Seymour Public Schools Curriculum

Grade: 7 Subject: Science

The purpose of science in grade 7 is for students to understand the dynamics of matter and energy through living and nonliving things.

<u>Unit 1 – The Chemistry of Energy Drinks:</u> Energy drinks are very popular with Americans, including kids, because energy drinks offer high doses of caffeine and sugar. Energy drinks can provide as much caffeine and sugar as one to three cups of coffee. Unfortunately, kids do not understand the health risks associated with the drinks. High amounts of sugar can cause weight gain or cause dental problems, Withdrawal from high amounts of caffeine can cause anxiety, irritability, or drowsiness. In this unit, students will explore the chemistry of energy drinks and how the body processes chemical compounds.

<u>Unit 2 –Bio Bottles: Designing a Self-Sustained Ecosystem</u>: Healthy ecosystems maintain specific balances of abiotic and biotic factors. Using a 50 year old bio bottle as a phenomenon, students investigate abiotic and biotic factors and ecosystem interactions in order to develop a self-sustained microscale ecosystem of their own. Students must consider the factors that can unbalance the system or puts an ecosystem as risk. Students use their knowledge of ecosystem dynamics and interactions to plan and develop a bio bottle that will support itself once sealed.

<u>Unit 3 – Where is California going</u>? Students view iconic movie clips showcasing California and its geologic predicament *San Andreas, Apocolypse, 10.5.* Outside of the film world, California's unique fault lines and position on the ring of fire has had scientists concerned for decades. In this unit, students build an understanding of the geologic processes responsible for changing earth, the impact of natural hazards on the landscape, and evidence of geologic change through fossil, sea floor patters and continent shape. Students design a devise to overcome the effects of a natural hazard.

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UNIT 1- The Chemistry of Energy Drinks

Phenomenon: **Grade:** **Time Frame: (# of weeks, etc)**	Energy Drinks Grade 7 10 weeks NGSS Storyline (insert link to CREC google doc)
NGSS Overarching Standards	• MS-PS1-1. Develop models to describe the atomic composition of simple molecules and extended structures • MS-PS1-2. Analyze and interpret data on the properties of substances before and after the substances interact to determine if a chemical reaction has occurred. • MS-PS1-3. Gather and make sense of information to describe that synthetic materials come from natural resources and impact society. • MS-PS1-4. Develop a model that predicts and describes changes in particle motion, temperature, and state of a pure substance when thermal energy is added or removed. • MS-PS1-5. Develop and use a model to describe how the total number of atoms does not change in a chemical reaction and thus mass is conserved. • MS-PS1-6. Undertake a design project to construct, test, and modify a device that either releases or absorbs thermal energy by chemical processes. • MS-LS1-7. Develop a model to describe how food is rearranged through chemical reactions forming new molecules that support growth and/or release energy as this matter moves through an organism. • MS-ETS1-3. Analyze data from tests to determine similarities and differences among several design solutions to identify the best characteristics of each that can be combined into a new solution to better meet the criteria for success
Enduring Understanding	**PS1.A: Structure and Properties of Matter** • Substances are made from different types of atoms, which combine with one another in various ways. Atoms form molecules that range in size from two to thousands of atoms. • Solids may be formed from molecules, or they may be extended structures with repeating subunits (e.g., crystals). • Each pure substance has characteristic physical and chemical properties (for any bulk quantity under given conditions) that can be used to identify it. • Gases and liquids are made of molecules or inert atoms that are moving about relative to each other. • In a liquid, the molecules are constantly in contact with others; in a gas, they are widely spaced except when they happen to collide. In a solid, atoms are closely spaced and may vibrate in position but do not change relative locations. • The changes of state that occur with variations in temperature or pressure can be described and predicted using these models of matter. **PS1.B: Chemical Reactions** • Substances react chemically in characteristic ways. In a chemical process, the atoms that make up the original substances are regrouped into different molecules, and these new substances have different properties from those of the reactants. • The total number of each type of atom is conserved, and thus the mass does not change. • Some chemical reactions release energy, others store energy.

	PS3.A: Definitions of Energy • The term "heat" as used in everyday language refers both to thermal energy (the motion of atoms or molecules within a substance) and the transfer of that thermal energy from one object to another. In science, heat is used only for this second meaning; it refers to the energy transferred due to the temperature difference between two objects. (secondary) • The temperature of a system is proportional to the average internal kinetic energy and potential energy per atom or molecule (whichever is the appropriate building block for the system's material). The details of that relationship depend on the type of atom or molecule and the interactions among the atoms in the material. Temperature is not a direct measure of a system's total thermal energy. The total thermal energy (sometimes called the total internal energy) of a system depends jointly on the temperature, the total number of atoms in the system, and the state of the material. *(secondary)* **PS3.D: Energy in Chemical Processes and Everyday Life** • Cellular respiration in plants and animals involve chemical reactions with oxygen that release stored energy. In these processes, complex molecules containing carbon react with oxygen to produce carbon dioxide and other materials. *(secondary)* **LS1.C: Organization for Matter and Energy Flow in Organisms** • Within individual organisms, food moves through a series of chemical reactions in which it is broken down and rearranged to form new molecules, to support growth, or to release energy.
Essential Questions	Should energy drinks be regulated for people under 16? What happens in your body after ingesting an energy drink? • What is in energy drinks? How do atoms arrange themselves to create the different ingredients in an energy drink? • How does temperature affect the fizziness of an energy drink? How do heat and energy affect an energy drink? • How can we use the physical and chemical properties of energy drink ingredients be used to separate the ingredients in the lab? • What chemical processes happen in your body after drinking an energy drink? • Are energy drinks worse for you than coffee or soda?
CCSS Connections Standards	**ELA/Literacy** • RST.6-8.1 Cite specific textual evidence to support analysis of science and technical texts, attending to the precise details of explanations or descriptions.(MS-PS1-2) (MS-PS1-3) (MS-ETS1-3) • RST.6-8.3 Follow precisely a multistep procedure when carrying out experiments, taking measurements, or performing technical tasks. (MS-PS1-6) • RST.6-8.7 Integrate quantitative or technical information expressed in words in a text with a version of that information expressed visually (e.g., in a flowchart, diagram, model, graph, or table). (MS-PS1-1)(MS-PS1-2)(MS-PS1-4)(MS-PS1-5)(MS-ETS1-3) • RST.6-8.9 Compare and contrast the information gained from experiments, simulations, video, or multimedia sources with that gained from reading a text on the same topic. (MS-ETS1-3) • WHST.6-8.7 Conduct short research projects to answer a question (including a self-generated question),

	drawing on several sources and generating additional related, focused questions that allow for multiple avenues of exploration. (MS-PS1-6) • WHST.6-8.8 Gather relevant information from multiple print and digital sources, using search terms effectively; assess the credibility and accuracy of each source; and quote or paraphrase the data and conclusions of others while avoiding plagiarism and following a standard format for citation. (MS-PS1-3) • SL.8.5 Integrate multimedia and visual displays into presentations to clarify information, strengthen claims and evidence, and add interest. (MS-LS1-7) **Mathematics -** • MP.2 Reason abstractly and quantitatively. (MS-PS1-1)(MS-PS1-2)(MS-PS1-5)(MS-ETS1-3) • MP.4 Model with mathematics. (MS-PS1-1)(MS-PS1-5) • 7.EE.3 Solve multi-step real-life and mathematical problems posed with positive and negative rational numbers in any form (whole numbers, fractions, and decimals), using tools strategically. Apply properties of operations to calculate with numbers in any form; convert between forms as appropriate; and assess the reasonableness of answers using mental computation and estimation strategies. (MS-ETS1-3)
Performance Expectations (Student outcomes: what students will know/understand and be able to do)	Students will be able to • Develop models of atoms and molecules to show scale, proportion and quantity; • distinguish pure substances from impure mixtures; • predict how different materials will act based on their properties (structure/function); • distinguish pure bulk substances from mixtures based on their individual components, physical, and chemical properties; • show that the atoms combine in different ways and also identifies the relationships between the components; • predict how different materials will act based on their properties (structure/function); • distinguish pure bulk substances from mixtures based on their individual components, physical, and chemical properties; • use physical and chemical properties to separate a mixture; • analyze and interpret data to determine the best approach for separating a mixture; and • synthesize data to determine whether or not a chemical reaction has occurred.

Strategies	Materials/Resources	Assessments
Science and Engineering Practices • Develop a model to predict and/or describe phenomena. • Gather, read, and synthesize information from multiple appropriate sources and assess the credibility, accuracy, and possible bias of each publication and methods used, and describe how they are supported or now supported by evidence. • Undertake a design project, engaging in the design cycle, to construct and/or implement a solution that meets specific design criteria and constraints. • Analyze and interpret data to determine similarities and differences in findings.	Chrome books Hotplates Alka-Seltzer tablets Egg ammonium chloride (NH4Cl) calcium chloride (CaCl2) sodium chloride (NaCl) small plastic cups water balance spoons stirrers graduated cylinder thermometer labeling dots indirectly vented safety splash goggles gloves lab apron surface temperature sensor (fast-response) tape calcium chloride sodium bicarbonate (baking soda) universal indicator small water bottle zip-lock plastic baggie wooden splint matches (if allowed in your classroom) chemical toe-warmer (optional) bags of mini marshmallows (white)* bags of mini marshmallows (COLORED)* boxes of toothpicks* white glue* 11 x 17 tabloid size paper or similar sized poster paper* Empty energy drink cans (for labels, photos of labels would suffice) Steel wool (small amount for demo)	Summative Assessments • Students will develop a model to represent the chemistry of energy drinks and their impact on the human body. Formative Assessments • Summary Table • LS2-Modeling Compounds found in Energy drinks • LS3-CER:Energy and fizziness of energy drinks • LS4-Model chemical and physical properties and relate to energy drink separation • LS5-Explain how the body processes excess sugar • LS6-CER-energy drink regulation

	Vinegar (small amount for demo) Beaker Balloon Multi-colored marshmallows Toothpicks Sodium bicarbonate Calcium chloride Sodium carbonate Magnesium sulfate Plastic cups	

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UNIT 2- Bio Bottles: Designing a Self-Sustained Ecosystem

Phenomenon: **Grade:** **Time Frame: (# of weeks, etc)**	50 Year old Bio Bottle Grade 7 10 weeks NGSS Storyline (insert link to CREC google doc)
NGSS Overarching Standards	• MS-LS1-6. Construct a scientific explanation based on evidence for the role of photosynthesis in the cycling of matter and flow of energy into and out of organisms. • MS-LS2-1. Analyze and interpret data to provide evidence for the effects of resource availability on organisms and populations of organisms in an ecosystem. • MS-LS2-2. Construct an explanation that predicts patterns of interactions among organisms across multiple ecosystems. • MS-LS2-3. Develop a model to describe the cycling of matter and flow of energy among living and nonliving parts of an ecosystem. • MS-LS2-4. Construct an argument supported by empirical evidence that changes to physical or biological components of an ecosystem affect populations. • MS-LS2-5. Evaluate competing design solutions for maintaining biodiversity and ecosystem services. • MS-ETS1-1. Define the criteria and constraints of a design problem with sufficient precision to ensure a successful solution, taking into account relevant scientific principles and potential impacts on people and the natural environment that may limit possible solutions. • MS-ETS1-2. Evaluate competing design solutions using a systematic process to determine how well they meet the criteria and constraints of the problem.
Enduring Understanding	**LS1.C: Organization for Matter and Energy Flow in Organisms** • Plants, algae (including phytoplankton), and many microorganisms use the energy from light to make sugars (food) from carbon dioxide from the atmosphere and water through the process of photosynthesis, which also releases oxygen. These sugars can be used immediately or stored for growth or later use. **PS3.D: Energy in Chemical Processes and Everyday Life** • The chemical reaction by which plants produce complex food molecules (sugars) requires an energy input (i.e., from sunlight) to occur. In this reaction, carbon dioxide and water combine to form carbon-based organic molecules and release oxygen. *(secondary)* **LS2.A: Interdependent Relationships in Ecosystems** • Organisms, and populations of organisms, are dependent on their environmental interactions both with other living things and with nonliving factors. • In any ecosystem, organisms and populations with similar requirements for food, water, oxygen, or other resources may compete with each other for limited resources, access to which consequently constrains their growth and reproduction. • Growth of organisms and population increases are limited by access to resources. • Similarly, predatory interactions may reduce the number of organisms or eliminate whole populations of organisms. Mutually

	beneficial interactions, in contrast, may become so interdependent that each organism requires the other for survival. Although the species involved in these competitive, predatory, and mutually beneficial interactions vary across ecosystems, the patterns of interactions of organisms with their environments, both living and nonliving, are shared. **LS2.B: Cycle of Matter and Energy Transfer in Ecosystems** • Food webs are models that demonstrate how matter and energy is transferred between producers, consumers, and decomposers as the three groups interact within an ecosystem. Transfers of matter into and out of the physical environment occur at every level. Decomposers recycle nutrients from dead plant or animal matter back to the soil in terrestrial environments or to the water in aquatic environments. The atoms that make up the organisms in an ecosystem are cycled repeatedly between the living and nonliving parts of the ecosystem. **LS2.C: Ecosystem Dynamics, Functioning, and Resilience** • Ecosystems are dynamic in nature; their characteristics can vary over time. Disruptions to any physical or biological component of an ecosystem can lead to shifts in all its populations. • Biodiversity describes the variety of species found in Earth's terrestrial and oceanic ecosystems. The completeness or integrity of an ecosystem's biodiversity is often used as a measure of its health. **LS4.D: Biodiversity and Humans** • Changes in biodiversity can influence humans' resources, such as food, energy, and medicines, as well as ecosystem services that humans rely on—for example, water purification and recycling. *(secondary)* **ETS1.B: Developing Possible Solutions** • There are systematic processes for evaluating solutions with respect to how well they meet the criteria and constraints of a problem. *(secondary)* **ETS1.A: Defining and Delimiting Engineering Problems** • The more precisely a design task's criteria and constraints can be defined, the more likely it is that the designed solution will be successful. Specification of constraints includes consideration of scientific principles and other relevant knowledge that are likely to limit possible solutions. **ETS1.B: Developing Possible Solutions** • There are systematic processes for evaluating solutions with respect to how well they meet the criteria and constraints of a problem.
Essential Questions	• How are engineering design principals support the development of a self-sustaining bio bottle? • What are the constraints to make a successful self-sustained ecosystem (bio bottle)? • What are the components and levels of organization found within a thriving ecosystem? • How do human actions impact an ecosystem and or affect biodiversity within an ecosystem? • How does energy move through an ecosystem? • What is the primary source of energy for most organisms? • How does matter move through an ecosystem? • What chemical reactions are necessary to moving matter and energy through an ecosystem? • How do interactions of organisms affect movement of energy? • How are ecosystems dynamic and always changing? • What are disruptions in an ecosystem and how do they affect humans?

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CCSS Connections Standards	**ELA/Literacy -** • RST.6-8.1 Cite specific textual evidence to support analysis of science and technical texts. (MS-LS1-6)(MS-LS2-1)(MS-LS2-2)(MS-LS2-4)(MS-ETS1-1)(MS-ETS1-2) • RST.6-8.2 Determine the central ideas or conclusions of a text; provide an accurate summary of the text distinct from prior knowledge or opinions. (MS-LS1-6) • RST.6-8.7 Integrate quantitative or technical information expressed in words in a text with a version of that information expressed visually (e.g., in a flowchart, diagram, model, graph, or table). (MS-LS2-1) • RST.6-8.8 Distinguish among facts, reasoned judgment based on research findings, and speculation in a text. (MS-LS2-5) • RST.6-8.9 Compare and contrast the information gained from experiments, simulations, video, or multimedia sources with that gained from reading a text on the same topic. (MS-ETS1-2) • RI.8.8 Trace and evaluate the argument and specific claims in a text, assessing whether the reasoning is sound and the evidence is relevant and sufficient to support the claims. (MS-LS2-4)(MS-LS2-5) • WHST.6-8.1 Write arguments to support claims with clear reasons and relevant evidence. (MS-LS2-4) • WHST.6-8.2 Write informative/explanatory texts to examine a topic and convey ideas, concepts, and information through the selection, organization, and analysis of relevant content. (MS-LS1-6) (MS-LS2-2) • WHST.6-8.8 Gather relevant information from multiple print and digital sources, using search terms effectively; assess the credibility and accuracy of each source; and quote or paraphrase the data and conclusions of others while avoiding plagiarism and following a standard format for citation. (MS-ETS1-1) • WHST.6-8.7 Conduct short research projects to answer a question (including a self-generated question), drawing on several sources and generating additional related, focused questions that allow for multiple avenues of exploration. (MS-ETS1-2) • WHST.6-8.9 Draw evidence from informational texts to support analysis, reflection, and research. (MS-LS1-6)(MS-LS2-2)(MS-LS2-4)(MS-ETS1-2) • SL.8.1 Engage effectively in a range of collaborative discussions (one-on-one, in groups, and teacher-led) with diverse partners on grade 8 topics, texts, and issues, building on others' ideas and expressing their own clearly. (MS-LS2-2)

	• SL.8.4 Present claims and findings, emphasizing salient points in a focused, coherent manner with relevant evidence, sound valid reasoning, and well-chosen details; use appropriate eye contact, adequate volume, and clear pronunciation. (MS-LS2-2) • SL.8.5 Integrate multimedia and visual displays into presentations to clarify information, strengthen claims and evidence, and add interest. (MS-LS2-3) **Mathematics -** • MP.4 Model with mathematics. (MS-LS2-5) • MP.2 Reason abstractly and quantitatively. (MS-ETS1-1)(MS-ETS1-2) • 7.EE.3 Solve multi-step real-life and mathematical problems posed with positive and negative rational numbers in any form (whole numbers, fractions, and decimals), using tools strategically. Apply properties of operations to calculate with numbers in any form; convert between forms as appropriate; and assess the reasonableness of answers using mental computation and estimation strategies. (MS-ETS1-1)(MS-ETS1-2)
Performance Expectations (Student outcomes: what students will know/understand and be able to do)	Students will be able to • define the criteria and constraints of both the design problem and possible solutions; • use evidence and reasoning to describe how the stability of an ecosystem is dependent upon the biological and physical components; • identify patterns of change in quantitative and qualitative data related to earth's ecosystem; • explain how organisms and their populations are dependent on their interactions with other living things as energy and matter flow through an ecosystem; • create a model to show the movement of energy from producers to consumers and the cycling of matter; • recognize that the laws of conservation of energy and matter are demonstrated in the chemical reaction of photosynthesis; • identify the key role of sunlight as the initial source of energy in most ecosystems; • create a model to describe how matter, made of atoms, and energy move through an ecosystem as it cycles into and out of living and nonliving parts of an ecosystem; • analyze and interpret patterns of predator and prey relationships to make predictions for the future; • analyze and interpret data from multiple sources to identify the cause and effect of changes in predator/ prey populations; • organize and interpret data to determine if small changes in resources may constrain the growth and reproduction of organisms in the ecosystem; • identify and describe evidence to support the claim that interactions between organisms can be beneficial and may vary across ecosystems; • analyze and interpret data to show that ecosystem characteristics change over time; • use evidence and reasoning to make a claim that the impact of small changes in one part of an ecosystem can cause a larger change in another part of the ecosystem; • evaluate competing design solutions based on scientific evidence;

	• demonstrate that humans can impact and be impacted by their role in an ecosystem.

Strategies	Materials/Resources	Assessments
Science and Engineering Practices Constructing Explanations and Designing Solutions • Construct a scientific explanation based on valid and reliable evidence obtained from sources (including the students' own experiments) and the assumption that theories and laws that describe the natural world operate today as they did in the past and will continue to do so in the future. • Construct an explanation that includes qualitative or quantitative relationships between variables that predict phenomena. Analyzing and Interpreting Data. • Analyze and interpret data to provide evidence for phenomena. Developing and Using Models • Develop a model to describe phenomena. Engaging in Argument from Evidence • Construct an oral and written argument supported by empirical evidence and scientific reasoning to support or refute an explanation or a model for a phenomenon or a solution to a problem. • Evaluate competing design solutions based on jointly developed and agreed-upon design criteria. Asking Questions and Defining Problems • Define a design problem that can be solved through the development of an	markers poster paper Sticky notes Seeds Ziplock baggies or clear cups Paper towels Any other abiotic factor materials based on what you decide to assign to groups Tape acorns pinecones oak seeds Skittles 3.3 lb bag bulk OR (for food restricted schools) 1 lb bag 9mm pony beads Cardstock	<u>Summative Assessments</u> • Bio bottle design and development <u>Formative Assessments</u> • L2-Zebra Mussels and the Hudson River • L3-African Savanah • L4-Photosynthesis Model • L5-Atoms through the apple tree visual model • L6-Middle Schooler Population Investigation • L7-Invasisve Species Presentation • L8-Bee Population

object, tool, process or system and includes multiple criteria and constraints, including scientific knowledge that may limit possible solutions. **Instructional Strategies**:		

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Unit 3 – Where is California going?

Phenomenon: **Grade:** **Time Frame: (# of weeks, etc)**	The future of California's location Grade 7 10 weeks
NGSS Overarching Standards	• MS-ESS2-1. Develop a model to describe the cycling of Earth's materials and the flow of energy that drives this process. • MS-ESS2-2. Construct an explanation based on evidence for how geoscience processes have changed Earth's surface at varying time and spatial scales. • MS-ESS2-3. Analyze and interpret data on the distribution of fossils and rocks, continental shapes, and seafloor structures to provide evidence of the past plate motions. • MS-ESS3-1. Construct a scientific explanation based on evidence for how the uneven distributions of Earth's mineral, energy, and groundwater resources are the result of past and current geoscience processes. • MS-ESS3-2. Analyze and interpret data on natural hazards to forecast future catastrophic events and inform the development of technologies to mitigate their effects. • MS-ETS1-4. Develop a model to generate data for iterative testing and modification of a proposed object, tool, or process such that an optimal design can be achieved.
Enduring Understanding	**ESS2.A: Earth's Materials and Systems** • All Earth processes are the result of energy flowing and matter cycling within and among the planet's systems. This energy is derived from the sun and Earth's hot interior. The energy that flows and matter that cycles produce chemical and physical changes in Earth's materials and living organisms. **ESS2.A: Earth's Materials and Systems** • The planet's systems interact over scales that range from microscopic to global in size, and they operate over fractions of a second to billions of years. These interactions have shaped Earth's history and will determine its future. **ESS2.C: The Roles of Water in Earth's Surface Processes** • Water's movements—both on the land and underground—cause weathering and erosion, which change the land's surface features and create underground formations. **ESS1.C: The History of Planet Earth** • Tectonic processes continually generate new ocean sea floor at ridges and destroy old sea floor at trenches. *(HS.ESS1.C GBE),(secondary)* **ESS2.B: Plate Tectonics and Large-Scale System Interactions** • Maps of ancient land and water patterns, based on investigations of rocks and fossils, make clear how Earth's plates have moved great distances, collided, and spread apart. **ESS3.A: Natural Resources** • Humans depend on Earth's land, ocean, atmosphere, and biosphere for many different resources. Minerals, fresh water, and biosphere resources are limited, and many are not renewable or replaceable over human lifetimes. These resources are distributed unevenly around the planet as a result of past geologic processes.

	ESS3.B: Natural Hazards • Mapping the history of natural hazards in a region, combined with an understanding of related geologic forces can help forecast the locations and likelihoods of future events. **ETS1.B: Developing Possible Solutions** • A solution needs to be tested, and then modified on the basis of the test results, in order to improve it. • Models of all kinds are important for testing solutions. **ETS1.C: Optimizing the Design Solution** • The iterative process of testing the most promising solutions and modifying what is proposed on the basis of the test results leads to greater refinement and ultimately to an optimal solution.
Essential Questions	•
CCSS Connections Standards	**ELA/Literacy-** • RST.6-8.1 Cite specific textual evidence to support analysis of science and technical texts. (MS-ESS2-2)(MS-ESS2-3)(MS-ESS3-1)(MS-ESS3-2) • RST.6-8.7 Integrate quantitative or technical information expressed in words in a text with a version of that information expressed visually (e.g., in a flowchart, diagram, model, graph, or table). (MS-ESS2-3)(MS-ESS3-2) • RST.6-8.9 Compare and contrast the information gained from experiments, simulations, video, or multimedia sources with that gained from reading a text on the same topic. (MS-ESS2-3)(MS-ESS3-1) • WHST.6-8.2 Write informative/explanatory texts to examine a topic and convey ideas, concepts, and information through the selection, organization, and analysis of relevant content. (MS-ESS2-2)(MS-ESS3-1) **Mathematics -** • MP.2 Reason abstractly and quantitatively. (MS-ESS2-2)(MS-ESS2-3)(MS-ESS3-2)(MS-ETS1-4) • 7.EE.B.4 Use variables to represent quantities in a real-world or mathematical problem, and construct simple equations and inequalities to solve problems by reasoning about the quantities. (MS-ESS2-2)(MS-ESS2-3)(MS-ESS3-1) (MS-ESS3-2) • 7.SP Develop a probability model and use it to find probabilities of events. Compare probabilities from a model to observed frequencies; if the agreement is not good, explain possible sources of the discrepancy. (MS-ETS1-4)
Performance Expectations	Students will be able to

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(Student outcomes: what students will know/understand and be able to do)	

Strategies	Materials/Resources	Assessments
Science and Engineering Practices . **Instructional Strategies**:		Summative Assessments Formative Assessments