DRAFT SCIENCE ALTERNATE EXPECTATIONS: GRADE 5

Topic Bundle: Structure and Properties of Matter

Target Alternate Expectation	Michigan Range of Complexity		
	High Range	Medium Range	Low Range
Michigan K-12 Science Content Standard: 5-PS1-1. Develop a model to describe that matter is made of particles too small to be seen.			
EE.5-PS1-1: Use a model to describe that matter is made of smaller parts, some of which are too small to be seen.	**EE.5-PS1-H.1:** Use a model to describe that matter is made of smaller parts, some of which are too small to be seen.	**EE.5-PS1-M.1:** Use a model to recognize that matter is made of smaller parts, some of which are too small to be seen.	**EE.5-PS1-L.1:** Identify the smaller parts of an object that has been disassembled.

Topic Bundle: Structure and Properties of Matter

Target Alternate Expectation	Michigan Range of Complexity		
	High Range	Medium Range	Low Range
Michigan K-12 Science Content Standard: 5-PS1-2. Measure and graph quantities to provide evidence that regardless of the type of change that occurs when heating, cooling, or mixing substances, the total weight of matter is conserved.			
EE.5-PS1-2: Measure or graph the weight of substances before and after they are heated, cooled, or mixed to provide evidence that the total weight of matter remains the same.	**EE.5-PS1-H.2:** Measure or graph the weight of substances before and after they are heated, cooled, or mixed to provide evidence that the total weight of matter remains the same.	**EE.5-PS1-M.2:** Compare the weight of substances before and after they are heated (solid to liquid), cooled (liquid to solid), or mixed to provide evidence that the total weight of matter remains the same.	**EE.5-PS1-L.2:** Identify that an object weighs the same before and after freezing.

Topic Bundle: Structure and Properties of Matter

Target Alternate Expectation	Michigan Range of Complexity		
	High Range	Medium Range	Low Range
Michigan K-12 Science Content Standard: 5-PS1-3. Make observations and measurements to identify materials based on their properties.			
EE.5-PS1-3: Make observations and measurements to describe given materials based on their properties (e.g., color, state of matter (solid/liquid), hardness, response to magnets, texture, shape, weight, length).	**EE.5-PS1-H.3:** Make observations and measurements to describe given materials based on their properties (e.g., color, state of matter (solid/liquid), hardness, response to magnets, texture, shape, weight, length).	**EE.5-PS1-M.3:** Make observations to describe given materials based on their properties (e.g., color, state of matter (solid/liquid), hardness, response to magnets, texture, shape).	**EE.5-PS1-L.3:** Identify one observable property of a given material. (e.g., color, state of matter (solid/liquid), hardness, response to magnets, texture, shape).

Topic Bundle: Structure and Properties of Matter

Target Alternate Expectation	Michigan Range of Complexity		
	High Range	Medium Range	Low Range
Michigan K-12 Science Content Standard: 5-PS1-4. Conduct an investigation to determine whether the mixing of two or more substances results in new substances.			
EE.5-PS1-4: Participate in an investigation of mixing two or more substances to compare properties before and after mixing or to determine if a new substance was formed.	**EE.5-PS1-H.4:** Participate in an investigation of mixing two or more substances to compare properties before and after mixing or to determine if a new substance was formed.	**EE.5-PS1-M.4:** Make observations to provide evidence that whether mixing two or more substances results in a new substance.	**EE.5-PS1-L.4:** Given two substances that are mixed together, identify the mixture that is made.

Topic Bundle: Matter and Energy in Organisms and Ecosystems

Target Alternate Expectation	Michigan Range of Complexity		
	High Range	Medium Range	Low Range
Michigan K-12 Science Content Standard: 5-PS3-1. Use models to describe that energy in animals' food (used for body repair, growth, and motion and to maintain body warmth) was once energy from the sun.			
EE.5-PS3-1: Use a model that begins with energy from the sun to describe how energy moves among plants and animals.	**EE.5-PS3-H.1:** Use a model that begins with energy from the sun to describe how energy moves among plants and animals.	**EE.5-PS3-M.1:** Use a simple model to show the energy flow from sun to plant to animal.	**EE.5-PS3-L.1:** Identify that plants use sunlight for energy to grow.

Topic Bundle: Matter and Energy in Organisms and Ecosystems

Target Alternate Expectation	Michigan Range of Complexity		
	High Range	**Medium Range**	**Low Range**
Michigan K-12 Science Content Standard: 5-LS1-1. Support an argument that plants get the materials they need for growth chiefly from air and water.			
EE.5-LS1-1: Use evidence to determine that plants get the materials they need for growth primarily from air and water.	**EE.5-LS1-H.1:** Use evidence to determine that plants get the materials they need for growth primarily from air and water.	**EE.5-LS1-M.1:** Identify supporting evidence that plants get the materials they need for growth primarily from air and water.	**EE.5-LS1-L.1:** Given an illustration, demonstration, or simulation, distinguish which plants have access to air and water compared to plants that do not have access to air and water.

Topic Bundle: Matter and Energy in Organisms and Ecosystems

Target Alternate Expectation	Michigan Range of Complexity		
	High Range	**Medium Range**	**Low Range**
Michigan K-12 Science Content Standard: 5-LS2-1. Develop a model to describe the movement of matter among plants, animals, decomposers, and the environment.			
EE.5-LS2-1: Use a model to show the movement of matter (material) among plants, animals, decomposers, and the environment.	**EE.5-LS2-H.1:** Use a model to show the movement of matter (material) among plants, animals, decomposers, and the environment.	**EE.5-LS2-M.1:** Use a simple model to show the movement of matter (material) among plants and animals in an ecosystem.	**EE.5-LS2-L.1:** Match a food source for a given animal.

Topic Bundle: Earth's Systems

Target Alternate Expectation	Michigan Range of Complexity		
	High Range	**Medium Range**	**Low Range**
Michigan K-12 Science Content Standard: 5-ESS2-1. Develop a model using an example to describe ways the geosphere, biosphere, hydrosphere, and/or atmosphere interact in Michigan and the Great Lakes basin.			
EE.5-ESS2-1: Use a model to describe the interaction of two of Earth's systems (geosphere, atmosphere, hydrosphere, and biosphere) in Michigan and the Great Lakes basin.	**EE.5-ESS2-H.1:** Use a model to describe the interaction of two of Earth's systems (geosphere, atmosphere, hydrosphere, and biosphere) in Michigan and the Great Lakes basin.	**EE.5-ESS2-M.1:** Use a model to describe how water (hydrosphere) interacts with the atmosphere, geosphere, or biosphere in Michigan and the Great Lakes basin.	**EE.5-ESS2-L.1:** Identify how water (hydrosphere) affects living things (biosphere) in Michigan and the Great Lakes basin.

Topic Bundle: Earth's Systems

Target Alternate Expectation	Michigan Range of Complexity		
	High Range	Medium Range	Low Range
Michigan K-12 Science Content Standard: 5-ESS2-2. Describe and graph the amounts and percentages of [salt] water and fresh water in the Great Lakes to provide evidence about the distribution of water on Earth.			
EE.5-ESS2-2: Make a bar graph or use a graph (bar graph or circle graph) to describe the distribution of salt water and fresh water to show evidence that nearly all Earth's water is in the ocean and is salt water, and most fresh water is stored in glaciers or underground, only tiny fraction (tiny amount) is in streams, lakes, wetlands, and the atmosphere.	**EE.5-ESS2-H.2:** Make a bar graph or use a graph (bar graph or circle graph) to describe the distribution of salt water and fresh water to show evidence that nearly all Earth's water is in the ocean and is salt water, and most fresh water is stored in glaciers or underground, only tiny fraction (tiny amount) is in streams, lakes, wetlands.	**EE.5-ESS2-M.2:** Identify sources of water in Michigan (lakes, streams, rivers, wetlands, ponds, groundwater).	**EE.5-ESS2-L.2:** Identify ways humans use water (e.g., washing clothes, drinking water, cleaning dishes, bathing, brushing teeth, recreational, farming).

Topic Bundle: Earth's Systems

Target Alternate Expectation	Michigan Range of Complexity		
	High Range	Medium Range	Low Range
Michigan K-12 Science Content Standard: 5-ESS3-1. Obtain and combine information about ways individual communities use science ideas to protect the Earth's resources and environment.			
EE.5-ESS3-1: Use information to identify how communities protect Earth's resources and the environment.	**EE.5-ESS3-H.1:** Use information to identify how communities protect Earth's resources and the environment.	**EE.5-ESS3-M.1:** Identify a reason why participating in a specific activity protects Earth's resources and the environment.	**EE.5-ESS3-L.1:** Identify objects that can be recycled.

Topic Bundle: Space Systems: Stars and the Solar System

Target Alternate Expectation	Michigan Range of Complexity		
	High Range	Medium Range	Low Range
Michigan K-12 Science Content Standard: 5-PS2-1. Support an argument that the gravitational force exerted by Earth on objects is directed down.			
EE.5-PS2-1: Use evidence to support the claim that the gravitational force exerted by Earth on objects is directed down.	**EE.5-PS2-H.1:** Use evidence to support the claim that the gravitational force exerted by Earth on objects is directed down.	**EE.5-PS2-M.1:** Predict the direction objects will travel when gravity pulls objects toward Earth.	**EE.5-PS2-L.1:** Participate in activities that demonstrate the gravitational force exerted by Earth on objects to identify the direction of a dropped object.

Topic Bundle: Space Systems: Stars and the Solar System

Target Alternate Expectation	Michigan Range of Complexity		
	High Range	Medium Range	Low Range
Michigan K-12 Science Content Standard: 5-ESS1-1. Support an argument that differences in the apparent brightness of the sun compared to other stars is due to their relative distances from the Earth.			
EE.5-ESS1-1: Use evidence to support the claim the sun appears larger and brighter than other stars because it is closer to Earth.	**EE.5-ESS1-H.1:** Use evidence to support the claim that the sun appears larger and brighter than other stars because it is closer to Earth.	**EE.5-ESS1-M.1:** Identify the sun is a star that appears brighter than other stars because it is closer to Earth.	**EE.5-ESS1-L.1:** Identify the sun is a star that produces light.

Topic Bundle: Space Systems: Stars and the Solar System

Target Alternate Expectation	Michigan Range of Complexity		
	High Range	Medium Range	Low Range
Michigan K-12 Science Content Standard: 5-ESS1-2. Represent data in graphical displays to reveal patterns of daily changes in length and direction of shadows, day and night, and the seasonal appearance of some stars in the night sky.			
EE.5-ESS1-2: Organize or use information to identify patterns in changes in length and/or direction of shadows during a day, day or night, or the amount of daylight during different seasons.	**EE.5-ESS1-H.2:** Organize or use information to identify patterns in changes in length and/or direction of shadows during a day, day or night, or the amount of daylight during different seasons.	**EE.5-ESS1-M.2:** Use observations to provide evidence there are patterns in the length or direction of shadows at various times of the day.	**EE.5-ESS1-L.2:** Use observations of shadows to identify the shadow, the light source, or the object blocking the light source.

Topic Bundle: Engineering Design

Target Alternate Expectation	Michigan Range of Complexity		
	High Range	Medium Range	Low Range
Michigan K-12 Science Content Standard: 3-5-ETS1-1. Define a simple design problem reflecting a need or a want that includes a specified criteria for success and constraints on materials, time, or cost.			
EE.3-5-ETS1-1: Determine a simple solution to a design problem that reflects a need or want.	**EE.3-5-ETS1-H.1:** Determine a simple solution to a design problem that reflects a need or want.	**EE.3-5-ETS1-M.1:** Identify appropriate materials for a given solution to a design problem.	**EE.3-5-ETS1-L.1:** Participate in activities that demonstrate finding a solution to a simple design problem (in order) to identify one action/material.

Topic Bundle: Engineering Design

Target Alternate Expectation	Michigan Range of Complexity		
	High Range	Medium Range	Low Range
Michigan K-12 Science Content Standard: 3-5-ETS1-2. Generate and compare multiple possible solutions to a problem based on how well each is likely to meet the criteria and constraints of the problem.			
EE.3-5-ETS1-2: Given a simple problem generate and/or compare possible solutions to the problem based on how well each solution is likely to meet the specified desired results.	**EE.3-5-ETS1-H.2:** Given a simple problem generate and/or compare possible solutions to the problem based on how well each solution is likely to meet specified desired results.	**EE.3-5-ETS1-M.2:** Given a simple problem, compare multiple solutions to identify the solution that meets specified desired results	**EE.3-5-ETS1-L.2:** Participate in testing and comparing two solutions to a simple problem to identify the solution that best meets specified desired results.

Topic Bundle: Engineering Design

Target Alternate Expectation	Michigan Range of Complexity		
	High Range	Medium Range	Low Range
Michigan K-12 Science Content Standard: 3-5-ETS1-3. Plan and carry out fair tests in which variables are controlled and failure points are considered to identify aspects of a model or prototype that can be improved.			
EE.3-5-ETS1-3: Describe changes needed to a given design to improve the design's ability to meet the desired results.	**EE.3-5-ETS1-H.3:** Describe changes needed to a given design to improve the design's ability to meet the desired results.	**EE.3-5-ETS1-M.3:** Determine whether or not an engineering design product meets the desired results.	**EE.3-5-ETS1-L.3:** Identify whether a specific product is working (broken) or not.