

Exploring the Extreme			
2008 Mathematics			
Core Curriculum Content Standards			
New Jersey Mathematics			
Grade 2			
Activity/Lesson	State	Standards	
Finding the Center of Gravity Using Rulers	NJ	MA.2.4.4.2 A.1.a	Collect, generate, record, and organize data in response to questions, claims, or curiosity: Data collected from students' everyday experiences
Changing the Center of Gravity Using Moment Arms	NJ	MA.2.4.4.2 A.1.a	Collect, generate, record, and organize data in response to questions, claims, or curiosity: Data collected from students' everyday experiences
Changing the Center of Gravity Using Moment Arms	NJ	MA.2.4.5 B.1.b	Use communication to organize and clarify their mathematical thinking: Discussion, listening, and questioning
Changing the Center of Gravity Using Moment Arms	NJ	MA.2.4.5 E.1.d	Create and use representations to organize, record, and communicate mathematical ideas: Graphical representations (e.g., a line graph)
Exploring the Extreme			
2008 Mathematics			
Core Curriculum Content Standards			
New Jersey Mathematics			
Grade 3			
Activity/Lesson	State	Standards	
Finding the Center of Gravity Using Rulers	NJ	MA.3.4.5 B.2	Communicate their mathematical thinking coherently and clearly to peers, teachers, and others, both orally and in writing.
Finding the Center of Gravity Using Plumb Lines	NJ	MA.3.4.4.3 B.2.b	Collect data and use that data to predict the probability (experimental)
Finding the Center of Gravity Using Plumb Lines	NJ	MA.3.4.5 B.4	Use the language of mathematics to express mathematical ideas precisely.
Changing the Center of Gravity Using Moment Arms	NJ	MA.3.4.5 B.2	Communicate their mathematical thinking coherently and clearly to peers, teachers, and others, both orally and in writing.
Changing the Center of Gravity Using Moment Arms	NJ	MA.3.4.5 B.4	Use the language of mathematics to express mathematical ideas precisely.
Exploring the Extreme			
2008 Mathematics			
Core Curriculum Content Standards			
New Jersey Mathematics			
Grade 4			
Activity/Lesson	State	Standards	

Finding the Center of Gravity Using Rulers	NJ	MA.4.4.5 B.2	Communicate their mathematical thinking coherently and clearly to peers, teachers, and others, both orally and in writing.
Finding the Center of Gravity Using Rulers	NJ	MA.4.4.5 B.4	Use the language of mathematics to express mathematical ideas precisely.
Finding the Center of Gravity Using Plumb Lines	NJ	MA.4.4.5 B.2	Communicate their mathematical thinking coherently and clearly to peers, teachers, and others, both orally and in writing.
Finding the Center of Gravity Using Plumb Lines	NJ	MA.4.4.5 B.4	Use the language of mathematics to express mathematical ideas precisely.
Exploring the Extreme			
2008 Mathematics			
Core Curriculum Content Standards			
New Jersey Mathematics			
Grade 5			
Activity/Lesson	State	Standards	
Jet Propulsion	NJ	MA.5.4.3.5 C.1.a	Using variables to represent unknown quantities
Jet Propulsion	NJ	MA.5.4.5 B.2	Communicate their mathematical thinking coherently and clearly to peers, teachers, and others, both orally and in writing.
Jet Propulsion	NJ	MA.5.4.5 B.4	Use the language of mathematics to express mathematical ideas precisely.
Vectoring	NJ	MA.5.4.2.5 A.1.a	Understand and apply concepts involving lines and angles: Notation for line, ray, angle, line segment
Vectoring	NJ	MA.5.4.2.5 D.1	Select and use appropriate units to measure angles and area.
Center of Gravity, Pitch, Yaw	NJ	MA.5.4.1.5 B.1	Recognize the appropriate use of each arithmetic operation in problem situations.
Center of Gravity, Pitch, Yaw	NJ	MA.5.4.2.5 D.4	Use measurements and estimates to describe and compare phenomena.
Fuel Efficiency	NJ	MA.5.4.1.5 B.1	Recognize the appropriate use of each arithmetic operation in problem situations.
Fuel Efficiency	NJ	MA.5.4.1.5 B.6	Understand and use the various relationships among operations and properties of operations.
Exploring the Extreme			
2008 Mathematics			
Core Curriculum Content Standards			
New Jersey Mathematics			
Grade 6			
Activity/Lesson	State	Standards	
Jet Propulsion	NJ	MA.6.4.3.6 C.1.a	Using variables to represent unknown quantities

Jet Propulsion	NJ	MA.6.4.4.6 A.3	Respond to questions about data, generate their own questions and hypotheses, and formulate strategies for answering their questions and testing their hypotheses.
Vectoring	NJ	MA.6.4.3.6 C.1.a	Using variables to represent unknown quantities
Vectoring	NJ	MA.6.4.4.6 A.3	Respond to questions about data, generate their own questions and hypotheses, and formulate strategies for answering their questions and testing their hypotheses.
Center of Gravity, Pitch, Yaw	NJ	MA.6.4.1.6 C.2	Recognize when an estimate is appropriate, and understand the usefulness of an estimate as distinct from an exact answer.
Center of Gravity, Pitch, Yaw	NJ	MA.6.4.2.6 D.5	Use measurements and estimates to describe and compare phenomena.
Center of Gravity, Pitch, Yaw	NJ	MA.6.4.2.6 E.5	Develop informal ways of approximating the measures of familiar objects (e.g., use a grid to approximate the area of the bottom of one's foot).
Fuel Efficiency	NJ	MA.6.4.1.6 B.6	Check the reasonableness of results of computations.
Exploring the Extreme			
2008 Mathematics			
Core Curriculum Content Standards			
New Jersey Mathematics			
Grade 7			
Activity/Lesson	State	Standards	
Jet Propulsion	NJ	MA.7.4.5 B.2	Communicate their mathematical thinking coherently and clearly to peers, teachers, and others, both orally and in writing.
Jet Propulsion	NJ	MA.7.4.5 B.4	Use the language of mathematics to express mathematical ideas precisely.
Vectoring	NJ	MA.7.4.5 B.4	Use the language of mathematics to express mathematical ideas precisely.
Vectoring	NJ	MA.7.4.5 F.1	Use technology to gather, analyze, and communicate mathematical information.
Center of Gravity, Pitch, Yaw	NJ	MA.7.4.2.7 D.2	Select and use appropriate units and tools to measure quantities to the degree of precision needed in a particular problem-solving situation.
Fuel Efficiency	NJ	MA.7.4.2.7 D.2	Select and use appropriate units and tools to measure quantities to the degree of precision needed in a particular problem-solving situation.
Fuel Efficiency	NJ	MA.7.4.3.7 C.1	Analyze functional relationships to explain how a change in one quantity can result in a change in another, using pictures, graphs, charts, and equations.

Fuel Efficiency	NJ	MA.7.4.3.7 C.2.a	Use patterns, relations, symbolic algebra, and linear functions to model situations: Using manipulatives, tables, graphs, verbal rules, algebraic expressions/equations/inequalities
Exploring the Extreme			
2008 Mathematics			
Core Curriculum Content Standards			
New Jersey Mathematics			
Grade 8			
Activity/Lesson	State	Standards	
Jet Propulsion	NJ	MA.8.4.5 B.2	Communicate their mathematical thinking coherently and clearly to peers, teachers, and others, both orally and in writing.
Jet Propulsion	NJ	MA.8.4.5 B.4	Use the language of mathematics to express mathematical ideas precisely.
Jet Propulsion	NJ	MA.8.4.5 F.1	Use technology to gather, analyze, and communicate mathematical information.
Vectoring	NJ	MA.8.4.2.8 A.5	Use logic and reasoning to make and support conjectures about geometric objects.
Center of Gravity, Pitch, Yaw	NJ	MA.8.4.1.8 A.3	Understand and use ratios, rates, proportions, and percents (including percents greater than 100 and less than 1) in a variety of situations.
Center of Gravity, Pitch, Yaw	NJ	MA.8.4.1.8 B.4	Solve problems involving proportions and percents.
Fuel Efficiency	NJ	MA.8.4.2.8 D.4	Select and use appropriate units and tools to measure quantities to the degree of precision needed in a particular problem-solving situation.