<table>
<thead>
<tr>
<th>UNIT TITLE</th>
<th>BASE STANDARD(s) COVERED</th>
<th>EXTENSION</th>
<th>ACTIVITIES</th>
</tr>
</thead>
</table>
| Exploring Energy through Rube Goldberg | -6.1 E) A method is devised to test the validity of predictions and inferences          | *Expanding skills/knowledge of different forms of energy and the ways that simple machines convert energy from one form to another  
*Demonstrating through simple machines that with minimal amounts of work put in, the force applied to objects is greater  
*Using demonstrations/activities to show that when multiple simple machines are placed together, a relatively simple task can be completed | *Exploratory - 6 station simple machines activity  
*Cartoon drawing/minature 4 step Rube Goldberg machine building-get the ball into the cup  
*10-16 step Rube Goldberg machine- make the buzzer BUZZ.                                                                                                                                                  |
<table>
<thead>
<tr>
<th>UNIT TITLE</th>
<th>BASE STANDARD(s)</th>
<th>EXTENSION</th>
</tr>
</thead>
<tbody>
<tr>
<td>Exploring Energy through Rube Goldberg</td>
<td>-6.1 E) A method is devised to test the validity of predictions and inferences</td>
<td><em>Expanding skills/knowledge of different forms of energy and the ways that simple machines convert energy from one form to another</em>&lt;br&gt; <em>Demonstrating through simple machines that with minimal amounts of work put in, the force applied to objects is greater</em>&lt;br&gt; <em>Using demonstrations/activities to show that when multiple simple machines are placed together, a relatively simple task can be completed</em>&lt;br&gt; <em>Exploratory - 6 station simple machines activity</em>&lt;br&gt; <em>Cartoon drawing/miniature 4 step Rube Goldberg machine building- get the ball into the cup</em>&lt;br&gt; <em>10-16 step Rube Goldberg machine- make the buzzer BUZZ.</em></td>
</tr>
<tr>
<td>Attack of the Invasive Species!</td>
<td>-6.7a) the health of ecosystems and the abiotic factors of a watershed&lt;br&gt;-6.7f) major conservation, health, and safety issues associated with watersheds&lt;br&gt;-6.9c) the mitigation of land-use and environmental hazards through preventive measures&lt;br&gt;-6.9d) cost/benefit tradeoffs in conservation policies</td>
<td><em>Introducing the skills for identifying and eradicating an ecosystem of non-native species</em>&lt;br&gt; <em>Identifying methods of preventing the introduction of invasive species to an ecosystem</em>&lt;br&gt; <em>Using media to get out the message of the dangers of invasive species-storyboards, slogans, and public service announcements</em>&lt;br&gt; <em>Possible extension could include an after school club to begin ridding Benton and the nature trail of identified invasive plant species</em>&lt;br&gt; <em>Identify Vocabulary for Invasive Species</em>&lt;br&gt; <em>Guided Tour of Benton property to learn to properly identify and remove invasive species from the grounds (led by Master Gardners of PWC)</em>&lt;br&gt; <em>Generate a Flow Chart-map out invasive species in the U.S., focus on Virginia (follow the path for how the species got to the United States and to Virginia)</em>&lt;br&gt; <em>Construct a storyboard on ways invasive species spread</em>&lt;br&gt; <em>Create a press release on ways invasive species spread</em>&lt;br&gt; <em>Design a “Call to Action” slogan and Public Service Announcement, (video, rap, rhyme) Record and Present using Sway or Power Point Video (or other approved app) (Flow Chart-&gt;Storyboard-&gt;Press Release-&gt;PSA presentation)</em></td>
</tr>
</tbody>
</table>
| The Albedo Effect: Building a Smarter Future | -6.1a) Observations are made involving fine discrimination between similar objects and organisms.<br>-6.1.h) Data are analyzed through graphical representations.<br>-6.1.i) Models and simulations are designed and used to illustrate/explain phenomena and systems.<br>-6.3.a) Earth's energy budget<br>-6.3.b) The role of radiation and convection in the distribution of energy.<br>-6.3.e) The role of thermal energy in weather-related phenomena.<br>-6.6.b) Pressure, temperature, and humidity<br>-6.6d) Natural and human-caused changes to the atmosphere and the importance of protecting and maintaining air quality.<br>-6.9.d) Cost/benefit tradeoffs in conservation policies. | *Gaining a better understanding of how and why materials absorb and reflect heat.*<br> *Recording data from the school grounds to see what areas collect the most heat.*<br> *Developing strategies to reduce heat collection in areas that people will inhabit.*<br> *The importance of energy conservation and better building practices to benefit the air quality of populated areas.*<br> *Real world data collection: Students will be planning areas to record temperature measurements using a thermometer and light meter based on the school map and building materials.*<br> *Engineering design: Students will record temperatures on a roofing shingle exposed to a heat lamp. They will then be tasked to make a scale model of a playground using a variety of building materials to prevent heat collection.*<br> *Digital Graphs: Students will be responsible for creating digital graphs using the data they collected in two of the activities in Excel.*
| The Albedo Effect: Building a Smarter Future | -6.1a) Observations are made involving fine discrimination between similar objects and organisms.  
-6.1.h) Data are analyzed through graphical representations.  
-6.1.i) Models and simulations are designed and used to illustrate/explain phenomena and systems.  
-6.3.a) Earth’s energy budget  
-6.3.b) The role of radiation and convection in the distribution of energy.  
-6.3.e) The role of thermal energy in weather-related phenomena.  
-6.6.b) Pressure, temperature, and humidity  
-6.6d) Natural and human-caused changes to the atmosphere and the importance of protecting and maintaining air quality.  
*Recording data from the school grounds to see what areas collect the most heat.  
*Developing strategies to reduce heat collection in areas that people will inhabit.  
*The importance of energy conservation and better building practices to benefit the air quality of populated areas. | *Real world data collection: Students will be planning areas to record temperature measurements using a thermometer and light meter based on the school map and building materials.  
*Engineering design: Students will record temperatures on a roofing shingle exposed to a heat lamp. They will then be tasked to make a scale model of a playground using a variety of building materials to prevent heat collection.  
*Digital Graphs: Students will be responsible for creating digital graphs using the data they collected in two of the activities in Excel. |