5th Grade

**Structures and Properties of Matter**

5-PS1-1 Develop a model to describe that matter is made of particles too small to be seen.
5-PS1-2 Measure and graph quantitates 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.
5-PS1-3 Make observations and measurements to identify materials based on their properties.
5-PS1-4 Conduct an investigation to determine whether the mixing of two or more substances results in new substances.

**Matter and Energy**

5-PS3-1 Use models to describe that energy in animals’ food (use for body repair, growth, and motion and to maintain body warmth) was once energy from the sun.
5-LS1-1 Support an argument that plants get the materials they need for growth chiefly from air and water.
5-LS2-1 Develop a model to describe the movement of matter among plants, animals, decomposers, and the environment.

**Earth’s Systems**

5-ESS2-1 Develop a model using an example to describe ways the geosphere, biosphere, hydrosphere, and/or atmosphere interact.
5-ESS2-2 Describe and graph the amounts and percentages of water and fresh water in various reservoirs to provide evidence about the distribution of water on Earth.
5-ESS3-1 Obtain and combine information about ways individual communities use science ideas to protect the Earth’s resources and environment.

**Space Systems: Stars and the Solar System**

5-ESS1-1 Support an argument that the differences in the apparent brightness of the sun compared to other stars is due to their relative distances from Earth.
5-ESS1-2 Represent data in graphical displays to reveal patterns of daily changes in the length and directions of shadows, day and night, and the seasonal appearance of some stars in the night sky.

**Engineering Design**

3-5-ETS1-1 Define a simple design problem reflecting a need or a want that includes specified criteria for success and constraints on materials, time or costs.
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.
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.

*Refer to evidence statements in www.nextscience.org

Adapted from Achieve. (2016, January 28), from http://www.nextgenscience.org
Grade 5 NGSS Initiation Fall of 2017-2018 School Year
Curriculum Map Aligned with NGSS 2018-2019

Fifth Grade Science Curriculum
Time Frame

<table>
<thead>
<tr>
<th>Months</th>
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<td>December</td>
<td>5PS2- Motion and Stability</td>
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<td>January-March</td>
<td>5ESS1- Earth’s Place in the Universe</td>
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<td>5ESS2- Earth’s Systems w/Rocks and Minerals</td>
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<td>5ESS3- Earth and Human Activity</td>
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<td>April-June</td>
<td>5PS3- Energy</td>
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<td>5LS1- Molecules to Organisms Structures and Processes</td>
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<td>5LS2- Ecosystems and Crayfish</td>
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<tr>
<td>September-June</td>
<td>5ETS1- Engineering Design</td>
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</table>

Fifth Grade Science Curriculum

REVIEWED FALL OF 2020
5-PS1-1 Matter and Its Interactions

5-PS1-1. Develop a model to describe that matter is made of particles too small to be seen. [Clarification Statement: Examples of evidence supporting a model could include adding air to expand a basketball, compressing air in a syringe, dissolving sugar in water, and evaporating salt water.] [Assessment Boundary: Assessment does not include the atomic-scale mechanism of evaporation and condensation or defining the unseen particles]

<table>
<thead>
<tr>
<th>Literacy or Informative Text</th>
<th>Lab Investigations</th>
<th>Assessments</th>
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<tbody>
<tr>
<td>Why Does Matter Matter?</td>
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<tr>
<td>Water/3 States of Matter</td>
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<tr>
<td>Science and Literacy-</td>
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<tr>
<td>pg:70-Matter</td>
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<tr>
<td>Matter- The Science Penguin</td>
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<tr>
<td>Forms of Matter- Delta</td>
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<tr>
<td>Reader</td>
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</tbody>
</table>

- Balloon
- Ice-Water-Antacid
- Hand Sanitizer-Milk-Stone
- Salt Evaporation
- Disappearing H2o-Baby Diaper
- Creating Oblek

- Warm Up Activities
- Investigations
- Scientific Method Documentation
- Graphic Organizers
- Lab Matrixes/written observations
- Written Connection Summary
- Foldables/Lab Interactive Notebooks
- Performance Indicator Assessments
- Teacher Observations/Student Participation

REVIEWED FALL OF 2020
Technology:

- Science Video for Kids: States of matter by Turtle Diary
- Bill Nye the Science Guy Phases of Matter
- States of Matter by Brown Pop
- NEO k12.com/statesofmatter
- How to turn Milk into Stone by Household Hocker
- How to Make Water Disappear/ Science Project by Howcast

Observable features of the student performance by the end of the grade:

1 Components of the model a Students develop a model to describe* a phenomenon that includes the idea that matter is made of particles too small to be seen. In the model, students identify the relevant components for the phenomenon, including: i. Bulk matter (macroscopic observable matter; e.g., as sugar, air, water). ii. Particles of matter that are too small to be seen.

2 Relationships a In the model, students identify and describe* relevant relationships between components, including the relationships between: i. Bulk matter and tiny particles that cannot be seen (e.g., tiny particles of matter that cannot be seen make up bulk matter). ii. The behavior of a collection of many tiny particles of matter and observable phenomena involving bulk matter (e.g., an expanding balloon, evaporating liquids, substances that dissolve in a solvent, effects of wind).

3 Connections a Students use the model to describe* how matter composed of tiny particles too small to be seen can account for observable phenomena (e.g., air inflating a basketball, ice melting into water.)
5-PS1-2 Matter and Its Interactions

<table>
<thead>
<tr>
<th>Literacy or Informative Text</th>
<th>Lab Investigations</th>
<th>Assessments</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Matter Can Change</strong></td>
<td>• Candle</td>
<td>• Warm Up Activities</td>
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<tr>
<td>• Accuteach</td>
<td>• Jiffy Pop</td>
<td>• Investigations</td>
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<tr>
<td><strong>Changes in Matter</strong></td>
<td>• Trail Mix (Mixture)</td>
<td>• Scientific Method</td>
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<td>• (Delta Science)</td>
<td>• Origami (Physical)</td>
<td>• Documentation</td>
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<tr>
<td><strong>Scott Foresman Text</strong></td>
<td>• Sugar Cube</td>
<td>• Graphic Organizers</td>
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<td>• (B24-27)</td>
<td>• (Solution/temps)</td>
<td>• Lab Matrixes/written</td>
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<tr>
<td><strong>Conservation of Matter</strong></td>
<td>• Hair Dryer-</td>
<td>• observations</td>
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<td>• (The Science Penguin)</td>
<td>Changes in Matter/</td>
<td>• Written</td>
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<tr>
<td><strong>Science and Literacy</strong></td>
<td>Conservation of</td>
<td>• Connection</td>
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<td>• pg:35-Forming</td>
<td>Matter/</td>
<td>• Summary</td>
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<tr>
<td><strong>Solutions</strong></td>
<td>(Solid-Liquid)</td>
<td>• Foldables/Lab</td>
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<td>• Mini lava lamps-</td>
<td>• Interactive</td>
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<td>suspensions</td>
<td>• Notebooks</td>
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<td></td>
<td>• Milk- detergent</td>
<td>• Performance</td>
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<tr>
<td></td>
<td>suspension</td>
<td>• Indicator</td>
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<td></td>
<td>• Baking soda/vinegar-</td>
<td>• Assessments</td>
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<td></td>
<td>chemical reactions</td>
<td>• Teacher</td>
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<td>• Bobbing raisins</td>
<td>• Observations/Students</td>
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<td></td>
<td>• Color changing</td>
<td>• Participation</td>
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<td>paper</td>
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[Clarification Statement: Examples of reactions or changes could include phase changes, dissolving, and mixing that form new substances.] [Assessment Boundary: Assessment does not include distinguishing mass and weight.] The performance expectation above was developed using the following elements from the

REVIEWED FALL OF 2020
Technology:

Physical/Chemical Changes of Matter (Science Post)
Characteristics of a Physical Change (Binogi)
Conservation of Mass(Crash Course Kids)
Conservation of Mass (Brain Pop)
SmokeyValley.org/Conservation of Mass
Law of Conservation of Mass Experiment (Zoo Friedland)
Elephant Toothpaste Experiment-colloid (Whizkidscience)
Physical/chemical change (BrainPop)

Observable features of the student performance by the end of the grade:

1 Students measure and graph the given quantities using standard units, including: i. The weight of substances before they are heated, cooled, or mixed. ii. The weight of substances, including any new substances produced by a reaction, after they are heated, cooled, or mixed.

2 Mathematical/computational analysis
   ● Students measure and/or calculate the difference between the total weight of the substances (using standard units) before and after they are heated, cooled, and/or mixed.
   ● Students describe* the changes in properties they observe during and/or after heating, cooling, or mixing substances.
   ● Students use their measurements and calculations to describe* that the total weights of the substances did not change, regardless of the reaction or changes in properties that were observed.
   ● Students use measurements and descriptions* of weight, as well as the assumption of consistent patterns in natural systems, to describe* evidence to address scientific questions about the conservation of the amount of matter, including the idea that the total weight of matter is conserved after heating, cooling, or mixing substances.
5-PS1-3 Matter and Its Interactions

5-PS1-3-Make observations and measurements to identify materials based on their properties. [Clarification Statement: Examples of materials to be identified could include baking soda and other powders, metals, minerals, and liquids. Examples of properties could include color, hardness, reflectivity, electrical conductivity, thermal conductivity, response to magnetic forces, and solubility; density is not intended as an identifiable property.] [Assessment Boundary: Assessment does not include density or distinguishing mass and weight.]

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<td>Scott Foresman Text (B28-35)</td>
<td>Penny and Glass/Chemical Changes-Penguin Interactive</td>
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<tr>
<td>Properties of Matter (Delta Science)</td>
<td>Observation of solid, liquid properties</td>
<td>Inquiry Investigations</td>
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<tr>
<td>Physical Properties of Matter (Science Penguin)</td>
<td>Candle observation</td>
<td>Scientific Method Documentation</td>
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<tr>
<td>Minerals, Rocks and Fossils- Delta Readers</td>
<td>Inquiry in action (American Chemical Society)</td>
<td>Graphic Organizers</td>
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<td></td>
<td>Science-class.net (properties of Matter Labs)</td>
<td>Lab Matrixes/written observations</td>
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<td>Density Cube Lab</td>
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<td>Properties of Rocks and Minerals</td>
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<table>
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<tr>
<th>Technology:</th>
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Chocolate Rock Cycle
http://www.earthsciweek.org/classroom-activities/chocolate-rock-cycle

Physical Property of Matter (Study.com)

REVIEWED FALL OF 2020
### Observable features of the student performance by the end of the grade:

1. **Identifying the phenomenon under investigation**
   - A. From the given investigation plan, students identify the phenomenon under investigation, which includes the observable and measurable properties of materials.
   - B. Students identify the purpose of the investigation, which includes collecting data to serve as the basis for evidence for an explanation about the idea that materials can be identified based on their observable and measurable properties.

2. **Identifying the evidence to address the purpose of the investigation**
   - A. From the given investigation plan, students describe* the evidence from data (e.g., qualitative observations and measurements) that will be collected, including: properties of materials that can be used to identify those materials (e.g., color, hardness, reflectivity, electrical conductivity, thermal conductivity, response to magnetic forces, and solubility).
   - B. Students describe* how the observations and measurements will provide the data necessary to address the purpose of the investigation.

3. **Planning the investigation**
   - A. From the given plan investigation plan, students describe* how the data will be collected.
     Examples could include:
     - i. Quantitative measures of properties, in standard units (e.g., grams, liters).
     - ii. Observations of properties such as color, conductivity, and reflectivity.
     - iii. Determination of conductors vs. nonconductors and magnetic vs. nonmagnetic materials.
   - B. Students describe* how the observations and measurements they make will allow them to identify materials based on their properties

4. **Collecting the data**
   - A. Students collect and record data, according to the given investigation plan.
5-PS1-4 Matter and Its Interactions

**PS1-4 Students who demonstrate understanding can:** 5-PS1-4. Conduct an investigation to determine whether the mixing of two or more substances results in new substances.

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<tr>
<td><strong>Scott Foresman</strong> Text pgs:</td>
<td>Investigating a Chemical Change (B38-B39)</td>
<td>Warm Up Activities</td>
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<tr>
<td>36-39</td>
<td>Various Slime Labs</td>
<td>Investigations</td>
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<td><em>Foldables: (The Penguin)</em></td>
<td>Magnetic Slime</td>
<td>Scientific Method</td>
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<tr>
<td>- Chemical Change Clues</td>
<td>Fluffy Slime</td>
<td>Documentation</td>
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<tr>
<td>- Examples of Chemical Changes</td>
<td>Oxidation Labs w/ penny, nail, staple, clip, brad,</td>
<td>Graphic Organizers</td>
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<td><strong>Literacy In Science-</strong></td>
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<td>Lab Matrixes/written observations</td>
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<td>“Forming Solutions by</td>
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<td>Written Connection</td>
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<tr>
<td>Dissolving Substances in Water”</td>
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<td>Foldables/Lab Interactive Notebooks</td>
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<td>Teacher Observations/Student Participation</td>
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</tbody>
</table>

**Technology:**
- Chemical Reactions (easyscienceforkids.com)
- Kids chemical reaction experiments (lovelmyscience.com)
- Chemical Reaction for fifth graders (Ruby barajas)
- Magnetic Slime without Borax (Melissa Swigart)
- DIY Fluffy Slime:How to Make the Best Slime (Gillian Bower)

REVIEWED FALL OF 2020
**Observable features of the student performance by the end of the grade:**

1. Identifying the phenomenon under investigation
   A. From the given investigation plan, students describe* the phenomenon under investigation, which includes the mixing of two or more substances.
   B. Students identify the purpose of the investigation, which includes providing evidence for whether new substances are formed by mixing two or more substances, based on the properties of the resulting substance.

2. Identifying the evidence to address the purpose of the investigation
   A. From the given investigation plan, students describe* the evidence from data that will be collected, including: i. Quantitative (e.g., weight) and qualitative properties (e.g., state of matter, color, texture, odor) of the substances to be mixed. ii. Quantitative and qualitative properties of the resulting substances.
   B. Students describe* how the collected data can serve as evidence for whether the mixing of the two or more tested substances results in one or more new substances.

3. Planning the investigation
   A. From the given investigation plan, students describe* how the data will be collected, including:
   i. How quantitative and qualitative properties of the two or more substances to be mixed will be determined and measured.
   ii. How quantitative and qualitative properties of the substances that resulted from the mixture of the two or more substances will be determined and measured.
   iii. Number of trials for the investigation.
   iv. How variables will be controlled to ensure a fair test (e.g., the temperature at which the substances are mixed, the number of substances mixed together in each trial).

4. Collecting the data
   A. According to the investigation plan, students collaboratively collect and record data, including data about the substances before and after mixing.
5-PS2-1 Motion and Stability- Forces and Interactions

5-PS2-1. Support an argument that the gravitational force exerted by Earth on objects is directed down. [Clarification Statement: “Down” is a local description of the direction that points toward the center of the spherical Earth.] [Assessment Boundary: Assessment does not include mathematical representation of gravitational force.]

<table>
<thead>
<tr>
<th>Literacy or Informative Text</th>
<th>Lab Investigations</th>
<th>Assessments</th>
</tr>
</thead>
</table>
| Scott Foresman text pages:B56-71) | Law of Motion#1  
- Coin Magic Trick (godleyisd.net)  
- Wacky Washers (sciencespot.net)  
- Newton Gravity beads (sickscience.com)  
| Law of Motion #2  
- Marble Drop (Inspiration laboratories.com)  
- The Rolling Car (k12.wa.us)  
| Law of Motion #3  
- Balloon Lab (Balloon Lab Newton’s 3rd Law Elizabeth Serva)  
- Balloon Rockets Lab-text pgs:69-71  
- Lego Balloon Car (groovylabinabox.com)  
| • Warm Up Activities  
• Investigations  
• Scientific Method Documentation  
• Graphic Organizers  
• Lab Matrixes/written observations  
• Written Connection Summary  
• Foldables/Lab Interactive Notebooks  
• Performance Indicator Assessments  
• Teacher Observations/Student Participation  

Delta Reader-Forces and Motion  
Newton’s law of Motion (School Discoveryeducation.com)  
Sir isaac Newton (readworks.com)  
Force and Motion (A2) Forces and Motion Activities (Lakeshore learning.com)
Technology:

**Law #1 - Newton’s First Law of Motion** (Smart Learning for All) (Make me Genius)
Science for NFL- National Science Foundation

**Law #2 - Newton’s Second Law of Motion** (smart learning for All) (make me genius)
(nationalsciencefoundation)
Demonstration (newwaverly7)

**Law #3 - Newton’s 3rd Law** (Smart learning)
- Bill Nye and Newton’s 3rd Law (George Buford)
- Newton’s 3rd Law by Professor mac (Learning with mac)
- Newton’s 3rd (makemegenius)

**All three Laws**
Laws of motion (physics4kids.com)
Newton’s Law of Motion (brainpop.com)
“ “ (hardwick.assu.org)

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**Observable features of the student performance by the end of the grade:**

1. **Supported claims** a Students identify a given claim to be supported about a phenomenon. The claim includes the idea that the gravitational force exerted by Earth on objects is directed down toward the center of Earth.

2. **Identifying scientific evidence** a Students identify and describe* the given evidence, data, and/or models that support the claim, including:
   i. Multiple lines of evidence that indicate that the Earth’s shape is spherical (e.g., observation of ships sailing beyond the horizon, the shape of the Earth’s shadow on the moon during an eclipse, the changing height of the North Star above the horizon as people travel north and south).
   ii. That objects dropped appear to fall straight down.
   iii. That people live all around the spherical Earth, and they all observe that objects appear to fall straight down.

3. **Evaluation and critique** a Students evaluate the evidence to determine whether it is sufficient and relevant to supporting the claim. b Students describe* whether any additional evidence is needed to support the claim.

4. **Reasoning and synthesis** a Students use reasoning to connect the relevant and appropriate evidence to support the claim with argumentation. Students describe* a chain of reasoning that includes:
   i. If Earth is spherical, and all observers see objects near them falling directly "down" to the Earth’s surface, then all observers would agree that objects fall toward the Earth’s center.
   ii. Since an object that is initially stationary when held moves downward when it is released, there must be a force (gravity) acting on the object that pulls the object toward the center of Earth.
5-PS3-1 Energy

Use models to describe that energy in animals' food (used for body repair, growth, motion, and to maintain body warmth) was once energy from the sun.

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<tr>
<td>Scott Foresman text pages:(A118-A134)</td>
<td>4 Purposes of Animals Food (SciencePenguin)</td>
<td>• Warm Up Activities</td>
</tr>
<tr>
<td>The Penguin:</td>
<td>Food Chain Activity(myips.org)</td>
<td>• Investigations</td>
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<tr>
<td>Science and Literacy:</td>
<td>Food Chain Stack Attack(agapecenter.com)</td>
<td>• Scientific Method Documentation</td>
</tr>
<tr>
<td>Delta Reader- Energy pgs:16-18</td>
<td>Food chain mobile (rcsnc.org)</td>
<td>• Graphic Organizers</td>
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<tr>
<td>Food Chains (enchantedlearning.com)</td>
<td>Food Web Poster Project (bcsc.k12.us)</td>
<td>• Lab Matrixes/written observations</td>
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<tr>
<td>Food Chains and Food Webs(ScienceA-Z)</td>
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<td>• Written Connection Summary</td>
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Reviewed Fall of 2020
Technology:

Food Chains (makemegenius)
Fabulous Food chains (crashcoursekids)
Food Chains (BrainPop.com)
Food Chain game (Sheppards software.com)
Food Chains (interactivesites.weebly.com)
Food Chains game (Akidsheart.com)

Observable features of the student performance by the end of the grade:

1. Components of the model
   a. Students use models to describe* a phenomenon that includes the idea that energy in animals’ food was once energy from the sun. Students identify and describe* the components of the model that are relevant for describing* the phenomenon, including:
      i. Energy.
      ii. The sun.
      iii. Animals, including their bodily functions (e.g., body repair, growth, motion, body warmth maintenance).
      iv. Plants.

2. Relationships
   a. Students identify and describe* the relevant relationships between components, including:
      i. The relationship between plants and the energy they get from sunlight to produce food.
      ii. The relationship between food and the energy and materials that animals require for bodily functions (e.g., body repair, growth, motion, body warmth maintenance).
      iii. The relationship between animals and the food they eat, which is either other animals or plants (or both), to obtain energy for bodily functions and materials for growth and repair.

3. Connections
   a. Students use the models to describe* causal accounts of the relationships between energy from the sun and animals’ needs for energy, including that:
      i. Since all food can eventually be traced back to plants, all of the energy that animals use for body repair, growth, motion, and body warmth maintenance is energy that once came from the sun.
      ii. Energy from the sun is transferred to animals through a chain of events that begins with plants producing food then being eaten by animals.
5-LS1-1 Molecules to Organisms/Structures and Processes

5-LS1-1 Support an argument that plants get the materials they need for growth chiefly from air and water. [Clarification Statement: Emphasis is on the idea that plant matter comes mostly from air and water, not from the soil.]

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<td>Scott Foresman text pages:A 118-128</td>
<td>Diagram sheet on Photosynthesis (Penguin)</td>
<td>● Warm Up Activities</td>
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<tr>
<td>The Penguin</td>
<td>Plant Investigations Notebook</td>
<td>● Investigations</td>
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<tr>
<td>Science and Literacy: “Do Plants Eat”</td>
<td>Color Changing Celery Experiments/Colored Carnations</td>
<td>● Scientific Method Documentation</td>
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<td>Delta Reader-Air and water</td>
<td>Bend A Carrot</td>
<td>● Graphic Organizers</td>
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<td>Grow a Potato in a Cup Living Investigations with Crayfish</td>
<td>● Lab Matrixes/written observations</td>
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<td>● Written Connection Summary</td>
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<td>● Performance Indicator Assessments</td>
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<td></td>
<td>● Teacher Observations/Student Participation</td>
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</table>
**Technology:**

https://www.youtube.com/watch?v=tXptM5HPm-YGSS  
5-LS1-1 What Do Plants Need to Grow? Experiment Setup

Who Needs Dirt?: Crash Course Kids #27.1  
https://www.youtube.com/watch?v=tXptM5HPm-Y

The Color-Changing Celery Experiment!  
https://www.youtube.com/watch?v=Klug9Foou3s

Celery and Food Coloring Experiment  
https://www.youtube.com/watch?v=PdQsvW7QjiM
### 5LS2- Ecosystems: Interactions, Energy, and Dynamics

**5LS2-** Develop a model to describe the movement of matter among plants, animals, decomposers, and the environment. [Clarification Statement: Emphasis is on the idea that matter that is not food (air, water, decomposed materials in soil) is changed by plants into matter that is food. Examples of systems could include organisms, ecosystems, and the Earth.] [Assessment Boundary: Assessment does not include molecular explanations.]

<table>
<thead>
<tr>
<th>Literacy or Informative Text</th>
<th>Lab Investigations</th>
<th>Assessments</th>
</tr>
</thead>
</table>
| Scott Foresman text pages: 118-134 | How Can you Test Your Soil  
- Food Chain Vocabulary-foldable  
- Decomposers- Foldable  
- Movement of Energy In Food Chains  
- Will it Grow?  
- Bread/Mold Experiment  
- Growing Bacteria in Petri Dishes  
- Mold Terrarium  
- Movement of Energy in Food Webs  
- Nitrogen Cycle  
- Draw and Label a diagram that shows how energy flows through an ecosystem  
- Lightbulb Terrarium (Pinterest)  
- Ecosystem Diorama | Warm Up Activities  
Investigations  
Scientific Method Documentation  
Graphic Organizers  
Lab Matrixes/written observations  
Written Connection Summary  
Foldables/Lab Interactive Notebooks  
Performance Indicator Assessments  
Teacher Observations/Student Participation |

**The Penguin**

Science and Literacy

**Delta Readers:**

- Ecosystems
- Changing Ecosystems

**REVIEWED FALL OF 2020**
Technology:

How Can You Test Your Soil?
http://www.earthsciweek.org/classroom-activities/how-can-you-test-your-soil

The Dirt on Decomposers: Crash Course Kids #7.2
https://www.youtube.com/watch?v=uB61rfeeAsM

Understanding Ecosystems for Kids: Producers, Consumers, Decomposers - FreeSchool
https://www.youtube.com/watch?v=bJEToQ49Yjc

Food Chains Compilation: Crash Course Kids
https://www.youtube.com/watch?v=CZhE2p46vJk

DIY Light Bulb Terrariums - Man Vs Pin - Pinterest Test #56
https://www.youtube.com/watch?v=QqKIgrLorlI

4th Grade Ecosystems
https://www.youtube.com/watch?v=KamQ_VoGs

Observable features of the student performance by the end of the grade:

1. Components of the model a Students develop a model to describe* a phenomenon that includes the movement of matter within an ecosystem. In the model, students identify the relevant components, including:
   i. Matter.
   ii. Plants.
   iii. Animals
   iv. Decomposers, such as fungi and bacteria.
   v. Environment.
2. Relationships a Students describe* the relationships among components that are relevant for describing* the phenomenon, including:
   i. The relationships in the system between organisms that consume other organisms, including:
      1. Animals that consume other animals.
      2. Animals that consume plants. June 2015 Page 1 of 2
   3. Organisms that consume dead plants and animals.
   4. The movement of matter between organisms during consumption.
   ii. The relationship between organisms and the exchange of matter from and back into the environment (e.g., organisms obtain matter from their environments for life processes and release waste back into the environment, decomposers break down plant and animal remains to recycle some materials back into the soil). 3 Connections a Students use the model to describe*: i. The cycling of matter in the system between plants, animals, decomposers, and the environment. ii. How interactions in the system of plants, animals, decomposers, and the environment allow multiple species to meet their needs.
   iii. That newly introduced species can affect the balance of interactions in a system (e.g., a new animal that has no predators consumes much of another organism’s food within the ecosystem).
   iv. That changing an aspect (e.g., organisms or environment) of the ecosystem will affect other aspects of the ecosystem.
<table>
<thead>
<tr>
<th>5-ESS1-1-Earth’s Place in the Universe</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>5-ESS1-1</strong> 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.</td>
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<tr>
<td>[Assessment Boundary: Assessment is limited to relative distances, not sizes, of stars. Assessment does not include other factors that affect apparent brightness (such as stellar masses, age, stage).]</td>
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<tr>
<td><strong>5-ESS1-2</strong> 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. [Clarification Statement: Examples of patterns could include the position and motion of Earth with respect to the sun and selected stars that are visible only in particular months.]</td>
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<tr>
<td>Literacy or Informative Text</td>
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<tr>
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<tr>
<td>Scott Foresman text pages: C118-123</td>
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<tr>
<td>The Penguin: Interactive Notebook</td>
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<tr>
<td>Science and Literacy: What is a Light Year</td>
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<td>Measures of Science Stars</td>
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<td>All about Stars</td>
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<tr>
<td>Fun Facts about Stars</td>
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<td>Sun and Stars</td>
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<td>Informational Text and Lapbook</td>
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<td>Constellations and Seasons</td>
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<td>Constellation WORkbooks</td>
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<td>Zodiac</td>
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<td>Pictures in the Stars, Legends in the Skies</td>
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<tr>
<td>Delta Readers:</td>
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<tr>
<td>Our Solar System and Beyond</td>
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<td>Earth, Moon, and Sun System</td>
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Technology:

Size and direction of shadows | Light | Physics
https://www.youtube.com/watch?v=yjLIe1aoXGY
Following the Sun: Crash Course Kids #8.2  
www.youtube.com/watch?v=1SN1BOPLZAs
Star Distance and Brightness - YouTube  

How Do We Measure the Distance to Stars? - Instant Egghead #46 - YouTube
https://www.youtube.com/embed/vyiauRjJBNQ

Stargazing Basics 2: Understanding magnitudes - YouTube
https://www.youtube.com/embed/9P8Veb_AlJ0

Why Do Stars in the Night Sky Change With the Seasons? : Planets
https://www.youtube.com/watch?v=tLPNawTZOSQ
Constellations: The Changing Night Sky - Windows to the Universe
https://www.windows2universe.org/the_universe/Constellations/constellations5.html
  Why do different stars appear with seasons? (Beginner) - Curious...
curious.astro.cornell.edu/.../stargazing/.../734-why-do-different-stars-appear-with-seas...
  Why do the stars change with the seasons? - Mystery Science
https://mysteryscience.com/astronomy/mystery-3
Observable features of the student performance by the end of the grade

5-ESS1-1:
1. Supported Claims
   A. Students identify a given claim to be supported about a given phenomenon. The claim includes the idea that the apparent brightness of the sun and stars is due to their relative distances from Earth.

2. Identifying Scientific Evidence
   A. Students describe the evidence, data, and/or models that support the claim, including:
      i. The sun and other stars are natural bodies in the sky that give off their own light.
      ii. The apparent brightness of a variety of stars, including the sun.
      iii. A luminous object close to a person appears much brighter and larger than a similar object that is very far away from a person (e.g., nearby streetlights appear bigger and brighter than distant streetlights).
      iv. The relative distance of the sun and stars from Earth (e.g., although the sun and other stars are all far from the Earth, the stars are very much farther away; the sun is much closer to Earth than other stars).

3. Evaluating and Critiquing Evidence
   A. Students evaluate the evidence to determine whether it is relevant to supporting the claim, and sufficient to describe the relationship between apparent size and apparent brightness of the sun and other stars and their relative distances from Earth.
   B. Students determine whether additional evidence is needed to support the claim.

4. Reasoning and Synthesis
   A. Students use reasoning to connect the relevant and appropriate evidence to the claim with argumentation. Students describe a chain of reasoning that includes
      i. Because stars are defined as natural bodies that give off their own light, the sun is a star.
      ii. The sun is many times larger than Earth but appears small because it is very far away.
      iii. Even though the sun is very far from Earth, it is much closer than other stars.
      iv. Because the sun is closer to Earth than any other star, it appears much larger and brighter than any other star in the sky.
      v. Because objects appear smaller and dimmer the farther they are from the viewer, other stars, although immensely large compared to the Earth, seem much smaller and dimmer because they are so far away.
      vi. Although stars are immensely large compared to Earth, they appear small and dim because they are so far away.
      vii. Similar stars vary in apparent brightness, indicating that they vary in distance from Earth.

REVIEWED FALL OF 2020
5-ESS1-2:
1 Organizing Data
A. Using graphical displays (e.g., bar graphs, pictographs), students organize data pertaining to daily and seasonal changes caused by the Earth’s rotation and orbit around the sun. Students organize data that include
i. The length and direction of shadows observed several times during one day.
ii. The duration of daylight throughout the year, as determined by sunrise and sunset.
iii. Presence or absence of selected stars and/or groups of stars that are visible in the night sky at different times of the year.

2. Identifying relationships
A. Students use the organized data to find and describe* relationships within the datasets, including:
i. The apparent motion of the sun from east to west results in patterns of changes in length and direction of shadows throughout a day as Earth rotates on its axis.
ii. The length of the day gradually changes throughout the year as Earth orbits the sun, with longer days in the summer and shorter days in the winter.
iii. Some stars and/or groups of stars (i.e., constellations) can be seen in the sky all year, while others appear only at certain times of the year.
B. Students use the organized data to find and describe* relationships among the seasons
i. Similarities and differences in the timing of observable changes in shadows, daylight, and the appearance of stars show that events occur at different rates (e.g., Earth rotates on its axis once a day, while its orbit around the sun takes a full year).

5-ESS2-1-Earth’s Systems

5-ESS2-1. Develop a model using an example to describe ways the geosphere, biosphere, hydrosphere, and/or atmosphere interact. [Clarification Statement: Examples could include the influence of the ocean on ecosystems, landform shape, and climate; the influence of the atmosphere on landforms and ecosystems through weather and climate; and the influence of mountain ranges on winds and clouds in the atmosphere. The geosphere, hydrosphere, atmosphere, and biosphere are each a system.]
<table>
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<tbody>
<tr>
<td>Scott Foresman text pages: C8-C11</td>
<td>Make Our Own Greenhouse</td>
<td>Warm Up Activities</td>
</tr>
<tr>
<td>The Penguin: Interactive Notebook on 4 Spheres</td>
<td>Diagram and writing about the Interaction of all the spheres</td>
<td>Investigations</td>
</tr>
<tr>
<td>Science and Literacy: The Four Spheres of Earth</td>
<td>Weathering of Chalk Experiment (text)</td>
<td>Scientific Method Documentation</td>
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<tr>
<td>Break It Down Erosion</td>
<td>Burning Issues</td>
<td>Graphic Organizers</td>
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<tr>
<td>Delta Reader: Earth, Moon, and Sun System Soils Weathering and Erosion</td>
<td>Dangerous Atmosphere</td>
<td>Lab Matrixes/written observations</td>
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<td>Written Connection Summary</td>
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<td>Teacher Observations/Student Participation</td>
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</tbody>
</table>
**Technology:**

**Burning Issues**
http://www.earthsciweek.org/classroom-activities/burning-issues

**Dangerous Atmosphere**
http://www.earthsciweek.org/classroom-activities/dangerous-atmosphere

Four Spheres Part 1 (Geo and Bio): Crash Course Kids #6.1
www.youtube.com/watch?v=VMxjzWHbyFM

Four Spheres Part 2 (Hydro and Atmo): Crash Course Kids
#6.2www.youtube.com/watch?v=UXh_7wbnS3A

Big Idea 3: Earth's Systems Interact
www.youtube.com/watch?v=BnpF0ndXk-8&list=PLtt9mvqDFqX_RckvcK2Bw9PDPe4p2EgQ

Weathering and Erosion: Crash Course Kids #10.2
www.youtube.com/watch?v=R-Iak3Wvh9c
Observable features of the student performance by the end of the grade:

1. Components of the model
   A. Students develop a model, using a specific given example of a phenomenon, to describe ways that the geosphere, biosphere, hydrosphere, and/or atmosphere interact. In their model, students identify the relevant components of their example, including features of two of the following systems that are relevant for the given example:
      i. Geosphere (i.e., solid and molten rock, soil, sediment, continents, mountains)
      ii. Hydrosphere (i.e., water and ice in the form of rivers, lakes, glaciers).
      iii. Atmosphere (i.e., wind, oxygen).
      iv. Biosphere (i.e., plants, animals [including humans]).

2. Relationships
   A. Students identify and describe relationships (interactions) within and between the parts of the Earth systems identified in the model that are relevant to the example (e.g., the atmosphere and the hydrosphere interact by exchanging water through evaporation and precipitation; the hydrosphere and atmosphere interact through air temperature changes, which lead to the formation or melting of ice).

3. Connections
   A. Students use the model to describe a variety of ways in which the parts of two major Earth systems in the specific given example interact to affect the Earth’s surface materials and processes in that context. Students use the model to describe how parts of an individual Earth system:
      i. Work together to affect the functioning of that Earth system.
      ii. Contribute to the functioning of the other relevant Earth system.
5ESS2-2- Earth’s Systems

5-ESS2-2. Describe and graph the amounts of saltwater and freshwater in various reservoirs to provide evidence about the distribution of water on Earth. [Assessment Boundary: Assessment is limited to oceans, lakes, rivers, glaciers, ground water, and polar ice caps, and does not include the atmosphere.]

<table>
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<tr>
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<tbody>
<tr>
<td>Scott Foresman text pages: C48-50</td>
<td>Make a poster of a pie graph for percentage of saltwater and freshwater on earth.</td>
<td>Warm Up Activities</td>
</tr>
<tr>
<td>The Penguin: Distribution of Water on Earth</td>
<td>Pinterest- tissue paper mosaic of percentage of water on earth</td>
<td>Investigations</td>
</tr>
<tr>
<td>Delta Reader</td>
<td>Hydrologic Cycle</td>
<td>Graphic Organizers</td>
</tr>
<tr>
<td></td>
<td>Groundwater Movement</td>
<td>Lab Matrixes/written observations</td>
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</tbody>
</table>

Reviewed Fall of 2020
Technology:

Deep-Sea Drilling
http://www.earthsciweek.org/classroom-activities/deep-sea-drilling
Earth’s Hydrologic Cycle
http://www.earthsciweek.org/classroom-activities/earths-hydrologic-cycle
Groundwater Movement
http://www.earthsciweek.org/classroom-activities/groundwater-movement

Observable features of the student performance by the end of the grade:

1. Representation
   A. Students graph the given data (using standard units) about the amount of salt water and the amount of fresh water in each of the following reservoirs, as well as in all the reservoirs combined, to address a scientific question:
      i. Oceans.
      ii. Lakes.
      iii. Rivers.
      iv. Glaciers.
      v. Groundwater.
      vi. Polar ice caps.

2. Mathematical/computational analysis
   A. Students use the graphs of the relative amounts of total salt water and total fresh water in each of the reservoirs to describe that:
      i. The majority of water on Earth is found in the oceans.
      ii. Most of the Earth’s freshwater is stored in glaciers or underground.
      iii. A small fraction of freshwater is found in lakes, rivers, wetlands, and the atmosphere.
5-ESS3-1: Earth and Human Activity

5-ESS3-1. Obtain and combine information about ways individual communities use science ideas to protect the Earth’s resources and environment.

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</table>
| Scott Foresman text pages:C42-C53  
  C54-55  
  C56-C67  
  C67-68 | A Paste with Taste  
  Cookie Mining  
  Burning Issues  
  Investigating Water Pollution Text lab) C54-55  
  Investigating Air Pollution (text lab)C67-68  
  Earth Day Mascot  
  Human Impact Task Cards  
  Human Impact-Rd The Boy Who Harnessed the Wind and Energy Island do problem and solution foldable  
  Agricultural RunOff Fact Sheet (Penguin) | Warm Up Activities  
  Investigations  
  Scientific Method Documentation  
  Graphic Organizers  
  Lab Matrixes/written observations  
  Written Connection Summary  
  Foldables/Lab Interactive Notebooks  
  Performance Indicator Assessments  
  Teacher Observations/Student Participation |

REVIEWED FALL OF 2020
Technology:

The Short Story: "Samsø The Energy Island"

[www.youtube.com/watch?v=pXdxYTCOvwc](http://www.youtube.com/watch?v=pXdxYTCOvwc)

A Paste with a Taste
[http://www.earthsciweek.org/classroom-activities/](http://www.earthsciweek.org/classroom-activities/)

Cookie Mining
[cookie-miningciweek.org/classroom-activities/a-paste-with-taste](http://cookie-miningciweek.org/classroom-activities/a-paste-with-taste)

Burning Issues

Observable Features of the Student Performance by the end of the grade

1. Supported Claims
   i. How a given human activity (e.g., in agriculture, industry, everyday life) affects the Earth's resources and environments.
   ii. How a given community uses scientific ideas to protect a given natural resource and the environment in which the resource is found.

2. Evaluating information
   A. Students combine information from two or more sources to provide and describe* evidence about:
   i. The positive and negative effects on the environment as a result of human activities.
   ii. How individual communities can use scientific ideas and a scientific understanding of interactions between components of environmental systems to protect a natural resource and the environment in which the resource is found.
Engineering Design

Students who demonstrate understanding can:

3-5-ETS1.1- Define a simple design problem reflecting a need or a want that includes specified criteria
For success and constraints on materials, time, or cost.

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.

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.
### Physical Sciences

#### Investigations/Technology

- **The Inventors Secret** - investigate designing a toy, pgs:61-78 in Picture Perfect STEM
- **Burn** - explore physical and chemical changes of a burning candle, Pgs: 137-160 in Picture Perfect STEM
- **Bottle Rockets** - chemical reactions-pgs;54-55 (Steam Kids)
- **Off to the Races** - design a race car-pg:41 (50 Lab..)
- **Merry Go Round** - balloon powered-pg:40 “ “
- **Lay it All on the Line** - balloon powered.pg:36
- **Create a plastic bridge** - motion and forces-pg:44 (50 Stem Labs)

#### Assessments

- Sketch w/ labels-25%
- Explanation of strategies-25%
- Completion of project-25%
- Conclusions and reflections based on results-25%

### Life Sciences

#### Investigations/Technology

- **Bionic Animals** - pgs: 223-244 in Picture Perfect STEM by Morgan and Ansberry
- **From Seed to Tree** - pgs:245-261 in Picture Perfect STEM
- **Growing Seeds Science** - pg:82-83 (Steam Kids)
- **Fun with Fungus** - pg:86-87 “ “
- **Bedroom planetarium-constellations** - pgs: 52-53 (Steam Kids)
- **Growing Shadow Artwork** - shadows-pgs:89 “ “
### Earth Sciences

#### Investigations/Technology

- **Rock Candy-crystals**-pg:81 (Steam Kids)
- **Crystal landscapes**-pg:90

- **Take to the Winds-create a windmill**-pg:49 (50 Stem Labs)
- **Wind Powered Speed Boat**-pg:32 (50 Stem Labs)

#### Assessments

- Sketch w/ labels-25%
- Explanation of strategies-25%
- Completion of project-25%
- Conclusions and reflections based on results-25%