

Pushing the Envelope			
2004 Mathematics			
Performance Standards			
Georgia Mathematics			
Grade 5			
Activity/Lesson	State	Standards	
Types of Engines (pgs. 11-23)	GA	MA.5.M5A1.c	Students will represent and investigate mathematical expressions algebraically by using variables. Students will: Determine that a formula will be reliable regardless of the type of number (whole numbers or decimals) substituted for the variable.
Chemistry (pgs. 25-41)	GA	MA.5.M5M4.b	Students will compute the area of geometric plane figures. They will also understand the concept of volume and compute the volume of simple geometric solids and measure capacity. Students will convert from one unit to another within one system of measurement. Students will: Identify the units used in computing volume as cubic centimeters (cm ³), cubic meters (m ³), cubic inches (in ³), cubic feet (ft ³), and cubic yards (yd ³).
Chemistry (pgs. 25-41)	GA	MA.5.M5M4.d	Students will compute the area of geometric plane figures. They will also understand the concept of volume and compute the volume of simple geometric solids and measure capacity. Students will convert from one unit to another within one system of measurement. Students will: Compute the volume of a cube and a rectangular prism using formulae.
Chemistry (pgs. 25-41)	GA	MA.5.M5M1.h	Students will compute the area of geometric plane figures. They will also understand the concept of volume and compute the volume of simple geometric solids and measure capacity. Students will convert from one unit to another within one system of measurement. Students will: Find the area of a circle using the formula and pi is approximately 3.14.
Chemistry (pgs. 25-41)	GA	MA.5.M5M2.b	Students will compute the area of geometric plane figures. They will also understand the concept of volume and compute the volume of simple geometric solids and measure capacity. Students will convert from one unit to another within one system of measurement. Students will: Find the circumference of a circle using the formula and pi is approximately 3.14.
Physics and Math (pgs. 43-63)	GA	MA.5.M5A1.a	Students will represent and investigate mathematical expressions algebraically by using variables. Students will: Use variables, such as n or x, for unknown quantities in algebraic expressions.

Physics and Math (pgs. 43-63)	GA	MA.5.M5A1.b	Students will represent and investigate mathematical expressions algebraically by using variables. Students will: Investigate simple algebraic expressions by substituting numbers for the unknown.
Physics and Math (pgs. 43-63)	GA	MA.5.M5M1.h	Students will compute the area of geometric plane figures. They will also understand the concept of volume and compute the volume of simple geometric solids and measure capacity. Students will convert from one unit to another within one system of measurement. Students will: Find the area of a circle using the formula and pi is approximately 3.14.
Physics and Math (pgs. 43-63)	GA	MA.5.M5M2.b	Students will compute the area of geometric plane figures. They will also understand the concept of volume and compute the volume of simple geometric solids and measure capacity. Students will convert from one unit to another within one system of measurement. Students will: Find the circumference of a circle using the formula and pi is approximately 3.14.
Rocket Activity (pgs. 69-75)	GA	MA.5.M5A1.c	Determine that a formula will be reliable regardless of the type of number (whole numbers or decimals) substituted for the variable.
Rocket Activity (pgs. 69-75)	GA	MA.5.M5M1.h	Students will compute the area of geometric plane figures. They will also understand the concept of volume and compute the volume of simple geometric solids and measure capacity. Students will convert from one unit to another within one system of measurement. Students will: Find the area of a circle using the formula and pi is approximately 3.14.
Rocket Activity (pgs. 69-75)	GA	MA.5.M5M2.b	Students will compute the area of geometric plane figures. They will also understand the concept of volume and compute the volume of simple geometric solids and measure capacity. Students will convert from one unit to another within one system of measurement. Students will: Find the circumference of a circle using the formula and pi is approximately 3.14.
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Performance Standards			
Georgia Mathematics			
Grade 6			
Activity/Lesson	State	Standards	

Chemistry (pgs. 25-41)	GA	MA.6.M6M3.a	Students will understand how to determine the volume and surface area of solid figures. They will understand and use the customary and metric systems of measurement to measure quantities efficiently and to represent volume and surface area appropriately. Students will: Determine the formula for finding the volume of fundamental solid figures.
Chemistry (pgs. 25-41)	GA	MA.6.M6M3.b	Students will understand how to determine the volume and surface area of solid figures. They will understand and use the customary and metric systems of measurement to measure quantities efficiently and to represent volume and surface area appropriately. Students will: Compute the volumes of fundamental solid figures, using appropriate units of measure.
Chemistry (pgs. 25-41)	GA	MA.6.M6M2.b	Students will understand how to determine the volume and surface area of solid figures. They will understand and use the customary and metric systems of measurement to measure quantities efficiently and to represent volume and surface area appropriately. Students will: Select and use units of appropriate size and type to measure length, perimeter, area and volume.
Chemistry (pgs. 25-41)	GA	MA.6.M6M2.c	Students will understand how to determine the volume and surface area of solid figures. They will understand and use the customary and metric systems of measurement to measure quantities efficiently and to represent volume and surface area appropriately. Students will: Compare and contrast units of measure for perimeter, area, and volume.
Physics and Math (pgs. 43-63)	GA	MA.6.M6A1	Students will investigate relationships between two quantities. They will write and solve proportions and simple one-step equations that result from problem situations. Students will: understand the concept of ratio and use it to represent quantitative relationships.
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Grade 7			
Activity/Lesson	State	Standards	
Types of Engines (pgs. 11-23)	GA	MA.7.M7A3.b	Students will demonstrate an understanding of linear relations and fundamental algebraic concepts. Students will: Represent, describe, and analyze relations from tables, graphs, and formulas.

Chemistry (pgs. 25-41)	GA	MA.7.M7A3.b	Students will demonstrate an understanding of linear relations and fundamental algebraic concepts. Students will: Represent, describe, and analyze relations from tables, graphs, and formulas.
Physics and Math (pgs. 43-63)	GA	MA.7.M7A2.a	Students will demonstrate an understanding of linear relations and fundamental algebraic concepts. Students will: Given a problem, define a variable, write an equation, solve the equation, and interpret the solution.
Physics and Math (pgs. 43-63)	GA	MA.7.M7A3.b	Students will demonstrate an understanding of linear relations and fundamental algebraic concepts. Students will: Represent, describe, and analyze relations from tables, graphs, and formulas.
Rocket Activity (pgs. 69-75)	GA	MA.7.M7A3.b	Students will demonstrate an understanding of linear relations and fundamental algebraic concepts. Students will: Represent, describe, and analyze relations from tables, graphs, and formulas.
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Performance Standards			
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Grade 8			
Activity/Lesson	State	Standards	
Types of Engines (pgs. 11-23)	GA	MA.8.M8A3.e	Students will use linear algebra to represent, analyze and solve problems. They will use equations, tables, and graphs to investigate linear relations and functions, paying particular attention to slope as a rate of change. Students will: Use tables to describe sequences recursively and with a formula in closed form.
Chemistry (pgs. 25-41)	GA	MA.8.M8A3.e	Students will use linear algebra to represent, analyze and solve problems. They will use equations, tables, and graphs to investigate linear relations and functions, paying particular attention to slope as a rate of change. Students will: Use tables to describe sequences recursively and with a formula in closed form.
Physics and Math (pgs. 43-63)	GA	MA.8.M8A1.a	Students will use linear algebra to represent, analyze and solve problems. They will use equations, tables, and graphs to investigate linear relations and functions, paying particular attention to slope as a rate of change. Students will: Represent a given situation using algebraic expressions or equations in one variable.

Physics and Math (pgs. 43-63)	GA	MA.8.M8A3.d	Students will use linear algebra to represent, analyze and solve problems. They will use equations, tables, and graphs to investigate linear relations and functions, paying particular attention to slope as a rate of change. Students will: Recognize functions in a variety of representations and a variety of contexts.
Physics and Math (pgs. 43-63)	GA	MA.8.M8A1.d	Students will use linear algebra to represent, analyze and solve problems. They will use equations, tables, and graphs to investigate linear relations and functions, paying particular attention to slope as a rate of change. Students will: Solve equations involving several variables for one variable in terms of the others.
Physics and Math (pgs. 43-63)	GA	MA.8.M8A5.c	Students will use linear algebra to represent, analyze and solve problems. They will use equations, tables, and graphs to investigate linear relations and functions, paying particular attention to slope as a rate of change. Students will: Graph the solution set of a system of linear inequalities in two variables.
Rocket Activity (pgs. 69-75)	GA	MA.8.M8A3.e	Students will use linear algebra to represent, analyze and solve problems. They will use equations, tables, and graphs to investigate linear relations and functions, paying particular attention to slope as a rate of change. Students will: Use tables to describe sequences recursively and with a formula in closed form.

Pushing the Envelope

2004 Mathematics

Performance Standards

Georgia Mathematics

Grades 9-12 (Mathematics I: Algebra/Geometry/Statistics1)

Activity/Lesson	State	Standards	
Physics and Math (pgs. 43-63)	GA	MA.9-12.MM1A1.g	Students will explore functions and solve simple equations. Students will simplify and operate with radical, polynomial, and rational expressions Students will: Explore rates of change, comparing constant rates of change (i.e., slope) versus variable rates of change. Compare rates of change of linear, quadratic, square root, and other function families.
Physics and Math (pgs. 43-63)	GA	MA.9-12.MM1A2.f	Students will explore functions and solve simple equations. Students will simplify and operate with radical, polynomial, and rational expressions Students will: Factor expressions by greatest common factor, grouping, trial and error, and special products limited to the formulas below. $(x + y)^2 = x^2 + 2xy + y^2$; $(x - y)^2 = x^2 - 2xy + y^2$; $(x + y)(x - y) = x^2 - y^2$; $(x + a)(x + b) = x^2 + (a + b)x + ab$; $(x + y)^3 = x^3 + 3x^2y + 3xy^2 + y^3$; $(x - y)^3 = x^3 - 3x^2y + 3xy^2 - y^3$

Rocket Activity (pgs. 69-75)	GA	MA.9-12.MM1A2.f	<p>Students will explore functions and solve simple equations. Students will simplify and operate with radical, polynomial, and rational expressions. Students will: Factor expressions by greatest common factor, grouping, trial and error, and special products limited to the formulas below. $(x + y)^2 = x^2 + 2xy + y^2$; $(x - y)^2 = x^2 - 2xy + y^2$; $(x + y)(x - y) = x^2 - y^2$; $(x + a)(x + b) = x^2 + (a + b)x + ab$; $(x + y)^3 = x^3 + 3x^2y + 3xy^2 + y^3$; $(x - y)^3 = x^3 - 3x^2y + 3xy^2 - y^3$</p>
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