

Exploring the Extreme			
2002 Mathematics			
Academic Standards			
Pennsylvania Mathematics			
Grade 3			
Activity/Lesson	State	Standards	
Finding the Center of Gravity Using Rulers	PA	MA.3.2.11.3.A	Identify whole number quantities and measurements from least to most and greatest value.
Finding the Center of Gravity Using Plumb Lines	PA	MA.3.2.11.3.A	Identify whole number quantities and measurements from least to most and greatest value.
Exploring the Extreme			
2002 Mathematics			
Academic Standards			
Pennsylvania Mathematics			
Grade 5			
Activity/Lesson	State	Standards	
Jet Propulsion	PA	MA.5.2.4.5.B	Use models, number facts, properties and relationships to check and verify predictions and explain reasoning.
Vectoring	PA	MA.5.2.4.5.B	Use models, number facts, properties and relationships to check and verify predictions and explain reasoning.
Vectoring	PA	MA.5.2.5.5.B	Use appropriate mathematical terms, vocabulary, language symbols and graphs to explain clearly and logically solutions to problems.
Center of Gravity, Pitch, Yaw	PA	MA.5.2.2.5.F	Demonstrate skills for using fraction calculators to verify conjectures, confirm computations and explore complex problem-solving situations.
Center of Gravity, Pitch, Yaw	PA	MA.5.2.3.5.B	Select and use standard tools to measure the size of figures with specified accuracy, including length, width, perimeter and area.
Center of Gravity, Pitch, Yaw	PA	MA.5.2.3.5.C	Estimate, refine and verify specified measurements of objects.
Center of Gravity, Pitch, Yaw	PA	MA.5.2.2.5.G	Apply estimation strategies to a variety of problems including time and money.
Center of Gravity, Pitch, Yaw	PA	MA.5.2.2.5.I	Select a method for computation and explain why it is appropriate.
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2002 Mathematics			
Academic Standards			
Pennsylvania Mathematics			
Grade 8			
Activity/Lesson	State	Standards	
Jet Propulsion	PA	MA.8.2.4.8.A	Make conjectures based on logical reasoning and test conjectures by using counter-examples.

Jet Propulsion	PA	MA.8.2.7.8.D	Compare and contrast results from observations and mathematical models.
Vectoring	PA	MA.8.2.4.8.A	Make conjectures based on logical reasoning and test conjectures by using counter-examples.
Vectoring	PA	MA.8.2.9.8.E	Construct parallel lines, draw a transversal and measure and compare angles formed (e.g., alternate interior and exterior angles).
Center of Gravity, Pitch, Yaw	PA	MA.8.2.1.8.A	Represent and use numbers in equivalent forms (e.g., integers, fractions, decimals, percents, exponents, scientific notation, square roots).
Center of Gravity, Pitch, Yaw	PA	MA.8.2.2.8.B	Add, subtract, multiply and divide different kinds and forms of rational numbers including integers, decimal fractions, percents and proper and improper fractions.
Center of Gravity, Pitch, Yaw	PA	MA.8.2.2.8.D	Estimate amount of tips and discounts using ratios, proportions and percents.
Center of Gravity, Pitch, Yaw	PA	MA.8.2.4.8.D	Construct, use and explain algorithmic procedures for computing and estimating with whole numbers, fractions, decimals and integers.
Fuel Efficiency	PA	MA.8.2.4.8.A	Make conjectures based on logical reasoning and test conjectures by using counter-examples.
Fuel Efficiency	PA	MA.8.2.4.8.D	Construct, use and explain algorithmic procedures for computing and estimating with whole numbers, fractions, decimals and integers.
Fuel Efficiency	PA	MA.8.2.4.8.F	Use measurements and statistics to quantify issues (e.g., in family, consumer science situations).
Fuel Efficiency	PA	MA.8.2.5.8.B	Verify and interpret results using precise mathematical language, notation and representations, including numerical tables and equations, simple algebraic equations and formulas, charts, graphs and diagrams.
Fuel Efficiency	PA	MA.8.2.7.8.B	Present the results of an experiment using visual representations (e.g., tables, charts, graphs).