Grade Level: 5	Course: Environments, Landforms, Variables

Timeline/ Month(s) /Rotation (include date of rotation]	Content / concept	Grade Level Expectations (GLE's) [include GLE number & statement]	Skill(s) Use verbs to describe student's expected performance (i.e., identify nouns, describe components)	Resources (books, kits, guest speakers, models, etc.)	List all measures you used to check student understanding (e.g., assessments, performance projects, homework)
September-December (3 month rotation) **Environments**	Terrestrial Environments	**Understand how to ask a question about objects, organisms, and events in the environment. W** ▪ (3, 4, 5) Identify the question being answered in an investigation. ▪ (3, 4, 5) Ask questions about objects, organisms, and events based on observations of the natural world. ▪ (5) Develop a new question that can be investigated with the same materials and/or data as a given investigation.	After setting up terrariums, students list environmental factors.	Student journals	Student journals, response sheets included in the kit, planning a scientific investigation projects, the Fis project (designing a scientific solution)
	Bug and Beetles	**Understand how to plan and conduct simple investigations following all safety rules. W** ▪ (3, 4, 5) Make predictions of the results of an investigation. ▪ (5) Generate a logical plan for, and conduct, a simple controlled investigation with the following attributes: ☐ prediction ☐ appropriate materials, tools, and available computer technology ☐ variables kept the same (controlled) ☐ one changed variable (manipulated) ☐ measured (responding) variable ☐ gather, record, and organize data using appropriate units, charts, and/or graphs ☐ multiple trials	We set up bug runs and see how beetles and isopods respond to different environmental factors. Students learn about controlled experiments, variables and they write a science investigation.		
	Water tolerance		Students set up a controlled experiment that focuses the amount of water plants need to grow. Water tolerance Students learn that living organisms breathe in oxygen and out carbon dioxide, but plants are the reverse. They learn that carbon dioxide produces carbonic acid when mixed in water which increases ph levels in water.		
	Aquatic Environments	▪ (5) Generate a logical plan for a simple field investigation with the following attributes: ☐ Identify multiple variables ☐ Select observable or measurable variables related to the investigative question	Students conduct a controlled experiment to determine which of four salt concentrations allow brine shrimp to hatch. Brine shrimp hatch in a range of salt concentrations under optimum conditions.		
	Brine shrimp hatching	▪ (3, 4, 5) Identify and use simple equipment and tools (such as magnifiers, rulers, balances, scales, and thermometers) to gather data and extend the senses.(3, 4, 5) Follow all safety rules during investigations. **Understand how to construct a reasonable explanation using evidence. W** ▪ (3, 4, 5) Generate a scientific conclusion	Students set up another controlled experiment to test the effect of salinity on four kinds of plants. They determine the plants' range of tolerance for salt.		

	Salt of the earth	including supporting data from an investigation (e.g., grass grows taller with more light; with only 2 hours of light each day, grass grew 2 centimeters in two weeks, but with 6 hours of light, grass grew 8 centimeters). ▪ (3, 4, 5) Describe a reason for a given conclusion using evidence from an investigation. ▪ (4, 5) Generate a scientific explanation of observed phenomena using given data. **Understand how to report investigations and explanations of objects, events, systems, and processes. W** ▪ (3, 4, 5) Report observations or data of simple investigations without making inferences. ▪ (3, 4, 5) Summarize an investigation by describing: ☐ reasons for selecting the investigative plan ☐ materials used in the investigation ☐ observations, data, results ☐ explanations and conclusions in written, mathematical, oral, and information technology presentation formats ☐ safety procedures used **Understand that all scientific observations are reported accurately and honestly even when the observations contradict expectations. W** ▪ (3, 4, 5) Explain why scientific observations are recorded accurately and honestly. ▪ (3, 4, 5) Explain why scientific records of observations are not changed even when the records do not match initial expectations. ▪ (3, 4, 5) Explain why honest acknowledgement of the contributions of others and information sources are necessary.(5) Predict what logically might occur if an investigation lasted longer or was			

		changed. **Understand how to make the results of scientific investigations reliable. W** ▪ (3, 4, 5) Describe how the method of investigation insures reliable results (i.e., reliability means that repeating an investigation gives similar results). ▪ (4, 5) Identify and describe ways to increase the reliability of the results of an investigation (e.g., multiple trials of an investigation increase the reliability of the results). **Understand that a substance remains the same substance when changing state. Understand that two or more substances can react to become new substances. W** ▪ (5) Describe how two different substances can form a simple chemical reaction to produce new substances (e.g., baking soda and vinegar react to form a gas).			
Landforms **December to March (three month rotation)**	School yard models Stream tables Go with the flow	**Understand that Earth's system includes a mostly solid interior, landforms, bodies of water, and an atmosphere. W** ▪ (5) Identify and describe various landmasses, bodies of water, and landforms (e.g., illustrate continents, oceans, seas, rivers, mountains, plains from a globe and a map). **Know processes that change the surface of Earth. W** ▪ (5) Describe how weathering and erosion change the surface of the Earth. ▪ (5) Describe how earthquakes, landslides, and volcanic eruptions change Earth's surface. **Understand how to use simple models to represent objects, events, systems, and processes. W** ▪ (3, 4, 5) List similarities and differences between a model and what the model represents (e.g., a hinge and an elbow; a spinning globe and Earth's rotations; steam from a tea kettle and clouds or fog). ▪ (3, 4, 5) Create a simple model to represent	Models represent objects that are very large. Models and maps represent human structures. Maps can be made from models. Students learn that water is a cause of weathering and erosion. Eroded material becomes deposition. Landforms that result from running water are canyons, deltas, and alluvial fans. Students conduct controlled experiments to see how variables such as flood and slope affect the amount of erosion and deposition. Students plan, set up and run their own stream table investigation. Students study topographic maps. They use a three dimensional model to make a two dimensional topographic map and then a map profile. They study contour lines and symbols.		Student journals, response sheets included in the kit, planning a scientific investigation projects.

	Build a mountain Birds eye view	common objects, events, systems, or processes (e.g., diagram or map and /or physical model). **Understand how to ask a question about objects, organisms, and events in the environment. W** ▪ (3, 4, 5) Identify the question being answered in an investigation. ▪ (3, 4, 5) Ask questions about objects, organisms, and events based on observations of the natural world. ▪ (5) Develop a new question that can be investigated with the same materials and/or data as a given investigation. **Understand how to plan and conduct simple investigations following all safety rules. W** ▪ (3, 4, 5) Make predictions of the results of an investigation. ▪ (5) Generate a logical plan for, and conduct, a simple controlled investigation with the following attributes: ☐ prediction ☐ appropriate materials, tools, and available computer technology ☐ variables kept the same (controlled) ☐ one changed variable (manipulated) ☐ measured (responding) variable ☐ gather, record, and organize data using appropriate units, charts, and/or graphs ☐ multiple trials ▪ (5) Generate a logical plan for a simple field investigation with the following attributes: ☐ Identify multiple variables ☐ Select observable or measurable variables related to the investigative question ▪ (3, 4, 5) Identify and use simple equipment and tools (such as magnifiers, rulers, balances, scales, and thermometers) to gather data and extend the senses. **Understand that all scientific observations are reported accurately and honestly even when the observations contradict expectations. W** ▪ (3, 4, 5) Explain why scientific observations are recorded accurately and honestly.	Topographic maps are compared to aerial photographs. Landform maps can be generated from areal photographs.		

		▪ (3, 4, 5) Explain why scientific records of observations are not changed even when the records do not match initial expectations. ▪ (3, 4, 5) Explain why honest acknowledgement of the contributions of others and information sources are necessary. **Understand how to make the results of scientific investigations reliable. W** ▪ (3, 4, 5) Describe how the method of investigation insures reliable results (i.e., reliability means that repeating an investigation gives similar results). ▪ (4, 5) Identify and describe ways to increase the reliability of the results of an investigation (e.g., multiple trials of an investigation increase the reliability of the results). ▪ (3, 4, 5) Follow all safety rules during investigations. **Understand how to construct a reasonable explanation using evidence. W** ▪ (3, 4, 5) Generate a scientific conclusion including supporting data from an investigation (e.g., grass grows taller with more light; with only 2 hours of light each day, grass grew 2 centimeters in two weeks, but with 6 hours of light, grass grew 8 centimeters). ▪ (3, 4, 5) Describe a reason for a given conclusion using evidence from an investigation. ▪ (4, 5) Generate a scientific explanation of observed phenomena using given data.] ▪ (5) Predict what logically might occur if an investigation lasted longer or was changed.			
March to June (three month rotation) **Variables**	Swingers	**Understand how to ask a question about objects, organisms, and events in the environment. W** ▪ (3, 4, 5) Identify the question being answered in an investigation. ▪ (3, 4, 5) Ask questions about objects, organisms, and events based on observations of the natural world. ▪ (5) Develop a new question that can be investigated with the same materials and/or	Students learn about variables and controlled experiments. Students conduct a standard experiment and then conduct three separate experiments testing mass, release point and length of the string. Results are graphed. Capacity is the maximum volume of fluid a container		Student journals, response sheets included in the kit, planning a scientific investigation projects.

		data as a given investigation.			
	Lifeboats	**Understand how to plan and conduct simple investigations following all safety rules. W** ▪ (3, 4, 5) Make predictions of the results of an investigation. ▪ (5) Generate a logical plan for, and conduct, a simple controlled investigation with the following attributes: ☐ prediction ☐ appropriate materials, tools, and available computer technology ☐ variables kept the same (controlled) ☐ one changed variable (manipulated) ☐ measured (responding) variable ☐ gather, record, and organize data using appropriate units, charts, and/or graphs ☐ multiple trials	can hold. They again run a standard experiment and discuss the variables that must be controlled. They then run another experiment to see that the capacity of the lifeboat affects the number of passengers.		
	Plane sense		Through controlled experiments using rubber band powered airplanes, students discover that a system is a set of related objects that can be studied in isolation.		
	Flippers	▪ (5) Generate a logical plan for a simple field investigation with the following attributes: ☐ Identify multiple variables ☐ Select observable or measurable variables related to the investigative question ▪ (3, 4, 5) Identify and use simple equipment and tools (such as magnifiers, rulers, balances, scales, and thermometers) to gather data and extend the senses. ▪ **(3, 4, 5) Follow all safety rules during investigations.** (5) Describe what goes into (input) and out of (output) a system (e.g., what keeps a system running). **Understand how to construct a reasonable explanation using evidence. W** ▪ (3, 4, 5) Generate a scientific conclusion including supporting data from an investigation (e.g., grass grows taller with more light; with only 2 hours of light each day, grass grew 2 centimeters in two weeks, but with 6 hours of light, grass grew 8 centimeters). ▪ (3, 4, 5) Describe a reason for a given conclusion using evidence from an investigation. ▪ (4, 5) Generate a scientific explanation of observed phenomena using given data. ▪ (5) Predict what logically might occur if an investigation lasted longer or was changed.	Through small catapults called flippers, students conduct experiments to again see that a system is a set of related objects that can be studied in isolation.		

		▪ (5) Describe the effect on a system when an input in the system is changed.			