

Pushing the Envelope			
2004 Mathematics			
Grade Expectations			
Vermont Mathematics			
Grade 5			
Activity/Lesson	State	Standards	
History of Aviation Propulsion (pgs. 5-9)	VT	MA.5.M5:16	Determines elapsed and accrued time to the nearest minute.
Physics and Math (pgs. 43-63)	VT	MA.5.M5:20	Demonstrates a conceptual understanding of linear relationships ($y = kx$) as a constant rate of change by identifying, describing, or comparing situations that represent constant rates of change.
Physics and Math (pgs. 43-63)	VT	MA.5.M5:21	Demonstrates conceptual understanding of algebraic expressions by using letters to represent unknown quantities to write linear algebraic expressions involving any two of the four operations; or by evaluating linear algebraic expressions using whole numbers.
Pushing the Envelope			
2004 Mathematics			
Grade Expectations			
Vermont Mathematics			
Grade 6			
Activity/Lesson	State	Standards	
Physics and Math (pgs. 43-63)	VT	MA.6.M6:1.1	Demonstrates conceptual understanding of rational numbers with respect to ratios (comparison of two whole numbers by division a/b , $a:b$, and a / b , where b is not equal to 0); and rates (e.g., a out of b , 25%) using models, explanations, or other representations.
Physics and Math (pgs. 43-63)	VT	MA.6.M6:20	Demonstrates conceptual understanding of linear relationships ($y = kx$; $y = mx + b$) as a constant rate of change by constructing or interpreting graphs of real occurrences and describing the slope of linear relationships (faster, slower, greater, or smaller) in a variety of problem situations; and describes how change in the value of one variable relates to change in the value of a second variable in problem situations with constant rates of change.
Pushing the Envelope			
2004 Mathematics			
Grade Expectations			
Vermont Mathematics			
Grade 7			
Activity/Lesson	State	Standards	

Physics and Math (pgs. 43-63)	VT	MA.7.M7:20	Demonstrates conceptual understanding of linear relationships ($y = kx$; $y = mx + b$) as a constant rate of change by solving problems involving the relationship between slope and rate of change, by describing the meaning of slope in concrete situations, or informally determining the slope of a line from a table or graph; and distinguishes between constant and varying rates of change in concrete situations represented in tables or graphs; or describes how change in the value of one variable relates to change in the value of a second variable in problem situations with constant rates of change.
Physics and Math (pgs. 43-63)	VT	MA.7.M7:21	Demonstrates conceptual understanding of algebraic expressions by using letters to represent unknown quantities to write algebraic expressions (including those with whole-number exponents or more than one variable); or by evaluating algebraic expressions (including those with whole-number exponents or more than one variable); or by evaluating an expression within an equation (e.g., determine the value of y when $x = 4$ given $y = 5x^3 - 2$).
Pushing the Envelope			
2004 Mathematics			
Grade Expectations			
Vermont Mathematics			
Grade 8			
Activity/Lesson	State	Standards	
Types of Engines (pgs. 11-23)	VT	MA.8.M8:22	Demonstrates conceptual understanding of equality by showing equivalence between two expressions (expressions consistent with the parameters of the left- and right-hand sides of the equations being solved at this grade level) using models or different representations of the expressions, solving formulas for a variable requiring one transformation (e.g., $d = rt$; $d/r = t$); by solving multistep linear equations with integer coefficients; by showing that two expressions are or are not equivalent by applying commutative, associative, or distributive properties, order of operations, or substitution; and by informally solving problems involving systems of linear equations in a context.

Chemistry (pgs. 25-41)	VT	MA.8.M8:22	Demonstrates conceptual understanding of equality by showing equivalence between two expressions (expressions consistent with the parameters of the left- and right-hand sides of the equations being solved at this grade level) using models or different representations of the expressions, solving formulas for a variable requiring one transformation (e.g., $d = rt$; $d/r = t$); by solving multistep linear equations with integer coefficients; by showing that two expressions are or are not equivalent by applying commutative, associative, or distributive properties, order of operations, or substitution; and by informally solving problems involving systems of linear equations in a context.
Physics and Math (pgs. 43-63)	VT	MA.8.M8:20	Demonstrates conceptual understanding of linear relationships ($y = kx$; $y = mx + b$) as a constant rate of change by solving problems involving the relationship between slope and rate of change; informally and formally determining slopes and intercepts represented in graphs, tables, or problem situations; or describing the meaning of slope and intercept in context; and distinguishes between linear relationships (constant rates of change) and nonlinear relationships (varying rates of change) represented in tables, graphs, equations, or problem situations; or describes how change in the value of one variable relates to change in the value of a second variable in problem situations with constant and varying rates of change.
Physics and Math (pgs. 43-63)	VT	MA.8.M8:22	Demonstrates conceptual understanding of equality by showing equivalence between two expressions (expressions consistent with the parameters of the left- and right-hand sides of the equations being solved at this grade level) using models or different representations of the expressions, solving formulas for a variable requiring one transformation (e.g., $d = rt$; $d/r = t$); by solving multistep linear equations with integer coefficients; by showing that two expressions are or are not equivalent by applying commutative, associative, or distributive properties, order of operations, or substitution; and by informally solving problems involving systems of linear equations in a context.

Rocket Activity (pgs. 69-75)	VT	MA.8.M8:22	Demonstrates conceptual understanding of equality by showing equivalence between two expressions (expressions consistent with the parameters of the left- and right-hand sides of the equations being solved at this grade level) using models or different representations of the expressions, solving formulas for a variable requiring one transformation (e.g., $d = rt$; $d/r = t$); by solving multistep linear equations with integer coefficients; by showing that two expressions are or are not equivalent by applying commutative, associative, or distributive properties, order of operations, or substitution; and by informally solving problems involving systems of linear equations in a context.
Pushing the Envelope			
2004 Mathematics			
Grade Expectations			
Vermont Mathematics			
Grades 9-12			
Activity/Lesson	State	Standards	
Types of Engines (pgs. 11-23)	VT	MA.9-12.MHS:14	Demonstrates conceptual understanding of perimeter, circumference, or area of two-dimensional figures or composites of two-dimensional figures or surface area or volume of three-dimensional figures or composites of three-dimensional figures in problem-solving situations and uses appropriate units of measure and expresses formulas for the perimeter, and area of two-dimensional figures or composites of two-dimensional figures or surface area or volume of three-dimensional figures or composites of three-dimensional figures.
Types of Engines (pgs. 11-23)	VT	MA.9-12.MHS:21	Demonstrates conceptual understanding of algebraic expressions by evaluating, simplifying, or writing algebraic expressions; and writes equivalent forms of algebraic expressions or formulas ($d = rt \rightarrow r = d/t$ or solves a multivariable equation or formula for one variable in terms of the others).

Chemistry (pgs. 25-41)	VT	MA.9-12.MHS:14	Demonstrates conceptual understanding of perimeter, circumference, or area of two-dimensional figures or composites of two-dimensional figures or surface area or volume of three-dimensional figures or composites of three-dimensional figures in problem-solving situations and uses appropriate units of measure and expresses formulas for the perimeter, and area of two-dimensional figures or composites of two-dimensional figures or surface area or volume of three-dimensional figures or composites of three-dimensional figures.
Chemistry (pgs. 25-41)	VT	MA.9-12.MHS:21	Demonstrates conceptual understanding of algebraic expressions by evaluating, simplifying, or writing algebraic expressions; and writes equivalent forms of algebraic expressions or formulas ($d = rt \rightarrow r = d/t$ or solves a multivariable equation or formula for one variable in terms of the others).
Physics and Math (pgs. 43-63)	VT	MA.9-12.MHS:14	Demonstrates conceptual understanding of perimeter, circumference, or area of two-dimensional figures or composites of two-dimensional figures or surface area or volume of three-dimensional figures or composites of three-dimensional figures in problem-solving situations and uses appropriate units of measure and expresses formulas for the perimeter, and area of two-dimensional figures or composites of two-dimensional figures or surface area or volume of three-dimensional figures or composites of three-dimensional figures.
Physics and Math (pgs. 43-63)	VT	MA.9-12.MHS:20	Demonstrates conceptual understanding of linear relationships and linear and nonlinear functions (including $f(x) = ax^2$, $f(x) = ax^3$, absolute value function, exponential growth) through analysis of intercepts, domain, range and constant and variable rates of change in mathematical and contextual situations.
Physics and Math (pgs. 43-63)	VT	MA.9-12.MHS:21	Demonstrates conceptual understanding of algebraic expressions by evaluating, simplifying, or writing algebraic expressions; and writes equivalent forms of algebraic expressions or formulas ($d = rt \rightarrow r = d/t$ or solves a multivariable equation or formula for one variable in terms of the others).

Physics and Math (pgs. 43-63)	VT	MA.9-12.MHS:24	Analyzes patterns, trends, or distributions in single variable and two variable data in a variety of contexts by determining or using measures of central tendency (mean, median, or mode), dispersion (range or variation), outliers, quartile values, or regression line or correlation (high, low/positive, negative) to analyze situations, or to solve problems; and evaluates the sample from which the statistics were developed (bias, random, or nonrandom).
Rocket Activity (pgs. 69-75)	VT	MA.9-12.MHS:14	Demonstrates conceptual understanding of perimeter, circumference, or area of two-dimensional figures or composites of two-dimensional figures or surface area or volume of three-dimensional figures or composites of three-dimensional figures in problem-solving situations and uses appropriate units of measure and expresses formulas for the perimeter, and area of two-dimensional figures or composites of two-dimensional figures or surface area or volume of three-dimensional figures or composites of three-dimensional figures.
Rocket Activity (pgs. 69-75)	VT	MA.9-12.MHS:21	Demonstrates conceptual understanding of algebraic expressions by evaluating, simplifying, or writing algebraic expressions; and writes equivalent forms of algebraic expressions or formulas ($d = rt \rightarrow r = d/t$ or solves a multivariable equation or formula for one variable in terms of the others).