

	Content Standard	Investigation and Experimentation Standard	Ideas on Connection to Airplane and/or Rocket
K	<p>Properties of materials can be observed, measured, and predicted.</p> <p>As a basis for understanding this concepts students know objects can be described in terms of the materials they are made of (e.g., clay, cloth, paper) and their physical properties</p>	<p>Students will:</p> <ol style="list-style-type: none"> observe common objects by using the five senses. describe the properties of common objects. describe the relative position of objects by using one reference (e.g., above or below). compare and sort common objects by one physical attribute (e.g., color, shape, texture, size, weight). communicate observations orally and through drawings. <p>Students will:</p> <ol style="list-style-type: none"> draw pictures that portray some features of the thing being described. Record observations and data with pictures, numbers, or written statements. Record observations on a bar graph. Describe the relative position of objects by using two references (e.g., above and next to, below and left of). Make new observations when discrepancies exist between two descriptions of the same object or phenomenon. 	<p>Students build airplanes and rockets using different materials, difference sizes, etc., & perform simple experimentation.</p> <p>Student will use the thrust of the "air" to fly airplane or rocket.</p> <p>Students can predict the best weather to fly an airplane or rocket.</p> <p>In both cases, students can perform a simple experiment.</p>
1	<p>Materials come in different forms (states), including solids, liquids, and gases. As a basis for understanding this concept students know solids, liquids, and gases have different properties.</p> <p>Weather can be observed, measured, and described. As a basis for understanding this concept:</p> <ol style="list-style-type: none"> Students know how to use simple tools (e.g., thermometer, wind vane) to measure weather conditions and record changes from day to day and across the seasons. Students know that the weather changes from day to day but that trends in temperature or of rain (or snow) tend to be predictable during a season. <p>The motion of objects can be observed and measured. As a basis for understanding this concept:</p> <ol style="list-style-type: none"> Students know the position of an object can be described by locating it in relation to another object or to the background. Students know an object's motion can be described by recording the change in position of the object over time. Students know the way to change how something is moving is by giving it a push or a pull. The size of the change is related to the strength, or the amount of force, of the push or pull. Students know tools and machines are used to apply pushes and pulls (forces) to make things move. Students know objects fall to the ground unless something holds them up. <p>Energy and matter have multiple forms and can be changed from one form to another. As a basis for understanding this concept:</p> <ol style="list-style-type: none"> Students know sources of stored energy take many 	<p>Students will:</p> <ol style="list-style-type: none"> Make predictions based on observed patterns and not random guessing. Measure length, weight, temperature, and liquid volume with appropriate tools and express those measurements in standard metric system units. Write or draw descriptions of a sequence of steps, events, and observations. Follow oral instructions for a scientific investigation. 	<p>Students can record the change in motion depending on the amount of thrust.</p> <p>SO MANY IDEAS!!! Be Creative.....</p>
2	<p>Energy and matter have multiple forms and can be changed from one form to another. As a basis for understanding this concept:</p> <ol style="list-style-type: none"> Students know sources of stored energy take many 	<p>Students will:</p> <ol style="list-style-type: none"> Repeat observations to improve accuracy and know that the results of similar scientific investigations seldom turn out exactly the same because of differences in the things being investigated, methods being used, or observations. 	<p>Have students compare the amount of "stored energy" and flight.....smaller bottles=less stored energy=less flight???</p>
3			

	<p>forms, such as food, fuel, and batteries.</p> <p>c Students know machines and living things convert stored energy to motion and heat.</p>	<p>uncertainty in the observation.</p> <p>b. Differentiate evidence from opinion and know that scientists do not rely on claims or conclusions unless they are backed by observations that can be confirmed.</p> <p>c. Use numerical data in describing and comparing objects, events, and measurements.</p> <p>d. Predict the outcome of a simple investigation and compare the result with the prediction.</p> <p>e. Collect data in an investigation and analyze those data to develop a logical conclusion.</p> <p>Students will:</p> <p>a. Differentiate observation from inference (interpretation) and know scientists' explanations come partly from what they observe and partly from how they interpret their observations.</p> <p>b. Measure and estimate the weight, length, or volume of objects.</p> <p>c. Formulate and justify predictions based on cause-and effect relationships.</p> <p>d. Conduct multiple trials to test a prediction and draw conclusions about the relationships between predictions and results.</p> <p>e. Construct and interpret graphs from measurements.</p> <p>f. Follow a set of written instructions for a scientific investigation.</p> <p>Students will:</p> <p>b. Develop a testable question.</p> <p>c. Plan and conduct a simple investigation based on a student-developed question and write instructions others can follow to carry out the procedure.</p> <p>d. Identify the dependent and controlled variables in an investigation.</p> <p>e. Identify a single independent variable in a scientific investigation and explain how this variable can be used to collect information to answer a question about the results of the experiment.</p> <p>f. Select appropriate tools (e.g., thermometers, meter sticks, balances, and graduated cylinders) and make quantitative observations.</p> <p>g. Record data by using appropriate graphic representations (including charts, graphs, and labeled diagrams) and make inferences based on those data</p> <p>h. Draw conclusions from scientific evidence and indicate whether further information is needed to support a specific conclusion.</p> <p>i Write a report of an investigation that includes conducting tests, collecting data or examining evidence, and drawing conclusions.</p>	<p>Focus on Experimentation Standards...</p>
<p>4</p>	<p>Electricity and magnetism are related effects that have many useful applications in everyday life. As a basis for understanding this concept:</p> <p>a Students know how to design and build simple series and parallel circuits by using components such as wires, batteries, and bulbs.</p> <p>g Students know electrical energy can be converted to heat, light, and motion.</p>	<p>Possible activity: Student wire an airplane using series & parallel circuits.</p> <p>Students use motor to move plane along runway.</p>	
<p>5</p>	<p>Students know that the Earth's atmosphere exerts a pressure that decreases with distance above Earth's surface and that at any point it exerts this pressure equally in all directions.</p>		<p>Have students design, fly and improve airplane and/or rocket.....</p>