap
Earth Science

Module Title: Air and Weather (FOSS 3rd Ed)

Investigation #	Focus Question	Description	Objectives	# of Sessions	Vocabulary	IN Standard #	IN Standard Text	Cross cutting Concepts	Practices	Notes
2 Part 4	Where does the rain come from and where does it go?	The class discusses the kinds of clouds that bring rain or snow and natural sources of water. Students use a rain gauge to measure rain or snowfall. They are introduced to evaporation and condensation.	1. Clouds are made of water drops that fall to Earth as rain. 2. Water is in the air as a gas that we can't see. 3. Rain gauges measure how much rain or snow has fallen. 4. Natural sources of water include streams, rivers, lakes (fresh water), and the ocean (salt water).	1-2 active sessions 1 reading session 1 assessment session	condensation, evaporation, rain gauge, water vapor	2.ESS.1 2.ESS.4, SEPS.4, SEPS.7	Record detailed weather observations, including cloud cover, cloud type, and type of precipitation on a daily basis over a period of weeks and correlate observations to the time of year. Chart and graph collected data. Obtain information to identify where water is found on Earth and that it can be solid or liquid.	Patterns, Systems and System Models	Analyzing and Interpreting Data, Engaging in Argument from Evidence, Science Knowledge is Based on Empirical Evidence	
3 Part 1	How can bubbles be used to observe the wind?	Students use bubble wands to blow bubbles outdoors. They investigate how the air moves bubbles in a variety of locations around the school building.	1. Bubbles are filled with air. 2. Wind is moving air. 3. Bubbles can show the changing direction and speed of the wind.	1 active session	direction	SEPS.1		Cause and Effect	Asking Questions and Defining Problems	not essential for standards but encouraged to support wind observations
3 Part 2	How strong is the wind today?	Students go outdoors to feel and observe the wind. They are introduced to a descriptive wind scale and an anemometer.	1. Meteorologists use wind scales to describe the strength of the wind. Meteorologists use anemometers to measure the speed of the wind.	1 active session	anemometer, calm, gentle breeze, moderate breeze, strong breeze, wind speed	Although 2.ESS.1 doesn't specify wind conditions as weather observations, it should be included. SEPS.4, SEPS.7	Record detailed weather observations, including cloud cover, cloud type, and type of precipitation on a daily basis over a period of weeks and correlate observations to the time of year. Chart and graph collected data.	Patterns, Systems and System Models	Analyzing and Interpreting Data, Engaging in Argument from Evidence, Science Knowledge is Based on Empirical Evidence	

Grade 2 curriculum roadmap
Earth Science

Module Title: Air and Weather (FOSS 3rd Ed)

Investigation #	Focus Question	Description	Objectives	# of Sessions	Vocabulary	IN Standard #	IN Standard Text	Cross cutting Concepts	Practices	Notes
3 Part 3	How can pinwheels be used to observe the wind?	Students construct a pinwheel and observe how it operates when they blow on it, move it through the air, and take it outdoors in the wind. They compare the action of the pinwheel to the class anemometer.	1. Meteorologists use anemometers to measure the speed of the wind. 2. A pinwheel provides evidence about how fast the wind is blowing.	2 active sessions	pinwheel	SEPS.1		Cause and Effect	Asking Questions and Defining Problems	not essential to standards, but encouraged to support wind observations. The focus of this lesson is not to build a pinwheel. So, I suggest using pinwheels made by the teacher or buy them from the dollar store. That allows this lesson to be done in one session.
3 Part 4	What does a wind vane tell us about the wind?	Students learn about wind vanes, instruments used to indicate wind direction. Students compare the movement of the wind vanes to that of bubbles and clouds.	1. Meteorologists use wind vanes to observe teh direction of the wind. 2.A wind vane points in the direction the wind is coming from.	1-2 active sessions 1 reading session	east, north, south, west, wind vane	SEPS.1		Cause and Effect	Asking Questions and Defining Problems	not essential to standards, but strongly encouraged to support the wind observations. The focus of this lesson is not to build a wind vane. So, I suggest the teacher make the wind vane ahead of time. That allows this lesson to be done in one session with one reading session.
3 Part 5	What weather conditions are good for kite flying?	Students construct kites. They use the anemometer and wind vane to determine the best location and direction for flying kites.	1. Wind lifts kites up into the sky. 2. An anemometer can give evidence that there is a good wind for kite flying. 3. A wind vane points in the direction the wind is coming from.	2 active sessions 1 assessment session	kite	SEPS.1		Cause and Effect	Asking Questions and Defining Problems	not essential to standards, but strongly encouraged to support the wind observations.

Grade 2 curriculum roadmap
Earth Science

Module Title: Air and Weather (FOSS 3rd Ed)

Investigation #	Focus Question	Description	Objectives	# of Sessions	Vocabulary	IN Standard #	IN Standard Text	Cross cutting Concepts	Practices	Notes
4 Part 1	How can we compare the number of days of different kinds of weather?	Students organize and graph the class weather data recorded over a period of 4 weeks. The class will continue recording the weather on the calendar and graph the following month.	1. Weather conditions change over time. 2. Weather observations can be organized and used to make comparisons.	1-2 active sessions plus daily observations	graph	2.ESS.1, SEPS.4, SEPS.7	Record detailed weather observations, including cloud cover, cloud type, and type of precipitation on a daily basis over a period of weeks and correlate observations to the time of year. Chart and graph collected data.	Patterns, Systems and System Models	Analyzing and Interpreting Data, Engaging in Argument from Evidence, Science Knowledge is Based on Empirical Evidence	
4 Part 2	What does the Moon look like at different times during a month?	Students discuss their observations of the day and night sky, including any changes they have discovered in the Moon's appearance and location. Weather at night is compared to weather during the day.	1. Weather occurs at night as well as during the day. 2. The Moon can be seen sometimes at night and sometimes during the day. It looks different every day, but looks the same again about every 4 weeks. 3.There are more stars in the sky than anyone can easily count. 4. The Sun and Moon can be observed moving across the sky;we see them at different locations in the sky depending on the time of day or night.	3 active sessions over one month, 1 reading session	change, day Moon, night, pattern, star, Sun	SEPS.4, SEPS.7		Patterns, Systems and System Models	Analyzing and Interpreting Data, Engaging in Argument from Evidence, Science Knowledge is Based on Empirical Evidence	not essential for standards

Grade 2 curriculum roadmap
Earth Science

Module Title: Air and Weather (FOSS 3rd Ed)

Investigation #	Focus Question	Description	Objectives	# of Sessions	Vocabulary	IN Standard #	IN Standard Text	Cross cutting Concepts	Practices	Notes
4 Part 3	What are the local weather patterns over a year?	The class moves from recording weather data on a calendar to creating seasonal graphs of the weather, temperature and precipitation. Each season, the class creates new graphs and compares them with the graphs from the preceding seasons.	1. Daily changes in temperature, precipitation, and weather type can be observed, compared and predicted. 2. Each season has a typical weather pattern that can be observed, compared and predicted. 3. The Sun can only be seen during the day. 4. The Sun heats Earth during the day. 5. The weather affects animals and plants.	3 active sessions, 3 reading sessions, 1 assessment session	fall, season, spring, summer, winter, hibernate, resource, migrate	2.ESS.1, SEPS.4, SEPS.7	Record detailed weather observations, including cloud cover, cloud type, and type of precipitation on a daily basis over a period of weeks and correlate observations to the time of year. Chart and graph collected data.	Patterns, Systems and System Models	Analyzing and Interpreting Data, Engaging in Argument from Evidence, Science Knowledge is Based on Empirical Evidence	

Grade 2 curriculum roadmap
Life Science

Module- FOSS Insects and Plants (Next Gen)

Investigation #	Focus Question	Description	Objectives	# of sessions	Vocabulary	IN Standard #	IN Standard Text	Cross Cutting Concept	Practices	Notes
1 Part 1	What do mealworms need to live?	Students begin their study of insects. They are introduced to mealworms and observe their structures and behaviors. Each pair of students monitors several mealworms over time and attends to the insects' needs—food, water, space, and air.	Insects are animals and need air, food, water, and space. Living organisms need to be treated with care and respect. Mealworms resemble each other.	Active Inv. 1 session	insect, observe, living, mealworms, structures, air, water, food, space, organism, bran, habitat,	2.LS.2 2.LS.3	Compare and contrast details of body plans and structures within the life cycle of plants and animals. Classify living organisms according to variations in specific physical features (i.e. body coverings, appendages) and describe how those features may provide an advantage for survival in different environments.			
1 Part 2	How do mealworms grow and change?	Mini-sessions are conducted whenever students observe a change in their mealworms. They discuss molting, pupation, adults, and mating. They learn the three parts of an insect body: head, thorax, and abdomen. Students observe, compare, and draw the mealworms as they progress through their stages.	Insects have characteristic structures and behaviors. The structure of some insects change as the insect grows. As insects grow, they molt their hard, external covering. Adult insects have a head, thorax, and abdomen.	Active Inv. 6-8 sessions Reading 1 session	segment, stages, larva, exoskeleton, molting, molt, droppings, pupa, adult, darkling beetle, legs, head, thorax, abdomen, antennae	2.LS.2 2.LS.3	Compare and contrast details of body plans and structures within the life cycle of plants and animals. Classify living organisms according to variations in specific physical features (i.e. body coverings, appendages) and describe how those features may provide an advantage for survival in different environments.	Structure and function		

Grade 2 curriculum roadmap
Life Science

Module- FOSS Insects and Plants (Next Gen)

Investigation #	Focus Question	Description	Objectives	# of sessions	Vocabulary	IN Standard #	IN Standard Text	Cross Cutting Concept	Practices	Notes
1 Part 3	What are the stages of a beetle's life cycle?	Students discover tiny larvae in the class mealworm habitat several weeks after adults appear.	The life cycle of the beetle is egg, larva, pupa, and adult, which produces eggs. Insects have predictable characteristics at different stages of development.	Active Inv. 3 sessions Assessment 1 session	egg, life cycle, dead	SEPS.4 SEPS.6 2.LS.2 2.LS.3	Compare and contrast details of body plans and structures within the life cycle of plants and animals. Classify living organisms according to variations in specific physical features (i.e. body coverings, appendages) and describe how those features may provide an advantage for survival in different environments.	Patterns	Analyzing and interpreting data Constructing explanations	
2 Part 1	How did we plant the brassica seeds?	Students plant rapid-cycling brassica seeds in soil, water the seeds, and place them under a lamp where they will receive continuous light.	Plants are living organisms that need water, air, nutrients, light, and space to grow. Plants produce seeds that develop into new plants that look like the parent plant.	Active Inv.	plant, seed, brassica, soil, light, fertilizer, nutrients,	SEPS.3			Planning and carrying out investigations	

Grade 2 curriculum roadmap
Life Science

Module- FOSS Insects and Plants (Next Gen)

Investigation #	Focus Question	Description	Objectives	# of sessions	Vocabulary	IN Standard #	IN Standard Text	Cross Cutting Concept	Practices	Notes
2 Part 2	How does a young plant change as it grows?	Students observe germination, growth, and flowering of the brassica plants. They monitor and record changes in the plants over time. They discuss environmental conditions that promote germination and gain awareness of flower pollination. Students view videos showing what plants need to grow, the different stages of development of plants, and the importance of insects in plant pollination.	As plants grow, they develop roots, stems, leaves, buds, flowers, and seeds in a sequence called the life cycle. Bees and other insects help some plants by moving pollen from flower to flower.	Active Inv. 4-5 sessions	seedlings, sprouts, stem, leaves, flower, germinatio n, pollen, pollinate	SEPS.1 SEPS.3 SEPS.4 SEPS.6 SEPS.7 SEPS.8 2,LS.2 2.LS.3	Compare and contrast details of body plans and structures within the life cycle of plants and animals. Classify living organisms according to variations in specific physical features (i.e. body coverings, appendages) and describe how those features may provide an advantage for survival in different environments.		Asking questions Planning and carrying out investigations Obtaining, evaluating, and communicating information Analyzing and interpreting data Engaging in argument from evidence Constructing explanations	
2 Part 3	What will happen to the flowers on the brassica plants?	Students observe brassica flowers change and become seedpods. They harvest the seeds, getting an introduction to the concept of life cycle in plants. Students read about the importance of fruit, seeds, and flowers for a plant's life cycle	As plants grow, they develop roots, stems, leaves, buds, flowers, and seeds in a sequence called the life cycle.	Active Inv. 3 sessions Reading 1 session	seedpods, fruit, roots	SEPS.3 SEPS.4 SEPS.8 2.LS.2 2.LS.3	Compare and contrast details of body plans and structures within the life cycle of plants and animals. Classify living organisms according to variations in specific physical features (i.e. body coverings, appendages) and describe how those features may provide an advantage for survival in different environments.		Planning and carrying out investigations Analyzing and Interpreting Data Obtaining, evaluating, and communicating information	

Grade 2 curriculum roadmap
Life Science

Module- FOSS Insects and Plants (Next Gen)

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2 Part 4	Where is a good outdoor place for growing young plants?	Students find outdoor locations where young plants can grow and thrive. Students plant marigold seeds and seedlings outdoors and observe them over time. They look for flowers, seeds, and seedpods in the schoolyard.	Plants are living organisms that need water, air, nutrients, light, and space to grow. Animals disperse seeds, moving them from one location to another.	Active Inv. 1–2 Sessions Reading 1–2 Sessions Assessment 1 Session		SEPS.3 SEPS.4 SEPS.8 2.LS.3	Classify living organisms according to variations in specific physical features (i.e. body coverings, appendages) and describe how those features may provide an advantage for survival in different environments.		Planning and carrying out investigations Analyzing and Interpreting Data Obtaining, evaluating, and communicating information	
3 Part 1	What are the yellow objects and how do they change over time?	Students observe the tiny yellow or orange milkweed bug eggs in vials and speculate on what they are and how they might change over time.	Insects hatch from eggs. Living organisms need to be treated with care and respect.	Active Inv. 2 sessions		SEPS.1 SEPS.3			Asking questions Planning and carrying out investigations	

Grade 2 curriculum roadmap
Life Science

Module- FOSS Insects and Plants (Next Gen)

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3 Part 2	What do milkweed bugs need in their habitat?	Students prepare milkweed bug habitats for the nymphs and outfit them with food (sunflower seeds), water, air, and space with shelter. They hang up the habitat in the classroom. They use a thermometer to measure the air temperature near the habitats.	Insects need air, food, water, and appropriate space including shelter; different insects meet these needs in different ways. Variations exist within a group of related organisms.	Active Inv. 2 sessions	hatched, milkweed bugs, nymphs, shelter	SEPS.3 SEPS.8 2.LS.1 2,LS.3	Determine patterns and behaviors (adaptations) of parents and offspring which help offspring to survive. Classify living organisms according to variations in specific physical features (i.e. body coverings, appendages) and describe how those features may provide an advantage for survival in different environments.		Planning and carrying out investigations Obtaining, evaluating, and communicating information	

Grade 2 curriculum roadmap
Life Science

Module- FOSS Insects and Plants (Next Gen)

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3 Part 3	How do milkweed bugs grow and change?	Students care for the bugs and observe the changes that occur as the bugs mature. They observe egg hatching, molting, feeding, growth, movement, change of color pattern, mating, egg laying, and death—leading to opportunities to develop the concept of life cycle. Each time they observe, they record the temperature of the air near the habitats. Students read about the variation in color, size, and shape in different groups of organisms.	As insects grow, they molt their hard, external covering. Insects have three main body parts: head, thorax, and abdomen. Insects and other animals have different structures that help them grow and survive. The life cycle of some insects is egg, nymph stages, and adult, which produces eggs.	Active Inv. 5–7 Sessions Reading 1 Session	bugs, proboscis, males, females, mating	SEPS.1 SEPS.3 SEPS.4 SEPS.6 2.LS.1 2.LS.2 2.LS.3	Determine patterns and behaviors (adaptations) of parents and offspring which help offspring to survive. Compare and contrast details of body plans and structures within the life cycle of plants and animals. Classify living organisms according to variations in specific physical features (i.e. body coverings, appendages) and describe how those features may provide an advantage for survival in different environments.	Pattern, Structure and Function	Asking questions Planning and carrying out investigations Analyzing and interpreting data Constructing explanations	

Grade 2 curriculum roadmap
Life Science

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Investigation #	Focus Question	Description	Objectives	# of sessions	Vocabulary	IN Standard #	IN Standard Text	Cross Cutting Concept	Practices	Notes
3 Part 4	Where do insects live?	Students go outdoors to search the schoolyard for insects living in a natural habitat, either on the ground or on plants. Students each select one insect for careful observation and draw it in their notebooks. Students select one of the common schoolyard insects to study as a class. After researching the insect's needs and life cycle, students design an appropriate classroom habitat for the insect.	Insects need air, food, water, and appropriate space including shelter; different insects meet these needs in different ways. Variations exist within a group of related organisms. Designing an insect habitat requires asking questions, making observations, and gathering information to clearly understand the problem to be solved. Designs can be conveyed through drawings.	Active Inv. 2–3 Sessions Assessment 1 Session		SEPS.1 SEPS.2 SEPS.3 SEPS.4 SEPS.6 SEPS.7 SEPS.8 2.LS.3	Classify living organisms according to variations in specific physical features (i.e. body coverings, appendages) and describe how those features may provide an advantage for survival in different environments.	Structure and Function	Asking questions and defining problems Developing and using models Planning and carrying out investigations Analyzing and interpreting data Constructing explanations and designing solutions Engaging in argument from evidence Obtaining, evaluating, and communicating information	
4 Part 1	What do silkworms need to live?	Students observe silkworm eggs in vials. After the eggs hatch, students set up a class habitat for the tiny, hairy silkworm larvae.	Insects need air, food, water, and space including shelter; different insects meet these needs in different ways.	Active Inv. 2–3 Sessions	silkworm, mulberry leaf, evidence	SEPS.3 2.LS.3	Classify living organisms according to variations in specific physical features (i.e. body coverings, appendages) and describe how those features may provide an advantage for survival in different environments.		Planning and carrying out investigations	

Grade 2 curriculum roadmap
Life Science

Module- FOSS Insects and Plants (Next Gen)

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4 Part 2	How does a silkworm compare to a mealworm?	Each student group builds a desktop paper habitat for silkworm larvae so that students can make detailed, up-close observations over the next several weeks as the larvae grow. Using their observations, the class makes an accurate, labeled drawing of silkworm larval structures.	The structures of some insects change as the insect grows. As insects grow, they molt their exoskeleton. Insects have three main body parts: head, thorax, and abdomen.	Active Inv. 3 Sessions Reading 1 Session	engineering, silk, prolegs, claspers, eyespots, spriacles, spinnerets	SEPS.3 SEPS.4 SEPS.8 SEPS.5 SEPS.7 2.LS.2 2.LS.3	Compare and contrast details of body plans and structures within the life cycle of plants and animals. Classify living organisms according to variations in specific physical features (i.e. body coverings, appendages) and describe how those features may provide an advantage for survival in different environments.	Patterns, Structure and Function	Planning and carrying out investigations Analyzing and interpreting data Obtaining, evaluating, and communicating information Using mathematics and computational thinking Engaging in argument from evidence	
4 Part 3	What is the life cycle of the silkworm?	Students investigate silkworms through the remaining stages of the life cycle and observe as they mature, produce silk, spin cocoons, emerge from cocoons as adults, mate, lay eggs, and die, which gives multiple opportunities to revisit the concept of life cycle.	The structures of some insects change as the insect grows. The life cycle of some insects involves complete metamorphosis—egg, larva, pupa, and adult, which produces eggs.	Active Inv. 3 Sessions Reading 1 Session	cocoons, metamorphosis,	SEPS.4 SEPS.6 SEPS.8 2.LS,2 2.LS.3	Compare and contrast details of body plans and structures within the life cycle of plants and animals. Classify living organisms according to variations in specific physical features (i.e. body coverings, appendages) and describe how those features may provide an advantage for survival in different environments.		Analyzing and interpreting data Constructing explanations Obtaining, evaluating, and communicating information	

Grade 2 curriculum roadmap
Life Science

Module- FOSS Insects and Plants (Next Gen)

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4 Part 4	What evidence is there that insects are eating plants in the schoolyard?	Students search the schoolyard for evidence that plants are being eaten by insects or other small animals.	Insects need air, food, water, and space including shelter; different insects meet these needs in different ways.	Active Inv. 1 Session Assessment 1 Session		SEPS.3 SEPS.6 SEPS.7 2.LS.3	Classify living organisms according to variations in specific physical features (i.e. body coverings, appendages) and describe how those features may provide an advantage for survival in different environments.		Planning and carrying out investigations Constructing explanations Engaging in argument from evidence	
5 Part 1	What do caterpillars do?	Students are introduced to a painted lady caterpillar (larval stage) and observe it closely to determine its structures. They monitor its behaviors—eating, moving, molting—until it pupates into a chrysalis.	The life cycle of the butterfly involves complete metamorphosis—egg, larva, pupa, and adult, which produces eggs. Butterflies construct chrysalises when they pupate.	Active Inv. 3–4 Sessions	caterpillar, painted lady, predict	SEPS.3 SEPS.6 2.LS.2 2.LS.3	Compare and contrast details of body plans and structures within the life cycle of plants and animals. Classify living organisms according to variations in specific physical features (i.e. body coverings, appendages) and describe how those features may provide an advantage for survival in different environments.	Patterns	Planning and carrying out investigations Constructing explanations	

Grade 2 curriculum roadmap
Life Science

Module- FOSS Insects and Plants (Next Gen)

Investigation #	Focus Question	Description	Objectives	# of sessions	Vocabulary	IN Standard #	IN Standard Text	Cross Cutting Concept	Practices	Notes
5 Part 2	How is a painted lady pupa different from a silkworm pupa?	The painted lady pupae are transferred to a net cage to prepare for the emergence of adult painted ladies.	Butterflies construct chrysalises when they pupate. Life cycles are different for different animals.	Active Inv. 1 Session	chrysalis	SEPS.1 SEPS.4 SEPS.6 2.LS.2 2.LS.3	Compare and contrast details of body plans and structures within the life cycle of plants and animals. Classify living organisms according to variations in specific physical features (i.e. body coverings, appendages) and describe how those features may provide an advantage for survival in different environments.		Defining problems Analyzing and interpreting data Designing solutions	
5 Part 3	What is the life cycle of a painted lady butterfly?	Students observe butterflies feeding at a sugar-water fountain, watch for mating, and search for eggs. With luck, some eggs will hatch, and tiny larvae will emerge to start the cycle again. Students read an article about the life cycles of a fish, frog, duck, and mouse.	The life cycle of the butterfly involves complete metamorphosis—egg, larva, pupa, and adult, which produces eggs. Life cycles are different for different animals.	Active Inv. 4–5 Sessions Reading 1 Session	waste, butterfly, nectar, offspring	SEPS.1 SEPS.4 SEPS.6 SEPS.8 2.LS.1 2.LS.2 2.LS.3	Determine patterns and behaviors (adaptations) of parents and offspring which help offspring to survive. Compare and contrast details of body plans and structures within the life cycle of plants and animals. Classify living organisms according to variations in specific physical features (i.e. body coverings, appendages) and describe how those features may provide an advantage for survival in different environments.		Defining problems Analyzing and interpreting data Constructing explanations Obtaining, evaluating, and communicating information	

Grade 2 curriculum roadmap
Life Science

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5 Part 4	What plants in our schoolyard have pollen?	Students review a video describing the important role that insects and hummingbirds play in pollinating flowers. Students search the schoolyard for plants with pollen-rich flowers. While outdoors, students may observe butterflies and other insects engaged in pollination. Students design model pollinators to test the shape and materials that will collect pollen.	As butterflies, moths, bees, and other insects get food, they move pollen from a flower of one kind to another flower of the same kind. Plants depend on insects and birds to pollinate flowers in order to produce seeds.	Active Inv. 1–2 Sessions Assessment 1 Session		SEPS.2 SEPS.3 2.LS.3	Classify living organisms according to variations in specific physical features (i.e. body coverings, appendages) and describe how those features may provide an advantage for survival in different environments.		Planning and carrying out investigations Developing and using models	