
Geometry 10 and Geometry 11

Curriculum Guide

Scranton School District

Scranton, PA



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Curriculum Guide**

Geometry 10 and Geometry 11

Prerequisite : Successful completion of Algebra I

Intended Audience: This course is designed for the student who has successfully completed Algebra I by the end of the 9th or 10th grade.

Geometry 10 is the course 10th grade students take after Algebra I, while Geometry 11 is designed for those eleventh grade students who have completed Algebra I at the end of their sophomore year. These courses are designed to emphasize the study of the properties and applications of common two and three dimensional geometric figures. These courses formalize what students have learned about geometry in the middle grades, with a concentration on mathematical reasoning, including exposure to formal proofs. Topics covered focus on the Pennsylvania Common Core Standards and include, but are not limited to: coordinate geometry, perimeter, area, surface area and volume, congruent and similar triangles, right triangles, quadrilaterals, and circles. After successfully completing Geometry 10 or Geometry 11, students will be allowed to enroll in Algebra 2 or Algebra 2/Trigonometry.

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Year-at-a-glance

Subject: Geometry 10 and Geometry 11	Grade Level: 10th and 11th	Date Completed: Oct 2014
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1st Quarter

Topic	Resources	CCSS
Basic Terms and Coordinate Geometry	Big Ideas Geometry 1.1 - 1.3	G.2.1.2.1, G.2.1.2.2, G.2.1.2.3
Perimeter and Area in the Coordinate Plane	Big Ideas Geometry 1.4	G.2.2.2.1, G.2.2.2.2, G.2.2.2.4, G.2.2.2.5, G.2.2.3.1, G.2.2.4.1
Angles	Big Ideas Geometry 1.5 - 1.6, 5.1, 7.1	G.2.2.1.1, G.2.2.1.2, G.1.2.1.4
Parallel and Perpendicular Lines	Big Ideas Geometry 3.1- 3.5	G.2.2.1.2, G.2.1.2.2

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2nd Quarter

Topic	Resources	CCSS
Reasoning and Proof	Big Ideas Geometry 2.4 – 2.6	G.1.3.2.1
Congruent Triangles	Big Ideas Geometry 5.2 – 5.7	G.1.2.1.1, G.1.2.1.3, G.1.3.1.1, G.1.3.2.1
Relationships Within Triangles	Big Ideas Geometry 6.1, 6.2 – 6.5	G.1.2.1.1

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3rd Quarter

Topic	Resources	CCSS
Similar Triangles	Big Ideas Geometry 8.1 – 8.4	G.1.3.1.2, G.1.3.1.1
Right Triangles and Trigonometry	Big Ideas Geometry 9.1 – 9.5	G.2.1.1.1, G.2.1.1.2
Quadrilaterals and Their Area	Big Ideas Geometry 7.2 – 7.5	G.2.1.2.3, G.1.2.1.2, G.2.2.2.2, G.2.2.2.3,

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4th Quarter

Topic	Resources	CCSS
Circles	Big Ideas Geometry 10.1 – 10.6	G.1.1.1.1, G.1.1.1.2, G.1.1.1.3
Circumference, Area, and Volume	Big Ideas Geometry 11.1 – 11.2, 11.4 – 11.8	G.1.1.1.2, G.2.2.2.5, G.1.1.1.4, G.1.2.1.5, G.2.3.1.1, G.2.3.1.2, G.2.3.1.3, G.2.3.2.1, G.2.2.4.1
Final Review		

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General Topic	Academic Standard(s)	Essential Knowledge, Skills & Vocabulary	Resources & Activities	Assessments	Suggested Time
Basic Terms And Coordinate Geometry	G.2.1.2.1	<p><i>Name points, lines, planes, segments, and rays. Use the Ruler and Segment Addition Postulate.</i></p> <p>Calculate the distance and/or midpoint between 2 points on a number line or on a coordinate plane. <i>Using the Midpoint and Distance Formula.</i></p>	<p>Big Ideas Geometry 1.1 – 1.2</p> <p>Big Ideas Geometry 1.3</p> <p>http://departments.jordandistrict.org/curriculum/mathematics/secondary/impact/Algebra/Alg%208%20Geometry%20in%20Algebra/Alg8.4Solving%20for%20the%20midpoint.pdf</p>	<p>Teacher prepared tests, quizzes, etc.</p> <p>Series available assessments online. (Optional)</p> <p>bigideasmath.com (Optional)</p>	12 days

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Perimeter and Area in the Coordinate Plane	G.2.2.2.1	Estimate area, perimeter or circumference of an irregular figure. <i>Using area, perimeter, and circumference formulas in the coordinate plane.</i>	Big Ideas Geometry 1.4 http://shodor.org/interactivate-java/activities/ShapeBuilder/		8 days
	G.2.2.2.4	Develop and/or use strategies to estimate the area of a compound/composite figure.			
Angles		<i>Name, measure and classify angles. Identify congruent angles.</i>	Big Ideas Geometry 1.5		10 days
	G.2.2.1.1	Use properties of angles formed by intersecting lines to find the measures of missing angles. <i>Complementary, Supplementary, and Vertical Angles.</i>	Big Ideas Geometry 1.6 http://www.palmbeachschools.org/students/Grade12/GeometryActivity2.pdf		
	G.1.2.1.1	Identify and/or use properties of triangles. <i>Triangle Sum and Exterior Angle Theorems.</i>	Big Ideas Geometry 5.1		

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	G.1.2.1.4	Identify and/or use properties of regular polygons. <i>Interior and Exterior Angle Theorems.</i>	Big Ideas Geometry 7.1 http://illuminations.nctm.org/Activity.aspx?id=3546		
Parallel and Perpendicular Lines	G.2.2.1.2	<i>Review and identify pairs of lines.</i> Use properties of angles formed when two parallel lines are cut by a transversal to find the measures of missing angles.	Big Ideas Geometry 3.1 Big Ideas Geometry 3.2-3.3, 5.1		15 days
	G.2.1.2.2	Relate slope to perpendicularity and/or parallelism (limit to linear algebraic equations). <i>Identify parallel and perpendicular lines.</i> <i>Write equations of parallel and perpendicular lines.</i>	Big Ideas Geometry 3.4-3.5		

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Reasoning and Proofs	G.1.3.2.1	<p><i>Use Algebraic Properties of Equality to justify the steps in solving an equation in a two-column proof.</i></p> <p>Write, analyze, complete, or identify formal proofs (e.g., direct and/or indirect proofs/proofs by contradiction.)</p> <p><i>Use properties of equality involving segment lengths and angle measures to complete two-column proofs.</i></p>	<p>Big Ideas Geometry 2.4</p> <p>Big Ideas Geometry 2.5-2.6</p>		15 days
Congruent Triangles	G.1.3.1.1	<p>Identify and/or use properties of congruent polygons or solids.</p> <p><i>Identify and use corresponding parts.</i></p>	Big Ideas Geometry 5.2		20 days
	G.1.2.1.3	<p>Identify and/or use properties of isosceles and equilateral triangles.</p> <p><i>Use the Base Angles Theorems.</i></p>	Big Ideas Geometry 5.4		

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	G.1.3.2.1	<p>Write, analyze, complete, or identify formal proofs (e.g., direct and/or indirect proofs/proofs by contradiction). <i>Proving triangles congruent using the SAS, SSS, HL, ASA and AAS Congruence Theorems.</i></p>	<p>Big Ideas Geometry 5.3, 5.5, 5.6</p> <p>http://www.lcps.org/cms/lib4/VA01000195/Centricity/Domain/1445/Geo%20G.6%20Chapter%204%20Congruent%20Triange%20Lab%20WS%20PDF.pdf</p>		
Relationships Within Triangles	G.1.2.1.1	<p>Identify and/or use properties of triangles.</p> <p><i>Identify and/or use properties of medians, altitudes, and perpendicular bisectors.</i></p> <p><i>Use midsegments in the coordinate plane and the Triangle Midsegment Theorem to find distance.</i></p> <p><i>Use Triangle Inequality Theorem.</i></p>	<p>Big Ideas Geometry 6.1, 6.3</p> <p>Big Ideas Geometry 6.4</p> <p>Big Ideas Geometry 6.5 http://www.glencoe.com/sites/commmon_assets/support_pages/MC_Course3/Triangle_Inequality.pdf</p>		10 days

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Similar Triangles	G.1.3.1.1	<p>Identify and/or use properties of similar polygons or solids.</p> <p><i>Use the Triangle Similarity Theorems to solve real-life problems.</i></p>	<p>Big Ideas Geometry 8.1</p> <p>Big Ideas Geometry 8.2-8.3</p>		15 days
	G.1.3.1.2	<p>Identify and/or use proportional relationships in similar figures.</p>	<p>Big Ideas Geometry 8.4</p>		
Right Triangles and Trigonometry	G.2.1.1.1	<p>Use the Pythagorean Theorem to write and/or solve problems involving right triangles.</p> <p><i>Find side lengths in special right triangles and solve real-life problems.</i></p> <p><i>Use the geometric mean to solve problems involving similar right triangles.</i></p>	<p>Big Ideas Geometry 9.1</p> <p>http://www.cimt.plymouth.ac.uk/projects/mepres/book8/y8s3act.pdf</p> <p>Big Ideas Geometry 9.2</p> <p>Big Ideas Geometry 9.3</p>		15 days

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	G.2.1.1.2	Use trigonometric ratios to write and/or solve problems involving right triangles.	<p>Big Ideas Geometry 9.4-9.5</p> <p>http://en.wikibooks.org/wiki/High_School_Trigonometry/Applications_of_Right_Triangle_Trigonometry</p> <p>http://jwilson.coe.uga.edu/emt668/emat6680.folders/brooks/6690stuff/righttriangle/Applications.html</p>		
Quadrilaterals And Their Areas	G.1.2.1.2	<p>Identify and/or use properties of quadrilaterals.</p> <p><i>Use properties of trapezoids and the Trapezoid Midsegment Theorem to find distances.</i></p>	<p>Big Ideas Geometry 7.2, 7.4, 7.5</p> <p>http://illuminations.nctm.org/Lesson.aspx?id=1992</p> <p>Big Ideas Geometry 7.5</p>		15 days
	G.2.1.2.3	Use slope, distance and/or midpoint between 2 points on a coordinate plane to establish properties of a 2-dimensional shape.	Big Ideas Geometry 7.3, 7.4		

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	G.2.2.2.2	Find the measurement of a missing length given the perimeter, circumference, or area. Use formulas for quadrilaterals.			
	G.2.2.2.3	Find the side lengths of a polygon with a given perimeter to maximize the area of the polygon. <i>Use formulas for quadrilaterals.</i>	http://map.mathshell.org/materials/download.php?fileid=1226		
	G.2.2.3.1	Describe how a change in the linear dimension of a figure affects its perimeter, circumference, and area. (e.g., How does changing the length of the radius of a circle affect the circumference of the circle?). <i>Use formulas for quadrilaterals.</i>	http://www.ssms.scps.k12.fl.us/Portals/104/assets/pdf/Math%207th%20garde/Change%20in%20geometric%20dimensions.pdf http://www.shawnee.edu/acad/ms/ENABldocs/Summer08pdfs/Geoboards%20Lesson%20Plan.pdf http://www.shawnee.edu/acad/ms/ENABldocs/Summer08pdfs/Geoboards%20Lesson%20Plan.pdf		

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Circles	G.1.1.1.1	Identify, determine and/or use the radius, diameter, segment and/or tangent of a circle.	Big Ideas Geometry 10.1 http://illuminations.nctm.org/uploadedFiles/Content/Lessons/Resources/9-12/PiLine-AS-Slope.pdf		15 days
	G.1.1.1.2	Identify, determine and/or use the arcs, semicircles, sectors, and/or angles of a circle. <i>Find arc measures.</i>	Big Ideas Geometry 10.2		

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	G.1.1.1.3	<p>Use chords, tangents, and secants to find missing arc measures or missing segment measures.</p> <p><i>Use Chord Theorems to find lengths and arc measures.</i></p> <p><i>Use inscribed angles and inscribed polygons to find angle and arc measures.</i></p> <p><i>Use circumscribed angles to find angle and arc measures.</i></p> <p><i>Use chords, tangents, and secants to find missing segment measures.</i></p>	<p>Big Ideas Geometry 10.3</p> <p>Big Ideas Geometry 10.4</p> <p>Big Ideas Geometry 10.5</p> <p>Big Ideas Geometry 10.6</p> <p>http://www.nsa.gov/academia/file/s/collected_learning/high_school/geometry/tangents_scants_chords.pdf</p> <p>http://illuminations.nctm.org/Lesson.aspx?id=2417</p>		
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Circumference, Area, and Volume	G.1.1.1.2	Identify, determine and/or use the arcs, semicircles, sectors, and/or angles of a circle. <i>Find circumference and use arc length to find measures and solve real-life problems.</i>	Big Ideas Geometry 11.1		20 days
	G.2.2.2.5	Find the area of a sector of a circle.	Big Ideas Geometry 11.2 http://www.regentsprep.org/regents/math/geometry/GP14/CircleSectors.htm		
	G.1.2.1.5 G.1.1.1.4	Identify and/or use properties of pyramids and prisms. Identify and/or use the properties of a sphere or cylinder. <i>Include Pythagorean Theorem and Special Right Triangles when finding missing measures.</i>	Big Ideas Geometry 11.4		

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	G.2.3.1.2	Calculate the volume of prisms, cylinders, cones, pyramids and/or spheres. <i>Formulas are provided on the reference sheet.</i>	Big Ideas Geometry 11.5-11.8 http://intermath.coe.uga.edu/tweb/gwin1-01/luce/SAV/SAVRes.html		
	G.2.3.1.1	Calculate the surface area of prisms, cylinders, cones, pyramids and/or spheres. Formulas are provided on the reference sheet.	Big Ideas Geometry 11.7-11.8 http://www.mybookezzz.org/surface-area-hands-on-activity/		
	G.2.3.1.3	Find the measurement of a missing length given the surface area or volume.	http://illuminations.nctm.org/Lesson.aspx?id=2911		
	G.2.3.2.1	Describe how a change in the linear dimension of a figure affects its surface area or volume. (e.g., How does changing the length of the edge of a cube affect the volume of the cube?).	http://www.shodor.org/interactivate/lessons/SurfaceAreaAndVolume/ http://www.k12.wa.us/mathematics/MathAve/Landscaping/Assessment.pdf		
	G.2.2.4.1	Use area models to find probabilities.			

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Final Exam Review					10 days
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