Maris Stella School
Standard-Based Yearly Plan
4th Grade
Science
1st Quarter

Standard 1: *Students will explore the different types of living things and find that they all have at least one thing in common: they are all made up of cells.*

Topic: *Living Things*

Week	Performance Objectives	Performance Indicators	SA	TA
1	Explain that all living things are made up of one or more cells. Recognize that different kinds of cells have different parts.	*I can investigate the parts of cells.*		
		I can learn about different types of cells.		
		I can link to math, writing, literature, and technology.		
	Identify features of animals. Describe how body plans and support systems are used to classify animals.	*I can investigate sponges.*		
		I can learn about features of animals.		
		I can link to math, writing, social studies, and technology.		
2	Identify seeds as reproductive cells of plants. List features and examples of plants that reproduce with seeds.	*I can investigate ways to classify seeds.*		
		I can learn about features of plants with seeds.		
		I can link to math, writing, health, and technology.		
	Identify the fungal spores produce new fungi. Describe the features of fungi.	*I can investigate mushroom cap spore prints.*		
		I can learn about features of fungi.		
		I can link to math, writing, health, and technology.		

4 – Advanced Understanding of the Standard	3 – Meets the Standard	2 – Approaches the Standard	1 – Does Not Meet the Standard

Standard 2: *Students will think of as many kinds of animals as they can. They can probably think a lot, and there are thousands more – all different from one another. But all animals have something in common. They all have adaptations that help them live and grow.*				
Topic: *Animals Growth and Adaptations*				
Week	**Performance Objectives**	**Performance Indicators**	**SA**	**TA**
3	Lesson 1: What are the Basic Needs of Animals? Recognize that all animals have five basic needs: food, water, oxygen, shelter and climate. Conclude that animals meet their needs in different ways.	*I can investigate animal needs.*		
		I can learn about how animals meet their needs.		
		I can link to math, writing, social studies, and technology.		
	Lesson 2: How Do Animals' Body Parts Help Them Need Their Needs? Identify three adaptations birds have to help them meet their needs. Describe animal body parts adaptations that enable them to meet their needs.	*I can investigate how the shape of a bird's beak is related to the food it eats.*		
		I can learn about animal adaptations, including different body parts.		
		I can link to math, writing, and technology.		
4	Lesson 3: How Do Animals' Behaviors Help Them Meet Their Needs? Identify ways animals behave to enable them to meet their needs. Distinguish between instinctual behavior and learned behavior in animals.	*I can investigate a behavior of some butterflies that helps them survive.*		
		I can learn about other animal behaviors that are adaptations.		
		I can link to math, writing, social studies, and technology.		
Standard 3: *Students will be able to know that there are many different kinds of plants. But all plants need the same basic things to live and grow.*				
Topic: *Plant Growth and Adaptation*				
Week	**Performance Objectives**	**Performance Indicators**	**SA**	**TA**
	Lesson 1: What Do Plants Need To Live? Identify the four basic needs of plants	*I can investigate the effect of light on plants.*		

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4	Explain how plants make food. Give examples of plants adaptation.	*I can learn about what plants need to live.*		
	Explain how plant adaptations enable plants to survive in different environments.	*I can link to math, writing, social studies, and technology.*		
5	Identify ways that leaves, stems, and roots help plants live. Give examples of unusual plant adaptations.	*I can investigate how plants "breathe".*		
		I can learn about different parts of plants.		
		I can link to math, writing, art, and technology.		
	Describe the ways plants reproduce. Give examples of ways seeds are spread.	I can investigate how plants grow from seeds.		
		I can learn about plant life cycles.		
		I can link to math, writing, social studies, and technology.		

Standard 4: *Students will learn that their body is made up of many different parts that work together. They will think about all the parts they are using right now. Their eyes are sending messages to their brain. Their lungs are moving gases, their heart is pumping blood, and their muscles are keeping them sitting straight in their chair. They may also be digesting their breakfast or lunch. They probably didn't realize that they were so busy.*

Topic: *Human Body System*

Week	Performance Objective	Performance Indicators	SA	TA
6	Identify the basic parts that make up the body. Explain how the skeletal and muscular systems work.	*I can investigate types of muscles tissue.*		
		I can learn about the skeletal and muscular system.		
		I can link to math, writing, technology and other areas.		
	Describe what breathing does for the body. Identify why blood is important to the body's cells.	*I can investigate breathing rates.*		
		I can learn about the respiratory and circulatory systems.		
		I can link to math, writing, and technology.		
7	Describe how the nervous system controls all the body's systems.	*I can investigate the sense of touch.*		
		I can learn about the nervous and digestive system.		
		I can link to math, writing, health, and technology.		

*****End of 1st Quarter*****

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Science
2nd Quarter

Standard 1: *Students will learn that all living things have adaptations to meet their needs in areas where they are found. If the areas change, some living things may find it hard survive.*

Topic: *Ecosystem*

Week	Performance Objectives	Performance Indicators	SA	TA
1	Describe what makes up a system.	*I can investigate how parts of a system interact.*		
	Identify ways that a system gain stability.	*I can learn about characteristic of system.*		
	Describe the basic parts of an ecosystem.	*I can investigate an ecosystem.*		
	Explain how the living things in ecosystem are organized.	*I can learn about living and non-living parts of ecosystem.*		
	Give examples of habitats and niches in ecosystems.	*I can give examples of habitats and niches in ecosystems.*		
2	Explain how plants and animals interact and change their environments.	*I can explain how plants and animals interact and change their environments.*		
	Explain how tropical rain forests and coral reefs are alike.	*I can explain how tropical rain forests and coral reefs are alike.*		
	Describe the resources of rain forests and coral reefs.	*I can describe the resources of rain forests and coral reefs.*		
	Explain why the resources are important.	*I can explain why the resources are important.*		
3	Identify three examples of saltwater communities.	*I can identify three examples of saltwater communities.*		
	Give examples of living things in each type of saltwater community.	*I can give examples of living things in each type of saltwater community.*		
	Conclude that living things in different saltwater communities meet their needs in different ways.	*I can conclude that living things in different saltwater communities meet their needs in different ways.*		

Standard 2: *Students will find out how people help protect ecosystem from harmful changes.*

Topic: *Protecting Ecosystem*

Week	Performance Objectives	Performance Indicators	SA	TA
	Describe ways ecosystem change.	*I can investigate how a pond changes over time.*		
	Explain how changes affect ecosystem.	*I can learn about ways ecosystem change.*		

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4	Describe how people affect ecosystems.	*I can investigate how filtering removes some kinds of water pollution.*		
	Give examples of ecosystem changes that people cause.	*I can learn about ways people change ecosystems.*		
	Describe the ways people can conserve natural resources.	*I can investigate ways to save our national parks.*		
	Explain how governments help protect ecosystems.	*I can learn about how to conserve resources.*		

Standard 3: *Students will learn that the Earth is a planet that is always changing. When Earth's crust moves, earthquakes occur and volcanoes erupt. While both can be dangerous and scary, they are also natural Earth processes that have shaped the surface of our world.*

Topic: Earthquakes and Volcanoes

Week	Performance Objectives	Performance Indicators	SA	TA
5	Recognize and describe the layers of Earth.	*I can investigate the layers of the earth.*		
	Describe how slabs of Earth's crust and upper mantle move.	*I can learn about how huge pieces of earth's crust and mantle act on each other.*		
	Explain what causes an earthquake.	*I can investigate the shaking of earth caused by moving plates.*		
	Describe where earthquakes occur.	*I can learn about why earthquakes occur.*		
6	Explain various ways to measure earthquakes.	*I can explain various ways to measure earthquakes.*		
	Describe how volcanoes form.	*I can investigate how a volcano erupts.*		
	Identify three types of volcanoes.	*I can learn about how volcanoes form.*		
	Give examples of how volcano eruptions can be harmful and how they have a good effects on the land around them.	*I can give examples of how volcano eruptions can be harmful and how they have a good effects on the land around them.*		

Standard 4: *Students will be able to learn the history of life on Earth is buried under their feet. They might find clues left behind in a backyard by someone who lived in the house years ago. If they know where to look, they might find clues left behind millions of years ago by dinosaurs.*

Topic: Fossils

Week	Performance Objectives	Performance Indicators	SA	TA
7	Analyze the scientific explanation of how fossils form, using scientific evidence.	*I can investigate how animal parts can be preserved as a fossil.*		
	Describe the steps involved in fossil information.	*I can learn about ways in which some fossils form.*		
	Compare and contrast various methods of fossil preservation.	*I can compare and contrast various methods of fossil preservation.*		

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	Analyze and interpret sets of footprints in order to communicate valid conclusions based on direct evidence.	*I can investigate how scientist decide which events happened first.*		
	Explain methods used to date rocks and fossils.	*I can learn about when certain living things appeared on earth.*		
8	Identify some of the species that lived on Earth long ago, and compare them to existing species.	*I can Identify some of the species that lived on Earth long ago, and compare them to existing species.*		
	Conclude why fossils are important to both the present and the past.	*I can conclude why fossils are important to both the present and the past.*		
	Compare the three types of fossil fuels.	*I can investigate storage of rocks.*		
	Describe the formation of coal.	*I can learn about how fossil fuels form.*		
	Explain where petroleum and natural gas are found.	*I plain where petroleum and natural gas are found.*		

*****End of 2nd Quarter*****

Science
3rd Quarter

Standard 1: *Students will able to learn that everyone talks about the weather, but the weather forecasters get paid to talk about it. Many people depend on weather forecast to plan their day. Sometimes forecasts of severe weather can even save lives.*

Topic: Weather Conditions

Week	Performance Objectives	Performance Indicators	SA	TA
	Review and analyze theories about processes that take place in Earth's atmosphere as to their strengths and weaknesses using scientific evidence and information.	*I can investigate a property of air. I can review and analyze theories about processes that take place in Earth's atmosphere as to their strengths and weaknesses using scientific evidence and information.*		
	Describe the composition of Earth's atmosphere.	*I can learn about earth's atmosphere.*		
	Explain what is meant by air pressure.	*I can explain what is meant by air pressure.*		
	Compare and contrast the layers of the atmosphere.	*I can compare and contrast the layers of the atmosphere.*		
	Identify the sun as the major source of energy for Earth and recognize that this star provides the energy needed to generate wind and weather.	*I can investigate wind speed.*		
	Explain what causes the greenhouse effect.	*I can explain what causes the greenhouse effect.*		

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	Compare and contrast air masses, and explain what happens when they pass over an area.	*I can compare and contrast air masses, and explain what happens when they pass over an area.*		
	Construct a device to measure and observe changes in air pressure.	*I can investigate how to measure air pressure.*		
	Explain how different weather conditions are measured.	*I can learn about weather prediction.*		
	Recognize symbols used on weather maps.	*I can recognize symbols used on weather maps.*		

Standard 2: *Students will be able to know that nearly three –fourths of Earth is covered with a great body of salt water. It is always moving and full of life.*

Topic: The Oceans

Week	Performance objectives	Performance Indicators	SA	TA
	Demonstrate how fresh water can be extracted from salt water.	*I can investigate how to get fresh water how salt water.*		
	Define and describe the processes involved in the water cycle.	*I can learn about earth's ocean water.*		
	Describe the composition of ocean water.	*I can describe the composition of ocean water.*		
	Demonstrate how some ocean currents form.	*I can investigate water current.*		
	Compare and contrast waves, tides, and currents.	*I can learn about the ways ocean water moves.*		
	Explain, in detail, what causes tides to rise and fall.	*I can explain, in detail, what causes tides to rise and fall.*		
	Describe features of the ocean floor.	*I can investigate the ocean floor.*		
	Explain how new ocean floor forms.	*I can learn about features floor.*		

Standard 3: *Students will be able to know that from Earth they can study objects in space by just stepping outside on a clear night. Most of the objects you will see are stars, which are very, very distant suns. A few of the objects they will see planets. Some are amazingly different.*

Topic: Planets and Other Objects in Space

Week	Performance objectives	Performance Indicators	SA	TA
	Describe the motions of earth and the moon.	*I can investigate the movements of earth and the moon.*		
	Explain how these motions cause phases of the moon.	*I can learn about the seasons.*		
	Relate a day and year to the motions of Earth.	*I can relate a day and year to the motions of Earth.*		
	Describe the causes of the seasons.	*I can describe the causes of the seasons.*		
	Demonstrate two motions of planets – rotation and revolution.	*I can investigate the ways planets move.*		

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	Describe some characteristics of the star that is at the center of our solar system.	*I can learn about our solar system.*		
	Distinguish among planets, asteroids, and comets.	*I can distinguish among planets, asteroids, and comets.*		
	Construct scale models of the solar system.	*I can investigate distances between planets.*		
	Explain how the planets are divided into two groups – inner planets and outer planets.	*I can learn about the planets in our solar system.*		
	Analyze and critique theories regarding the formation of planets' moon and rings.	*I can analyze and critique theories regarding the formation of planets' moon and rings.*		
	Construct and use a simple telescope.	*I can investigate how to make a telescope.*		
	Compare and contrast radio and optical telescopes.	*I can learn about how people study objects in space.*		
	Describe how crewed missions differ from space probes.	*I can describe how crewed missions differ from space probes.*		
Standard 4: *Students will be able to learn how heavy, light, big, small things are. They will also learn how to measure and compare matter.*				
Topic: Matter and Its Changes				
Week	**Performance Objectives**	**Performance Indicators**	**SA**	**TA**
	Conclude that matter has three forms: solid, liquid, and gas.	*I can investigate a physical property of matter.*		
	Recognize that heat can cause a change in the state of matter.	*I can learn about solids, liquids, and gases.*		
	Conduct test, compare data, and draw conclusions about the states of matter.	*I can conduct test, compare data, and draw conclusions about the states of matter.*		
	Use numerical data to measure, describe, and compare physical properties of matter.	*I can investigate the densities of some types of matter.*		
	Conduct tests, compare data, and draw conclusions about mass, volume, and density.	*I can learn about measuring and comparing matter.*		
	Identify buoyancy as a physical property of matter.	*I can investigate what happens to some solids in water.*		
	Conduct tests, compare data, and draw conclusions about the buoyancy of different materials.	*I can learn about ways to group kinds of matter.*		
	Recognize that some materials combine to form solutions.	*I can recognize that some materials combine to form solutions.*		
	Describe a physical change.	*I can investigate a chemical change.*		

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	Identify a chemical change.	I can learn about physical and chemical changes.		
	Recognize that chemical and physical changes are used in the manufacturing of steel.	I can recognize that chemical and physical changes are used in the manufacturing of steel.		
Standard 5: *Students will be able to learn about heat – Energy on the move, which the materials expand and contract as they get hot and cold.*				
Topic: *Energy on the Move*				
Week	**Performance Objectives**	**Performance Indicators**	**SA**	**TA**
	Recognize that thermal energy is the motion of particles of matter.	*I can investigate how heat affects air in a balloon.*		
	Observe and record changes in the states of matte caused by the addition or reduction of thermal energy.	*I can learn about thermal energy.*		
	Explain how thermal energy and temperature differ.	*I can explain how thermal energy and temperature differ.*		
	Explain that adding or removing heat from a substance can change its state of matter.	*I can investigate one way thermal energy is transferred.*		
	Identify conduction as physical property of matter.	*I can learn about the three ways thermal energy is transferred.*		
	Recognize that thermal energy can be transferred from one object to another.	*I can recognize that thermal energy can be transferred from one object to another.*		
	Analyze information about temperature by using thermometers.	*I can investigate temperatures in a solar cooker.*		
	Identify ways to produce and use thermal energy.	*I can learn about ways to produce and use thermal energy.*		
	Explain that the energy that comes from the sun to Earth can be used by people.	*I can explain that the energy that comes from the sun to Earth can be used by people.*		
End of 3rd Quarter				
Science **4th Quarter**				
Standard 1: *Students will be able to learn about sound. They will also learn that even a space suit while orbiting Earth, they can still hear the sound of their blood flowing and their heat beating.*				
Topic: Sound				
Week	**Performance Objectives**	**Performance Indicators**	**SA**	**TA**

4 – Advanced Understanding of the Standard	**3 – Meets the Standard**	**2 – Approaches the Standard**	**1 – Does Not Meet the Standard**

1	Collect and analyze data about how sounds are made.	*I can investigate making and hearing sounds.*		
	Recognize that sound energy can be carried from one place to another by waves.	*I can learn about the ways sound travels.*		
	Observe how sounds differ.	*I can investigate making different sounds.*		
	Compare and contrast loudness and pitch.	*I can learn about differences in sounds.*		
2	Recognize that sound travels at different speeds through different sound.	*I can recognize that sound travels at different speeds through different sound.*		
	Describe how an echo forms.	*I can describe how an echo forms.*		
	Explain what causes a sonic boom.	*I can explain what causes a sonic boom.*		
	Evaluate the impact of research and technology on scientific thought, society, and the environment.	*I can evaluate the impact of research and technology on scientific thought, society, and the environment.*		
	Identify careers related to science.	*I can identify careers related to science.*		

Standard 2: *Students will be able to learn about light. The light reflects and bounces if you turn on and shine it at your image in a mirror. The light goes so fast it seems to hit the mirror and you at the same instant you turn the flashlight on.*

Topic: *Light Travels*

Week	Performance Objectives	Performance Indicators	SA	TA
3	Explain how light travels.	*I can investigate how light travels.*		
	Describe what can occur when light strikes an object.	*I can learn about things light can do.*		
	Describe what causes a rainbow.	*I can investigate rainbows.*		
	Explain how light and color are related.	*I can learn about light and color.*		

Standard 3: *Students will be able to learn about electricity and magnetism, and will be able to know that when you become charged with static electricity just by dragging your feet when you walk across the carpet.*

Topic: Electricity and Magnetism

Week	Performance Objectives	Performance Indicators	SA	TA
4	Define static electricity.	*I can investigate rubbing balloons with different materials.*		
	Recognize that electricity charged objects attract or repel each other as can be seen from the effects from the effects of static electricity.	*I can learn about causes of static electricity.*		
	Explain what causes an electric field.	*I can explain what causes an electric field.*		
	Design and build a simple series circuit using components such as wires, batteries, and bulbs.	*I can investigate using a battery to light a bulb.*		
	Compare data about physical properties of matter, including conduction.	*I can learn about electric current.*		

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	Recognize that electrical energy can be converted to other forms of energy, such as heat, light, and motion.	*I can recognize that electrical energy can be converted to other forms of energy, such as heat, light, and motion.*		
5	Construct a simple compass, and use it to detect magnetic effects.	*I can investigate how a compass works.*		
	Recognize that magnets have two poles, labeled north and south, and that like poles repel each other, while unlike poles attract each other.	*I can learn about the ways magnets interact.*		
	Recognize that all electric currents produce magnetic effects.	*I can investigate the magnetic field around a wire that carries current.*		
	Construct a simple electromagnet.	*I can learn about uses of electromagnets.*		
	Identify how electromagnets are useful to people.	*I can identify how electromagnets are useful to people.*		

Standard 4: *Students will be able to learn about motion-forces at work that acting all around us. When they write a letter, gravity holds the desk and you to the floor. Friction between your fingers and the pen keeps the pen upright. Gravity brings the ink to the pen's tip. The speed with which you move the pen determines how fast the letters are formed.*

Topic: Motion-Forces at Work

Week	Performance Objectives	Performance Indicators	SA	TA
6	Identify ways to describe motion.	*I can investigate giving directions.*		
	Define frame of reference and relative motion.	*I can learn about motion and speed.*		
	Calculate speed using data of distance and time.	*I can calculate speed using data of distance and time.*		
	Define force.	*I can investigate forces measured by spring scales.*		
	Demonstrate how forces are added and subtracted.	*I can learn about forces acting on objects.*		
	Measure forces using a spring scale.	*I can measure forces using a spring scale.*		
7	Recognize the relationship between gravity and weight.	*I can investigate forces on a sliding box.*		
	Give examples of different kinds of natural forces.	*I can learn about four different types of forces.*		
	Evaluate the impact of research and technology on scientific thought, society, and the environment.	*I can evaluate the impact of research and technology on scientific thought, society, and the environment.*		
	Identify careers related to science.	*I can identify careers related to science.*		

Standard 5: *Students will be able to learn about simple machines.*

Topic: *Simple Machines*

Week	Performance Objectives	Performance Indicators	SA	TA
7	Identify the parts of a lever.	*I can investigate how one kind of lever works.*		
	Describe the parts of a lever.	*I can learn about how levers help us do work.*		

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	Draw conclusions about what happens when a lever is moved.	*I can draw conclusions about what happens when a lever is moved.*		
8	Identify the parts of a wheel and axle.	*I can investigate how pulleys work.*		
	Describe the parts of the different types of pulleys.	*I can learn about pulleys and about wheels and axles.*		
	Draw conclusions about what happens when the size of a wheel or axle is changed.	*I can draw conclusions about what happens when the size of a wheel or axle is changed.*		
	Describe how an inclined plane make work easier.	*I can investigate an Archimedes' screw.*		
	Identify the relationship among screws, wedges, and inclined planes.	*I can learn about how inclined planes, screws, and wedges do work.*		
*****End of 4th Quarter*****				

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