

Pushing the Envelope			
2006 Science Revised January 2008			
State Curriculum			
Maryland Science Revised January 2008			
Grade 5			
Activity/Lesson	State	Standards	
Types of Engines (pgs. 11-23)	MD	SCI.5.5.A.2.b	Students will use scientific skills and processes to explain the interactions of matter and energy and the energy transformations that occur. Observe and explain the changes in selected motion patterns using the relationship between force and mass.
Types of Engines (pgs. 11-23)	MD	SCI.5.5.A.4.b.1	Students will use scientific skills and processes to explain the interactions of matter and energy and the energy transformations that occur. Identify that an object has energy (kinetic) related to its motion: The greater the mass, the greater the energy
Types of Engines (pgs. 11-23)	MD	SCI.5.5.A.4.b.2	Students will use scientific skills and processes to explain the interactions of matter and energy and the energy transformations that occur. Identify that an object has energy (kinetic) related to its motion: The greater the speed, the greater the energy
Chemistry (pgs. 25-41)	MD	SCI.5.1.A.1.b	Students will gather and question data from many different forms of scientific investigations which include reviewing appropriate print resources, observing what things are like or what is happening somewhere, collecting specimens for analysis, and doing experiments. Select and use appropriate tools hand lens or microscope (magnifiers), centimeter ruler (length), spring scale (weight), balance (mass), Celsius thermometer (temperature), graduated cylinder (liquid volume), and stopwatch (elapsed time) to augment observations of objects, events, and processes.
Chemistry (pgs. 25-41)	MD	SCI.5.1.A.1.g.3	Students will gather and question data from many different forms of scientific investigations which include reviewing appropriate print resources, observing what things are like or what is happening somewhere, collecting specimens for analysis, and doing experiments. Judge whether measurements and computations of quantities are reasonable in a familiar context by comparing them to typical values when measured to the nearest: Milliliter - volume

Chemistry (pgs. 25-41)	MD	SCI.5.1.A.1.g.7	Students will gather and question data from many different forms of scientific investigations which include reviewing appropriate print resources, observing what things are like or what is happening somewhere, collecting specimens for analysis, and doing experiments. Judge whether measurements and computations of quantities are reasonable in a familiar context by comparing them to typical values when measured to the nearest: Degree C - temperature
Physics and Math (pgs. 43-63)	MD	SCI.5.5.A.2.b	Students will use scientific skills and processes to explain the interactions of matter and energy and the energy transformations that occur. Observe and explain the changes in selected motion patterns using the relationship between force and mass.
Rocket Activity (pgs. 69-75)	MD	SCI.5.5.A.2.b	Students will use scientific skills and processes to explain the interactions of matter and energy and the energy transformations that occur. Observe and explain the changes in selected motion patterns using the relationship between force and mass.
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Grade 6			
Activity/Lesson	State	Standards	
History of Aviation Propulsion (pgs. 5-9)	MD	SCI.6.1.C.1.g	Develop explanations that explicitly link data from investigations conducted, selected readings and, when appropriate, contributions from historical discoveries. Recognize that important contributions to the advancement of science, mathematics, and technology have been made by different kinds of people, in different cultures, at different times.
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Grade 7			
Activity/Lesson	State	Standards	
History of Aviation Propulsion (pgs. 5-9)	MD	SCI.7.1.C.1.g	Develop explanations that explicitly link data from investigations conducted, selected readings and, when appropriate, contributions from historical discoveries. Recognize that important contributions to the advancement of science, mathematics, and technology have been made by different kinds of people, in different cultures, at different times.

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Grade 8			
Activity/Lesson	State	Standards	
History of Aviation Propulsion (pgs. 5-9)	MD	SCI.8.1.C.1.g	Develop explanations that explicitly link data from investigations conducted, selected readings and, when appropriate, contributions from historical discoveries. Recognize that important contributions to the advancement of science, mathematics, and technology have been made by different kinds of people, in different cultures, at different times.
Types of Engines (pgs. 11-23)	MD	SCI.8.5.A.1.a	Students will use scientific skills and processes to explain the interactions of matter and energy and the energy transformations that occur. Observe, describe, and compare the motions of objects using position, speed, velocity, and the direction.
Types of Engines (pgs. 11-23)	MD	SCI.8.5.A.1.c	Students will use scientific skills and processes to explain the interactions of matter and energy and the energy transformations that occur. Compare accelerated and constant motions using time, distance, and velocity.
Types of Engines (pgs. 11-23)	MD	SCI.8.5.A.1.d	Students will use scientific skills and processes to explain the interactions of matter and energy and the energy transformations that occur. Describe and calculate acceleration using change in the speed and time.
Chemistry (pgs. 25-41)	MD	SCI.8.4.A.1.b	Students will use scientific skills and processes to explain the composition, structure, and interactions of matter in order to support the predictability of structure and energy transformations. Investigate and describe what happens to the properties of elements when they react chemically with other elements.
Chemistry (pgs. 25-41)	MD	SCI.8.4.D.1.b	Students will use scientific skills and processes to explain the composition, structure, and interactions of matter in order to support the predictability of structure and energy transformations. Use evidence from data gathered to explain why the components of compounds cannot be separated using physical properties.
Chemistry (pgs. 25-41)	MD	SCI.8.4.D.3.d	Students will use scientific skills and processes to explain the composition, structure, and interactions of matter in order to support the predictability of structure and energy transformations. Provide data from investigations to support the fact that energy is transformed during chemical reactions.

Physics and Math (pgs. 43-63)	MD	SCI.8.5.A.2.a	Students will use scientific skills and processes to explain the interactions of matter and energy and the energy transformations that occur. Investigate and explain the interaction of force and motion that causes objects that are at rest to move.
Physics and Math (pgs. 43-63)	MD	SCI.8.5.A.2.b	Students will use scientific skills and processes to explain the interactions of matter and energy and the energy transformations that occur. Demonstrate and explain, through a variety of examples, that moving objects will stay in motion at the same speed and in the same direction unless acted on by an unbalanced force.
Physics and Math (pgs. 43-63)	MD	SCI.8.5.A.2.c	Students will use scientific skills and processes to explain the interactions of matter and energy and the energy transformations that occur. Investigate and collect data from multiple trials, about the motion that explain the motion that results when the same force acts on objects of different mass; and when different amounts of force act on objects of the same mass.
Physics and Math (pgs. 43-63)	MD	SCI.8.5.A.2.d	Students will use scientific skills and processes to explain the interactions of matter and energy and the energy transformations that occur. Based on data collected and organized, explain qualitatively the relationship between net force applied to an object and its mass for a given acceleration.
Physics and Math (pgs. 43-63)	MD	SCI.8.5.A.2.e	Students will use scientific skills and processes to explain the interactions of matter and energy and the energy transformations that occur. Calculate the net force given the mass and acceleration.
Rocket Activity (pgs. 69-75)	MD	SCI.8.5.A.2.a	Students will use scientific skills and processes to explain the interactions of matter and energy and the energy transformations that occur. Investigate and explain the interaction of force and motion that causes objects that are at rest to move.
Rocket Activity (pgs. 69-75)	MD	SCI.8.5.A.2.b	Students will use scientific skills and processes to explain the interactions of matter and energy and the energy transformations that occur. Demonstrate and explain, through a variety of examples, that moving objects will stay in motion at the same speed and in the same direction unless acted on by an unbalanced force.