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Geometry

Mathematics

Curriculum Guide

Developed: June 2016

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Nancy Suazo, Member

Curriculum Facilitation:

Vivian Valencia, Instructional Coach

MaryEllen Fresquez, Instructional Coach

Mathematics Resources
Adopted Curriculum

Grade Band	Resource	District Contact
9-12 2013-2018	College Preparatory Math (CPM) Website: http://textbooks.cpm.org	Office of Curriculum, Instruction & Assessment Myra L. Martinez, Associate Superintendent Nancy Suazo, EVHS Department Chair

Mathematics Resources

Supplemental Curriculum Resources

Grade Band	Resource	District Contact:
9-12 2015-2020	Renaissance Learning Accelerated Math https://hosted39.renlearn.com/258790/default.aspx Pearson's Algebra 1 Textbook www.kutasoftware.com www.ixl.com www.teachertube.com Triumph Learning Common Core Coach Geometry Textbook www.tenmarks.com www.thatquiz.org Pizzazz Geometry Workbook Agile Mind Textbook Engage NY https://www.engageny.org/resource/high-school-geometry Making Number Talks Matter Textbook www.khanacademy.com https://www.illustrativemathematics.org/ http://www.insidemathematics.org/  Website: https://learn.education2020.com/	Office of Curriculum, Instruction & Assessment Myra L. Martinez, Associate Superintendent Nancy Suazo, EVHS Department Chair Sandra Roney, Edgenuity Administrator Larry DeAguero, Federal Programs (Title I) Deirdra Montoya, Special Education Director TBA, Assessment & RtI Facilitator

Mathematics Resources

Adopted Curriculum

Grade Band	Resource	District Contact:
9-12	Core Assessments College Preparatory Math (CPM)	Nancy Suazo, Math Department Chair
9-12	Supplemental Assessments Common Core Coach Geometry	Nancy Suazo, Math Department Chair
2-12	STAR Math	Office of Curriculum, Instruction & Assessment Myra L. Martinez, Associate Superintendent Mary Ellen Fresquez, Instructional Coach Vivian Valencia, Instructional Coach Assessment Contact: TBA, Assessment & RTI Facilitator
3-11	PARCC	Office of Curriculum, Instruction & Assessment Myra L. Martinez, Associate Superintendent Mary Ellen Fresquez, Instructional Coach Vivian Valencia, Instructional Coach Assessment Contact: TBA, Assessment & RTI Facilitator
7-12	End of Course Exams (EOC)	Office of Curriculum, Instruction & Assessment Myra L. Martinez, Associate Superintendent Mary Ellen Fresquez, Instructional Coach Vivian Valencia, Instructional Coach Assessment Contact: TBA, Assessment & RTI Facilitator

Grade Band	Resource	District Contact
Pre K <i>2013-2018</i>	Creative Classroom Website:	Office of Curriculum, Instruction & Assessment Myra L. Martinez, Associate Superintendent MaryEllen Fresquez, Pre K Coordinator
K -6 <i>2013-2018</i>	  Website: www.pearsonsuccessnet.com	Office of Curriculum, Instruction & Assessment Myra L. Martinez, Associate Superintendent MaryEllen Fresquez, Instructional Coach Vivian Valencia, Instructional Coach
7-8 <i>2013-2018</i>	College Preparatory Math (CPM)	Office of Curriculum, Instruction & Assessment

Mathematics Resources

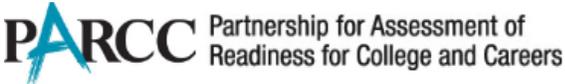
Adopted Curriculum

	 <p>CPM teacher log in: http://textbooks.cpm.org/?238090954324249223</p> <p>CPM student log in: http://en8467.textbooks.cpm.org/?409553627727330301</p>	Myra L. Martinez, Associate Superintendent Robert Quiñonez, CFVMS Assistant Principal
9-12 <i>2013-2018</i>	College Preparatory Math (CPM)  <p>CPM teacher log in: http://textbooks.cpm.org/?238090954324249223</p> <p>CPM student log in: http://en8467.textbooks.cpm.org/?409553627727330301</p>	Office of Curriculum, Instruction & Assessment Myra L. Martinez, Associate Superintendent Nancy Suazo, EVHS Department Chair

Mathematics Resources
Supplemental Curriculum Resources

Grade Band	Resource	District Contact:
Pre K 2016-2021	<i>Insert Resource</i> Website: Insert <i>Insert Resource</i> Website: Insert	Office of Curriculum, Instruction & Assessment Myra L. Martinez, Associate Superintendent MaryEllen Fresquez, Pre K Coordinator Larry DeAguerro, Federal Programs (Title I) Deirdra Montoya, Special Education Director TBA, Assessment & RtI Facilitator
K -6 2016-2021	<i>Insert Resource</i> Website: Insert <i>Insert Resource</i> Website: Insert	Office of Curriculum, Instruction & Assessment Myra L. Martinez, Associate Superintendent MaryEllen Fresquez, Instructional Coach Vivian Valencia, Instructional Coach Larry DeAguerro, Federal Programs (Title I) Deirdra Montoya, Special Education Director TBA, Assessment & RtI Facilitator
7-8 2016-2021	<i>Insert Resource</i> Website: Insert  Website: Insert	Office of Curriculum, Instruction & Assessment Myra L. Martinez, Associate Superintendent Robert Quiñonez, CFVMS Assistant Principal Insert Name, Edgenuity Administrator Larry DeAguerro, Federal Programs (Title I) Deirdra Montoya, Special Education Director TBA, Assessment & RtI Facilitator
9-12 2015-2020	<i>Insert Resource</i> Website:  Website: Insert	Office of Curriculum, Instruction & Assessment Myra L. Martinez, Associate Superintendent Insert Name, EVHS Department Chair Insert Name, Edgenuity Administrator Larry DeAguerro, Federal Programs (Title I) Deirdra Montoya, Special Education Director TBA, Assessment & RtI Facilitator

Mathematics Resources
Supplemental Curriculum Assessments

Grade Band	Resource	District Contact:
<p>Pre K 2016-2021</p>	<p><i>Insert Resource</i> Website: Insert</p>  <p>PreK Observation & Portfolios</p>	<p>Office of Curriculum, Instruction & Assessment Myra L. Martinez, Associate Superintendent MaryEllen Fresquez, Pre K Coordinator</p> <p>Assessment Contact: TBA, Assessment & RtI Facilitator</p>
<p>K-1</p>	<p>Envisions:</p>  <p>Topic Book Assessments Topic Mat Assessments</p> <p>Renaissance Learning:</p>  <p>STAR EARLY LITERACY (Numeracy) https://hosted39.renlearn.com/258790/default.aspx</p>	<p>Office of Curriculum, Instruction & Assessment Myra L. Martinez, Associate Superintendent MaryEllen Fresquez, Instructional Coach Vivian Valencia, Instructional Coach</p> <p>Assessment Contact: TBA, Assessment & RtI Facilitator</p>
<p>2-12</p>	<p>Envisions:</p>  <p>Topic Book Assessments Topic Mat Assessments (2nd)</p> <p>Renaissance Learning:</p>  <p>STARMath https://hosted39.renlearn.com/258790/default.aspx</p>	<p>Office of Curriculum, Instruction & Assessment Myra L. Martinez, Associate Superintendent MaryEllen Fresquez, Instructional Coach Vivian Valencia, Instructional Coach</p> <p>Assessment Contact: TBA, Assessment & RtI Facilitator</p>
<p>3-11</p>	<p>PARCC</p> 	<p>Office of Curriculum, Instruction & Assessment Myra L. Martinez, Associate Superintendent MaryEllen Fresquez, Instructional Coach Vivian Valencia,</p>

Mathematics Resources
Supplemental Curriculum Assessments

		<p>Instructional Coach</p> <p>Assessment Contact: TBA, Assessment & RtI Facilitator</p>
<p>7-12</p>	<p>End of Course Exams (EoC)</p>  <p>College Preparatory Math (CPM)</p>  <p>CPM teacher log in: http://textbooks.cpm.org/?238090954324249223</p> <p>CPM student log in: http://en8467.textbooks.cpm.org/?409553627727330301</p>	<p>Office of Curriculum, Instruction & Assessment Myra L. Martinez, Associate Superintendent MaryEllen Fresquez, Instructional Coach Vivian Valencia, Instructional Coach</p> <p>Assessment Contact: TBA, Assessment & RtI Facilitator</p>

At a Glance Pacing Guide

GEOMETRY

UNITS & Time Frame	STANDARD CLUSTERS	COMMON CORE STANDARDS	RESOURCES	ASSESSMENT
<p>UNIT 1</p> <p>Congruence, Proof, Transformations and Constructions</p> <p>TIME FRAME:</p> <p>8/17 to 10/3</p>	<p>* Experiment with transformations in the plane.</p> <p>* Understand congruence in terms of rigid motions.</p> <p>* Prove geometric theorems.</p> <p>* Make geometric constructions.</p>	<p>G.CO.1 to G.CO.13</p> <p>CC.9-12.G.CO.1 Experiment with transformations in the plane. Know precise definitions of angle, circle, perpendicular line, parallel line, and line segment, based on the undefined notions of point, line, distance along a line, and distance around a circular arc.</p> <p>CC.9-12.G.CO.2 Experiment with transformations in the plane. Represent transformations in the plane using, e.g., transparencies and geometry software; describe transformations as functions that take points in the plane as inputs and give other points as outputs. Compare transformations that preserve distance and angle to those that do not (e.g., translation versus horizontal stretch).</p> <p>CC.9-12.G.CO.3 Experiment with transformations in the plane. Given a rectangle, parallelogram, trapezoid, or regular polygon, describe the rotations and reflections that carry it onto itself.</p> <p>CC.9-12.G.CO.4 Experiment with transformations in the plane. Develop definitions of rotations, reflections, and translations in terms of angles, circles, perpendicular lines, parallel lines, and line segments.</p> <p>CC.9-12.G.CO.5 Experiment with transformations in the plane. Given a geometric figure and a rotation, reflection, or translation, draw the transformed figure using, e.g., graph paper, tracing paper, or geometry software. Specify a sequence of transformations that will carry a given figure onto another.</p> <p>CC.9-12.G.CO.6 Understand congruence in terms of rigid motions. Use geometric descriptions of rigid motions to transform figures and to predict the effect of a given rigid motion on a given figure; given two figures, use the definition of congruence in terms of rigid motions to decide if they are congruent.</p> <p>CC.9-12.G.CO.7 Understand congruence in terms of rigid motions. Use the definition of congruence in terms of rigid motions to show that two triangles are congruent if and only if corresponding pairs of sides and corresponding pairs of angles are congruent.</p> <p>CC.9-12.G.CO.8 Understand congruence in terms of rigid motions. Explain how the criteria for triangle congruence (ASA, SAS, and SSS) follow from the definition of congruence in terms of rigid motions.</p> <p>CC.9-12.G.CO.9 Prove geometric theorems. Prove theorems about lines and angles. Theorems include: vertical angles are congruent; when a transversal crosses parallel lines, alternate interior angles are congruent and corresponding angles are congruent; points on a perpendicular bisector of a line segment are exactly those equidistant from the segment's endpoints.</p> <p>CC.9-12.G.CO.10 Prove geometric theorems. Prove theorems about</p>	<p>Core Adapted</p> <p>College Preparatory Math (CPM) Chapter 1, 2, 6, & 7</p> <p>Supplement</p> <p>Renaissance Learning Accelerated Math Pearson's Algebra 1 www.kutasoftware.com www.ixl.com www.teachertube.com Triumph Learning Common Core Coach Geometry www.tenmarks.com www.thatquiz.org Pizzazz Geometry Agile Mind Engage NY Making Number Talks Matter www.khanacademy.com https://www.illustrativemathematics.org/ http://www.insidemathematics.org/</p>	<p>FORMATIVE</p> <p>College Preparatory Math (CPM) Chapter 1, 2, 6, & 7 MATH TASK</p> <p>SUMMATIVE</p> <p>Triumph Learning Common Core Coach Geometry Assessment</p>

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GEOMETRY

UNITS & Time Frame	STANDARD CLUSTERS	COMMON CORE STANDARDS	RESOURCES	ASSESSMENT
		<p>triangles. Theorems include: measures of interior angles of a triangle sum to 180 degrees; base angles of isosceles triangles are congruent; the segment joining midpoints of two sides of a triangle is parallel to the third side and half the length; the medians of a triangle meet at a point.</p> <p>CC.9-12.G.CO.11 Prove geometric theorems. Prove theorems about parallelograms. Theorems include: opposite sides are congruent, opposite angles are congruent, the diagonals of a parallelogram bisect each other, and conversely, rectangles are parallelograms with congruent diagonals.</p> <p>CC.9-12.G.CO.12 Make geometric constructions. Make formal geometric constructions with a variety of tools and methods (compass and straightedge, string, reflective devices, paper folding, dynamic geometric software, etc.). Copying a segment; copying an angle; bisecting a segment; bisecting an angle; constructing perpendicular lines, including the perpendicular bisector of a line segment; and constructing a line parallel to a given line through a point not on the line.</p> <p>CC.9-12.G.CO.13 Make geometric constructions. Construct an equilateral triangle, a square, and a regular hexagon inscribed in a circle.</p>		
<p>UNIT 2</p> <p>Similarity, Proof, and Trigonometry</p> <p>TIME FRAME:</p> <p>10/4 – 12/2</p>	<p>* Understand similarity in terms of similarity transformations.</p> <p>* Prove theorems involving similarity.</p> <p>* Define trigonometric ratios and solve problems involving right triangles.</p> <p>* Apply geometric concepts in modeling situations.</p> <p>* Apply trigonometry in general triangles.</p>	<p>G.SRT.1 to G.SRT.11</p> <p>"CC.9-12.G.SRT.1 Understand similarity in terms of similarity transformations. Verify experimentally the properties of dilations given by a center and a scale factor:</p> <ul style="list-style-type: none"> -- a. A dilation takes a line not passing through the center of the dilation to a parallel line, and leaves a line passing through the center unchanged. -- b. The dilation of a line segment is longer or shorter in the ratio given by the scale factor." <p>CC.9-12.G.SRT.2 Understand similarity in terms of similarity transformations. Given two figures, use the definition of similarity in terms of similarity transformations to decide if they are similar; explain using similarity transformations the meaning of similarity for triangles as the equality of all corresponding pairs of angles and the proportionality of all corresponding pairs of sides.</p> <p>CC.9-12.G.SRT.3 Understand similarity in terms of similarity transformations. Use the properties of similarity transformations to establish the AA criterion for two triangles to be similar.</p> <p>CC.9-12.G.SRT.4 Prove theorems involving similarity. Prove theorems about triangles. Theorems include: a line parallel to one side of a triangle divides the other two proportionally, and conversely; the Pythagorean Theorem proved using triangle similarity.</p> <p>CC.9-12.G.SRT.5 Prove theorems involving similarity. Use congruence and similarity criteria for triangles to solve problems and to prove relationships in geometric figures.</p> 	<p style="text-align: center;">Core Adapted</p> <p>College Preparatory Math (CPM) Chapter 3, 4 & 5</p> <p style="text-align: center;">Supplement</p> <p>Renaissance Learning Accelerated Math Pearson's Algebra 1 www.kutasoftware.com www.ixl.com www.teachertube.com Triumph Learning Common Core Coach Geometry www.tenmarks.com www.thatquiz.org Pizzazz Geometry Agile Mind Engage NY Making Number Talks</p>	<p style="text-align: center;">FORMATIVE</p> <p>College Preparatory Math (CPM) Chapter 3, 4 & 5 MATH TASK</p> <p style="text-align: center;">SUMMATIVE</p> <p>Triumph Learning Common Core Coach Geometry Assessment</p>

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UNITS & Time Frame	STANDARD CLUSTERS	COMMON CORE STANDARDS	RESOURCES	ASSESSMENT
		<p>CC.9-12.G.SRT.6 Define trigonometric ratios and solve problems involving right triangles. Understand that by similarity, side ratios in right triangles are properties of the angles in the triangle, leading to definitions of trigonometric ratios for acute angles.</p> <p>CC.9-12.G.SRT.7 Define trigonometric ratios and solve problems involving right triangles. Explain and use the relationship between the sine and cosine of complementary angles.</p> <p>CC.9-12.G.SRT.8 Define trigonometric ratios and solve problems involving right triangles. Use trigonometric ratios and the Pythagorean Theorem to solve right triangles in applied problems.</p> <p>CC.9-12.G.SRT.9 (+) Apply trigonometry to general triangles. Derive the formula $A = (1/2)ab \sin(C)$ for the area of a triangle by drawing an auxiliary line from a vertex perpendicular to the opposite side.</p> <p>CC.9-12.G.SRT.10 (+) Apply trigonometry to general triangles. Prove the Laws of Sines and Cosines and use them to solve problems.</p> <p>CC.9-12.G.SRT.11 (+) Apply trigonometry to general triangles. Understand and apply the Law of Sines and the Law of Cosines to find unknown measurements in right and non-right triangles (e.g., surveying problems, resultant forces).</p>	<p>Matter www.khanacademy.com https://www.illustrativemathematics.org/ http://www.insidemathematics.org/</p>	
<p>UNIT 3</p> <p>Connecting Algebra and Geometry through Coordinates</p> <p>TIME FRAME: 12/5– 1/27</p>	<p>* Use coordinates to prove simple geometric theorems algebraically. * Translate between the geometric description and the equation for a conic section.</p>	<p>G.GPE.2 , G.GPE.4 to G.GPE.7</p> <p>CC.9-12.G.GPE.2 Translate between the geometric description and the equation for a conic section. Derive the equation of a parabola given a focus and directrix.</p> <p>CC.9-12.G.GPE.4 Use coordinates to prove simple geometric theorems algebraically. For example, prove or disprove that a figure defined by four given points in the coordinate plane is a rectangle; prove or disprove that the point $(1, \sqrt{3})$ lies on the circle centered at the origin and containing the point $(0, 2)$.</p> <p>CC.9-12.G.GPE.5 Use coordinates to prove simple geometric theorems algebraically. Prove the slope criteria for parallel and perpendicular lines and use them to solve geometric problems (e.g., find the equation of a line parallel or perpendicular to a given line that passes through a given point).</p> <p>CC.9-12.G.GPE.6 Use coordinates to prove simple geometric theorems algebraically. Find the point on a directed line segment between two given points that partitions the segment in a given ratio.</p> <p>CC.9-12.G.GPE.7 Use coordinates to prove simple geometric theorems algebraically. Use coordinates to compute perimeters of polygons and areas of triangles and rectangles, e.g., using the distance formula.*</p>	<p>Core Adapted College Preparatory Math (CPM) Chapter 7</p> <p>Core Adapted College Preparatory Math (CPM)</p> <p>Supplement Renaissance Learning Accelerated Math Pearson’s Algebra 1 www.kutasoftware.com www.ixl.com www.teachertube.com Triumph Learning Common Core Coach</p>	<p>FORMATIVE College Preparatory Math (CPM) Chapter 7 MATH TASK</p> <p>SUMMATIVE Triumph Learning Common Core Coach Geometry Assessment</p>

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GEOMETRY

UNITS & Time Frame	STANDARD CLUSTERS	COMMON CORE STANDARDS	RESOURCES	ASSESSMENT
			Geometry www.tenmarks.com www.thatquiz.org Pizzazz Geometry Agile Mind Engage NY Making Number Talks Matter www.khanacademy.com https://www.illustrativemathematics.org/ http://www.insidemathematics.org/	
UNIT 4 Circles With and Without Coordinates TIME FRAME: 1/30 – 3/24	<ul style="list-style-type: none"> * Understand and apply theorems about circles. * Find arc lengths and areas of sectors of circles. * Translate between the geometric description and the equation for a conic section. * Use coordinates to prove simple geometric theorems algebraically. * Apply geometric concepts in modeling situations. 	G.C.1 to G.C.5 G.GPE.1, G.GPE.4, G.MG.1 CC.9-12.G.C.1 Understand and apply theorems about circles. Prove that all circles are similar. CC.9-12.G.C.2 Understand and apply theorems about circles. Identify and describe relationships among inscribed angles, radii, and chords. Include the relationship between central, inscribed, and circumscribed angles; inscribed angles on a diameter are right angles; the radius of a circle is perpendicular to the tangent where the radius intersects the circle. CC.9-12.G.C.3 Understand and apply theorems about circles. Construct the inscribed and circumscribed circles of a triangle, and prove properties of angles for a quadrilateral inscribed in a circle. CC.9-12.G.C.4 (+) Understand and apply theorems about circles. Construct a tangent line from a point outside a given circle to the circle. CC.9-12.G.C.5 Find arc lengths and areas of sectors of circles. Derive using similarity the fact that the length of the arc intercepted by an angle is proportional to the radius, and define the radian measure of the angle as the constant of proportionality; derive the formula for the area of a sector. CC.9-12.G.GPE.1 Translate between the geometric description and the equation for a conic section. Derive the equation of a circle of given center and radius using the Pythagorean Theorem; complete the square to find the center and radius of a circle given by an equation. CC.9-12.G.GPE.4 Use coordinates to prove simple geometric theorems algebraically. For example, prove or disprove that a figure defined by four	<p style="text-align: center;">Core Adapted</p> College Preparatory Math (CPM) Chapter 8, 10 & 11 <p style="text-align: center;">Core Adapted</p> College Preparatory Math (CPM) <p style="text-align: center;">Supplement</p> Renaissance Learning Accelerated Math Pearson’s Algebra 1 www.kutasoftware.com www.ixl.com www.teachertube.com Triumph Learning Common Core Coach Geometry www.tenmarks.com www.thatquiz.org Pizzazz Geometry	<p style="text-align: center;">FORMATIVE</p> College Preparatory Math (CPM) Chapter 8, 10 & 11 MATH TASK <p style="text-align: center;">SUMMATIVE</p> Triumph Learning Common Core Coach Geometry Assessment

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		<p>given points in the coordinate plane is a rectangle; prove or disprove that the point $(1, \sqrt{3})$ lies on the circle centered at the origin and containing the point $(0, 2)$.</p> <p>CC.9-12.G.MG.1 Apply geometric concepts in modeling situations. Use geometric shapes, their measures, and their properties to describe objects (e.g., modeling a tree trunk or a human torso as a cylinder).*</p>	<p>Agile Mind Engage NY Making Number Talks Matter</p> <p>www.khanacademy.com https://www.illustrativemathematics.org/ http://www.insidemathematics.org/</p>	
<p>UNIT 5</p> <p>Extending to Three Dimensions</p> <p>TIME FRAME: 3/27 – 4/21</p>	<p>* Explain the volume formulas and use them to solve problems.</p> <p>* Visualize the relation between two-dimensional and three-dimensional objects.</p> <p>* Apply geometric concepts in modeling situations.</p>	<p>G.GMD.1, G.GMD.3 and G.GMD.4</p> <p>G.MG.1</p> <p>CC.9-12.G.GMD.1 Explain volume formulas and use them to solve problems. Give an informal argument for the formulas for the circumference of a circle, area of a circle, volume of a cylinder, pyramid, and cone. Use dissection arguments, Cavalieri's principle, and informal limit arguments.</p> <p>CC.9-12.G.GMD.3 Explain volume formulas and use them to solve problems. Use volume formulas for cylinders, pyramids, cones, and spheres to solve problems.*</p> <p>CC.9-12.G.GMD.4 Visualize relationships between two-dimensional and three-dimensional objects. Identify the shapes of two-dimensional cross-sections of three-dimensional objects, and identify three-dimensional objects generated by rotations of two-dimensional objects.</p> <p>CC.9-12.G.MG.1 Apply geometric concepts in modeling situations. Use geometric shapes, their measures, and their properties to describe objects (e.g., modeling a tree trunk or a human torso as a cylinder).*</p>	<p>Core Adapted</p> <p>College Preparatory Math (CPM) Chapter 9 & 11</p> <p>Supplement</p> <p>Renaissance Learning Accelerated Math Pearson's Algebra 1 www.kutasoftware.com www.ixl.com www.teachertube.com Triumph Learning Common Core Coach Geometry www.tenmarks.com www.thatquiz.org Pizzazz Geometry Agile Mind Engage NY Making Number Talks Matter www.khanacademy.com https://www.illustrativemathematics.org/ http://www.insidemathematics.org/</p>	<p>FORMATIVE</p> <p>College Preparatory Math (CPM) Chapter 9 & 11 MATH TASK</p> <p>SUMMATIVE</p> <p>Triumph Learning Common Core Coach Geometry Assessment</p>

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UNITS & Time Frame	STANDARD CLUSTERS	COMMON CORE STANDARDS	RESOURCES	ASSESSMENT
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<p>UNIT 6</p> <p>Applications of Probability</p> <p>TIME FRAME: 4/24 – 5/5</p>	<p>* Understand independence and conditional probability and use them to interpret data.</p> <p>* Use rules of probability to compute probabilities of compound events in a uniform probability model.</p> <p>* Use probability to evaluate outcomes of decisions.</p>	<p>S.CP.1 to S.CP.9 S.MD.6, S.MD.7</p> <p>CC.9-12.S.CP.1 Understand independence and conditional probability and use them to interpret data. Describe events as subsets of a sample space (the set of outcomes) using characteristics (or categories) of the outcomes, or as unions, intersections, or complements of other events (“or,” “and,” “not”).*</p> <p>CC.9-12.S.CP.2 Understand independence and conditional probability and use them to interpret data. Understand that two events A and B are independent if the probability of A and B occurring together is the product of their probabilities, and use this characterization to determine if they are independent.*</p> <p>CC.9-12.S.CP.3 Understand independence and conditional probability and use them to interpret data. Understand the conditional probability of A given B as $P(A \text{ and } B)/P(B)$, and interpret independence of A and B as saying that the conditional probability of A given B is the same as the probability of A, and the conditional probability of B given A is the same as the probability of B.*</p> <p>CC.9-12.S.CP.4 Understand independence and conditional probability and use them to interpret data. Construct and interpret two-way frequency tables of data when two categories are associated with each object being classified. Use the two-way table as a sample space to decide if events are independent and to approximate conditional probabilities. For example, collect data from a random sample of students in your school on their favorite subject among math, science, and English. Estimate the probability that a randomly selected student from your school will favor science given that the student is in tenth grade. Do the same for other subjects and compare the results.*</p> <p>CC.9-12.S.CP.5 Understand independence and conditional probability and use them to interpret data. Recognize and explain the concepts of conditional probability and independence in everyday language and everyday situations. For example, compare the chance of having lung cancer if you are a smoker with the chance of being a smoker if you have lung cancer.*</p> <p>CC.9-12.S.CP.6 Use the rules of probability to compute probabilities of compound events in a uniform probability model. Find the conditional probability of A given B as the fraction of B’s outcomes that also belong to A, and interpret the answer in terms of the model.*</p> <p>CC.9-12.S.CP.7 Use the rules of probability to compute probabilities of compound events in a uniform probability model. Apply the Addition Rule, $P(A \text{ or } B) = P(A) + P(B) - P(A \text{ and } B)$, and interpret the answer in terms of the model.*</p>	<p>Core Adapted</p> <p>College Preparatory Math (CPM) Chapter 10</p> <p>Supplement</p> <p>Renaissance Learning Accelerated Math Pearson’s Algebra 1 www.kutasoftware.com www.ixl.com www.teachertube.com Triumph Learning Common Core Coach Geometry www.tenmarks.com www.thatquiz.org Pizzazz Geometry Agile Mind Engage NY Making Number Talks Matter www.khanacademy.com https://www.illustrativemathematics.org/ http://www.insidematheatics.org/</p>	<p>FORMATIVE</p> <p>College Preparatory Math (CPM) Chapter 10 MATH TASK</p> <p>SUMMATIVE</p> <p>Triumph Learning Common Core Coach Geometry Assessment</p>

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UNITS & Time Frame	STANDARD CLUSTERS	COMMON CORE STANDARDS	RESOURCES	ASSESSMENT
		<p>CC.9-12.S.CP.8 (+) Use the rules of probability to compute probabilities of compound events in a uniform probability model. Apply the general Multiplication Rule in a uniform probability model, $P(A \text{ and } B) = [P(A)] \times [P(B A)] = [P(B)] \times [P(A B)]$, and interpret the answer in terms of the model.*</p> <p>CC.9-12.S.CP.9 (+) Use the rules of probability to compute probabilities of compound events in a uniform probability model. Use permutations and combinations to compute probabilities of compound events and solve problems.*</p> <p>CC.9-12.S.MD.6 (+) Use probability to evaluate outcomes of decisions. Use probabilities to make fair decisions (e.g., drawing by lots, using a random number generator).*</p> <p>CC.9-12.S.MD.7 (+) Use probability to evaluate outcomes of decisions. Analyze decisions and strategies using probability concepts (e.g., product testing, medical testing, pulling a hockey goalie at the end of a game).*</p>		
<p>UNIT 7 Population Density & Conic Sections</p> <p>TIME FRAME: 5/8 – 5/19</p>	<p>Apply the concepts of density based on area and volume in modeling situations.</p>	<p>G.GPE.2, G.GPE.3, G.GMG.2, G.GMG.3</p> <p>CC.9-12.G.GPE.2 Translate between the geometric description and the equation for a conic section. Derive the equation of a parabola given a focus and directrix.</p> <p>CC.9-12.G.GPE.3 (+) Translate between the geometric description and the equation for a conic section. Derive the equations of ellipses and hyperbolas given the foci, using the fact that the sum or difference of distances from the foci is constant.</p> <p>CC.9-12.G.MG.2 Apply geometric concepts in modeling situations. Apply concepts of density based on area and volume in modeling situations (e.g., persons per square mile, BTUs per cubic foot).*</p> <p>CC.9-12.G.MG.3 Apply geometric concepts in modeling situations. Apply geometric methods to solve design problems (e.g., designing an object or structure to satisfy physical constraints or minimize cost; working with topographic grid systems based on ratios).*</p>	<p>Core Adapted College Preparatory Math (CPM) Chapter 12</p> <p>Supplement Renaissance Learning Accelerated Math Pearson’s Algebra 1 www.kutasoftware.com www.ixl.com www.teachertube.com Triumph Learning Common Core Coach Geometry www.tenmarks.com www.thatquiz.org Pizzazz Geometry Agile Mind Engage NY Making Number Talks Matter www.khanacademy.com https://www.illustrative</p>	<p>FORMATIVE College Preparatory Math (CPM) Chapter 12 MATH TASK</p> <p>SUMMATIVE Triumph Learning Common Core Coach Geometry Assessment</p>

At a Glance Pacing Guide
GEOMETRY

UNITS & Time Frame	STANDARD CLUSTERS	COMMON CORE STANDARDS	RESOURCES	ASSESSMENT
			mathematics.org/ http://www.insidemathematics.org/	



New Mexico Public Education Department

Assessment Blueprint

Geometry

End-of-Course (EoC) Exam

Version 003

Spring 2015

<http://ped.state.nm.us/assessmentaccountability/assessmentevaluation/EOC/2015/Mathematics/Geometry%20Blueprint%20v%20003.pdf>

Purpose Statement—Geometry

The Geometry End-of-Course assessment is designed to measure student proficiency of the Common Core State Standards pertaining to geometry. This course-level assessment is provided to all students who have completed Geometry (STARS code 2034) or related courses. Intended as a final exam for the course, this is a summative assessment covering a wide range of content, skills, and applications. Scores are reported at the teacher, school, district, and state levels for the purposes of student grades, curriculum review, and—for optional use—as input into the Educator Effectiveness System.

Blueprint Table—Geometry
Based on Common Core State Standards

REPORTING CATEGORY	STANDARD/ BENCHMARK	CONTENT STATEMENT
CONGRUENCE	G.CO.1	<p>Experiment with transformations in the plane. Know precise definitions of angle, circle, perpendicular line, parallel line, and line segment based on the undefined notions of point, line, distance along a line, and distance around a circular arc.</p>
	G.CO.5	<p>Given a geometric figure and a rotation, reflection, or translation, draw the transformed figure using, e.g., graph paper, tracing paper, or geometry software. Specify a sequence of transformations that will carry a given figure onto another.</p>
	G.CO.7	<p>Understand congruence in terms of rigid motions. Use the definition of congruence in terms of rigid motions to show that two triangles are congruent if, and only if, corresponding pairs of sides and corresponding pairs of angles are congruent.</p>
	G.CO.8	<p>Explain how the criteria for triangle congruence (ASA, SAS, and SSS) follow from the definition of congruence in terms of rigid motions.</p>
	G.CO.10	<p>Prove geometric theorems. Prove theorems about triangles. Theorems include: measures of interior angles of a triangle sum to 180°, base angles of isosceles triangles are congruent, the segment joining midpoints of two sides of a triangle is parallel to the third side and half the length, the medians of a triangle meet at a point.</p>
	G.CO.11	<p>Prove theorems about parallelograms. Theorems include: opposite sides are congruent; opposite angles are congruent; the diagonals of a parallelogram bisect each other; and conversely, rectangles are parallelograms with congruent diagonals.</p>
SIMILARITY, RIGHT TRIANGLES, AND TRIGONOMETRY	G.SRT.2	<p>Understand similarity in terms of similarity transformations. Given two figures, use the definition of similarity in terms of similarity transformations to decide if they are similar; explain using similarity transformations the meaning of similarity for triangles as the equality of all corresponding pairs of angles and the proportionality of all corresponding pairs of sides.</p>
	G.SRT.4	<p>Prove theorems involving similarity. Prove theorems about triangles. Theorems include: a line parallel to one side of a triangle divides the other two proportionally, and conversely, the Pythagorean Theorem proved using triangle similarity.</p>
	G.SRT.5	<p>Use congruence and similarity criteria for triangles to solve problems and to prove relationships in geometric figures.</p>

REPORTING CATEGORY	STANDARD/ BENCHMARK	CONTENT STATEMENT
SIMILARITY, RIGHT TRIANGLES, AND TRIGONOMETRY (CONT.)	G.SRT.6	Define trigonometric ratios and solve problems involving right triangles. Understand that, by similarity, side ratios in right triangles are properties of the angles in the triangle, leading to definitions of trigonometric ratios for acute angles.
	G.SRT.7	Explain and use the relationship between the sine and cosine of complementary angles.
	G.SRT.8	Use trigonometric ratios and the Pythagorean Theorem to solve right triangles in applied problems.
CIRCLES	G.C.1	Understand and apply theorems about circles Prove that all circles are similar.
	G.C.2	Identify and describe relationships among inscribed angles, radii, and chords. Include the relationship between central, inscribed, and circumscribed angles; inscribed angles on a diameter are right angles; the radius of a circle is perpendicular to the tangent where the radius intersects the circle.
	G.C.3	Construct the inscribed and circumscribed circles of a triangle and prove properties of angles for a quadrilateral inscribed in a circle.
EXPRESSING GEOMETRIC PROPERTIES WITH EQUATIONS	G.GPE.4	Use coordinates to prove simple geometric theorems algebraically. Use coordinates to prove simple geometric theorems algebraically. For example, prove or disprove that a figure defined by four given points in the coordinate plane is a rectangle; prove or disprove that the point $(1, \sqrt{3})$ lies on the circle centered at the origin and contains the point $(0, 2)$.
	G.GPE.5	Prove the slope criteria for parallel and perpendicular lines and use them to solve geometric problems (e.g., find the equation of a line parallel or perpendicular to a given line that passes through a given point).
	G.GPE.7	Use coordinates to compute perimeters of polygons and areas of triangles and rectangles, e.g., using the distance formula.
GEOMETRIC MEASUREMENT AND DIMENSION	G.GMD.2	Explain volume formulas and use them to solve problems. Give an informal argument using Cavalieri's Principle for the formulas for the volume of a sphere and other solid figures.
	G.GMD.3	Use volume formulas for cylinders, pyramids, cones, and spheres to solve problems.
	G.GMD.4	Visualize relationships between two-dimensional and three-dimensional objects. Identify the shapes of two-dimensional cross-sections of three-dimensional objects, and identify three-dimensional objects generated by rotations of two-dimensional objects.
MODELING WITH GEOMETRY	G.MG.1	Apply geometric concepts in modeling situations. Use geometric shapes, their measures, and their properties to describe objects (e.g., modeling a tree trunk or a human torso as a cylinder).

REPORTING CATEGORY	STANDARD/ BENCHMARK	CONTENT STATEMENT
MODELING WITH GEOMETRY (CONT.)	G.MG.2	Apply geometric concepts in modeling situations. Apply concepts of density based on area and volume in modeling situations (e.g., persons per square mile, BTUs per cubic foot).
	G.MG.3	Apply geometric methods to solve design problems (e.g., designing an object or structure to satisfy physical constraints or minimize cost; working with typographic grid systems based on ratios).

**Geometry EoC Reporting Category
Alignment Framework**

Reporting Category	Standard	DOK (Item # by DOK)			Grand Total
		1	2	3	
1	G.CO.1	1			1
	G.CO.5	22			1
	G.CO.7	2			1
	G.CO.8			3	1
	G.CO.10		35		1
	G.CO.11			12	1
2	G.SRT.2		7		1
	G.SRT.4			34	1
	G.SRT.5		4		1
	G.SRT.6	36			1
	G.SRT.7		30		1
	G.SRT.8	13			1
3	G.C1b		9		1
	G.C2.a	8			1
	G.C.1a		28		1
	G.C.3a		24		1
	G.C.3b			29	1
	G.C.2b		33		

**Geometry EoC Reporting Category
Alignment Framework**

Reporting Category	Standard	DOK (Item # by DOK)			Grand Total
		1	2	3	
4	G.GPE.5a			6	1
	G.GPE.4a		14		1
	G.GPE.7a		18		1
	G.GPE.4b		19		1
	G.GPE.5b		25		1
	G.GPE.7b		31		1
	5	G.GMD.4b	5		
G.GMD.2b			11		1
G.GMD.3b				16	1
G.GMD.2a			20		1
G.GMD.4a		27			1
G.GMD.3a			32		1
6	G.MG.2b		10		1
	G.MG.1b		15		1
	G.MG.3b		17		1
	G.MG.2a			21	1
	G.MG.1a		23		1
	G.MG.3a		26		1
Grand Total					35

MATH TASK PRACTICE

GEOMETRY

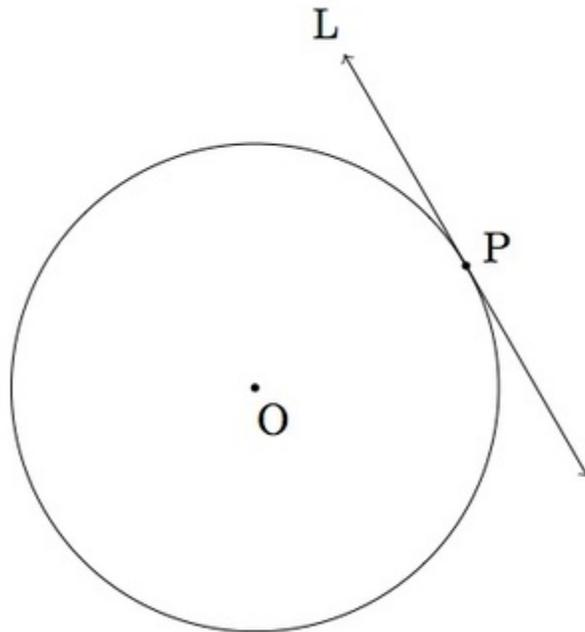
UNIT 1

G-C, G-CO Tangent Lines and the Radius of a Circle

Alignments to Content Standards: [G-C.A.2](#) [G-CO.C.9](#) [G-CO.A](#)

Task

Consider a circle with center O and let P be a point on the circle. Suppose L is a tangent line to the circle at P , that is L meets the circle only at P .



Show that segment OP is perpendicular to L .

MATH TASK PRACTICE

GEOMETRY

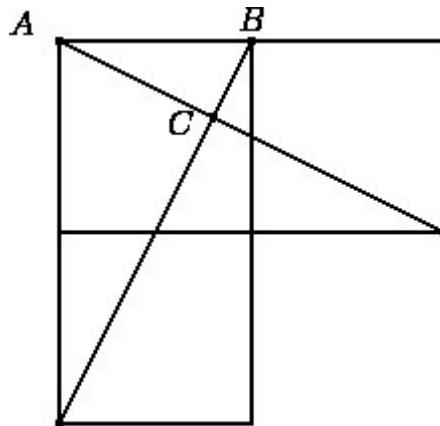
UNIT 2 & 3

G-GPE, G-CO, G-SRT Unit Squares and Triangles

Alignments to Content Standards: [G-GPE.B.5](#) [G-GPE.B.4](#) [G-CO.A](#) [G-SRT.B.5](#)

Task

Three unit squares and two line segments connecting two pairs of vertices are shown. What is the area of $\triangle ABC$?



MATH TASK PRACTICE

GEOMETRY

UNIT 2, 3 & 4

8.G, G-GPE, G-SRT, G-CO Is this a rectangle?

Alignments to Content Standards: [8.G.A](#) [8.G.B](#) [G-CO.B](#) [G-GPE.B](#) [G-SRT.B.5](#)

Task

Is the quadrilateral with vertices $(-6,2)$, $(-3,6)$, $(9,-3)$, $(6,-7)$ a rectangle? Explain.

MATH TASK PRACTICE

GEOMETRY

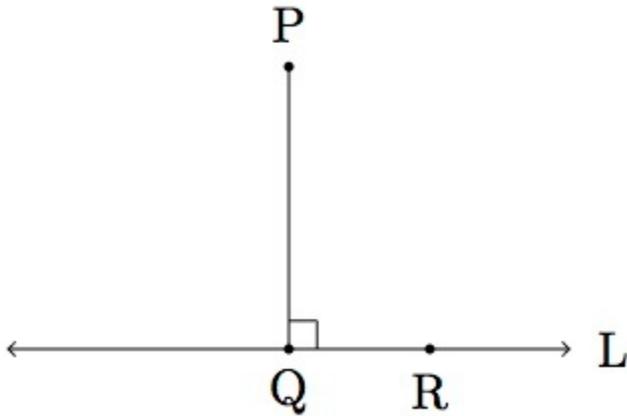
G.SRT Shortest line segment from a point P to a line L

UNIT 4

Alignments to Content Standards: [G-SRT.C.8](#)

Task

Suppose P is a point not contained on a line L . Let Q be the point on L so that PQ meets L perpendicularly and let R be any other point on L as in the picture below:



Show that segment PQ is shorter than segment PR .

MATH TASK PRACTICE

GEOMETRY

G-GMD Use Cavalieri's Principle to Compare Aquarium Volumes

UNIT 5

Tags: MP.4

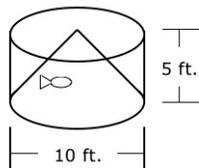
Alignments to Content Standards: G-GMD.A.2 G-MG.A.1

Task

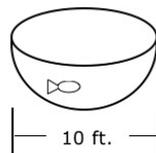
The management of an ocean life museum will choose to include either Aquarium A or Aquarium B in a new exhibit.

Aquarium A is a right cylinder with a diameter of 10 feet and a height of 5 feet. Covering the lower base of Aquarium A is an "underwater mountain" in the shape of a 5-foot-tall right cone. This aquarium would be built into a pillar in the center of the exhibit room.

Aquarium B is half of a 10-foot-diameter sphere. This aquarium would protrude from the ceiling of the exhibit room.



Aquarium A



Aquarium B

- How many cubic feet of water will Aquarium A hold?
- For each aquarium, what is the area of the water's surface when filled to a height of h feet?
- Use your results from parts (a) and (b) and Cavalieri's principle to find the volume of Aquarium B.

MATH TASK PRACTICE

GEOMETRY

S-CP, S-MD But mango is my favorite...

UNIT 6

Alignments to Content Standards: [S-CP.A.5](#) [S-CP.B](#) [S-MD.B.7](#)

Task

A seven-year-old boy has a favorite treat, Super Fruity Fruit Snax.

These "Fruit Snax" come in pouches of 10 snack pieces per pouch, and the pouches are generally sold by the box, with each box containing 4 pouches.

The snack pieces come in 5 different fruit flavors, and usually each pouch contains at least one piece from each of the 5 flavors. The website of the company that manufactures the product says that equal numbers of each of the 5 fruit flavors are produced and that pouches are filled in such a way that each piece added to a pouch is equally likely to be any one of the five flavors.

Of all the 5 fruit flavors, the seven-year-old boy likes mango the best. One day, he was very disappointed when he opened a pouch and there were no (zero) mango flavored pieces in the pouch. His mother (a statistician) assured him that this was no big deal and just happens by chance sometimes.

- a. If the information on the company's website is correct,
 - i. What proportion of the population of snack pieces is mango flavored?
 - ii. On average, how many mango flavored pieces should the boy expect in a pouch of 10 snack pieces?
 - iii. What is the chance that a pouch of 10 would have no mango flavored pieces? Was the mother's statement reasonable? Explain. (Hint: if none of the 10 independently selected pieces are mango, then all 10 pieces are "not mango.")
 - iv. The family then finds out that there were in fact no mango flavored pieces in any of the 4 pouches in the box they purchased. Again, if the information on the company's website is correct,
 - v. What is the chance that an entire box of 4 pouches would have no mango flavored pieces? (Hint: How is this related to your answer to question (iii) in part (a)?)
 - vi. Based on your answer and based on the fact that this event of an entire box with "no mangoes" happened to this family, would you be concerned about the company's claims, or would you say that such an event is not surprising given the company's claims? Explain.

MATH TASK PRACTICE

GEOMETRY

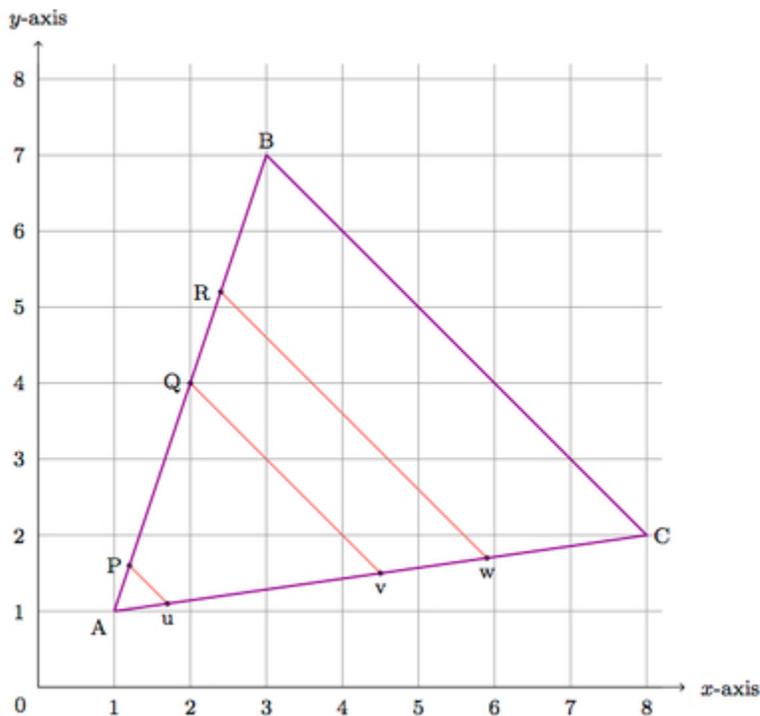
G-GPE, G-SRT Finding triangle coordinates

UNIT 2 & 7

Alignments to Content Standards: [G-GPE.B.6](#) [G-SRT.B.5](#)

Task

Below is a picture of a triangle ABC on the coordinate grid. The red lines are parallel to BC \longleftrightarrow :



Suppose $P=(1.2,1.6)$, $Q=(2,4)$, and $R=(2.4,5.2)$. Find the coordinates of the points u , v , and w .