

Unit Title: “Riding a Roller Coaster: Perimeter, Area, Graphing, and Equations”

Course: Geometry

Subject Area: Mathematics

Time Frame: 15 days

Standards

DCPS Geometry Standards	Sunshine State Standards Benchmarks	NCEE New Standards
<p>The student will:</p> <p>1.4 Determine the slope and the x- and y-intercept of given lines.</p> <p>1.6 Graph linear equations in two variables.</p> <p>1.7 Determine equations for lines with given conditions.</p> <p>7.1 Use the Pythagorean Theorem and its converse to solve problems.</p> <p>7.3 Find distances and midpoints between given points using the coordinate plane.</p> <p>9.1 Solve problems related to area of polygons, including the area of triangles, squares, rectangles, parallelograms, and trapezoids.</p> <p>Algebra I</p> <p>The student will:</p> <p>6.1 Simplify expressions involving exponents.</p> <p>6.2 Add and subtract polynomials.</p> <p>6.3 Multiply polynomials.</p>	<p>MA.B.1.4.1 The student will use concrete and graphic models to derive formulas for finding perimeter, area, surface area, circumference, and volume of two- and three-dimensional shapes, including rectangular solids, cylinders, cones, and pyramids.</p> <p>MA.C.3.4.2 The student will use a rectangular coordinate system (graph) applies and algebraically verifies properties of two- and three-dimensional figures, including distance, midpoint, slope, parallelism, and perpendicularity.</p> <p>MA.C.4.4.1 The student will use estimation strategies in complex situations to predict results and to check the reasonableness of results.</p>	<p>The student:</p> <p>M2a Models situations geometrically to formulate and solve problems.</p> <p>M2b Works with two- and three-dimensional figures and their properties, including polygons, and cubes, cubes and pyramids, and cylinders, cones, and spheres.</p> <p>M2e Knows, uses, and derives formulas for perimeter, circumference, area, surface area, and volume of many types of figures.</p> <p>M2f Uses the Pythagorean Theorem in many types of situations, and works through more than one proof of this theorem.</p> <p>M2K Works with geometric measures of length, area, volume, and angles; and non-geometric measures such as time.</p> <p>M3d Find solutions for unknown quantities in linear equations and in simple equations and inequalities.</p>

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<p>M/J Mathematics 1 The student will:</p> <p>3.1 Recognize, classify, and analyze polygons.</p> <p>5.1 Find areas and perimeters of rectangular shapes and non-rectangular shapes.</p>	<p>Algebra I MA.D.2.4.2 The student will use systems of equations and inequalities to solve real-world problems graphically, algebraically, <i>and with matrices</i>.</p> <p>M/J Mathematics 1 MA.B.1.3.3 The student will understand and describe how the change of a figure in such dimensions as length, width, height, or radius affects its other measurements such as perimeter, area, surface area, and volume.</p> <p>MA.C.1.3.1 The student will understand the basic properties of, and relationships pertaining to, regular and irregular geometric shapes in two and three dimensions.</p>	

Desired Results

Enduring Understanding	Essential Questions	Knowledge and Skills
<p>Students will understand:</p> <ul style="list-style-type: none">• Strong problem solving skills eliminate the problem of forgetting designated steps when facing slightly different versions of a given problem.	<ul style="list-style-type: none">• Do I understand what I am doing?• Am I actively involving myself in doing math every day?• Am I reading the textbook?	<p>Students will know:</p> <ul style="list-style-type: none">• Key terms (e.g., right triangle, leg, hypotenuse, Pythagorean Theorem, polygon, perpendicular, parallel, perimeter, area, base, height, y-intercept, slope).• Strategies for studying mathematics. <p>Students will be able to:</p> <ul style="list-style-type: none">• Determine the slope and the x- and y-intercept of given lines.• Graph linear equations in two variables.• Determine equations for lines with given conditions.• Use the Pythagorean Theorem and its converse to solve problems.• Find distances and midpoints between given points using the coordinate plane.• Solve problems related to area of polygons, including the area of triangles, squares, rectangles, parallelograms, and trapezoids.• Simplify expressions.• Multiply monomials and binomials.

Acceptable Evidence

Performance Tasks	Quizzes, Test, and Work Samples	Observations and Dialogues
<ul style="list-style-type: none">• Area and Perimeter Students review the development of the Pythagorean Theorem, the process of finding the area for rectangles, triangles, parallelograms, and trapezoids through hands-on investigations.• Polygons Students investigate properties of given polygons.• Linear Equations Students review graphing linear equations and slope triangles.	Check-Up 1 Quiz A Check-Up 2 Quiz B Unit Test Unit Project – Team presentations	Teacher observations of students during work on performance tasks. Accountable talk during work on performance tasks.