Bartlett City Schools’ Geometry instructional maps are standards-based maps driven by the TN Standards and implemented using a variety of educational resources.

Students should enter Geometry with an understanding and the ability to solve and interpret linear equations and associated graphs, be familiar with quadratic equations, understand the Pythagorean Theorem, be able to identify two- and three- dimensional shapes, and be familiar with the basic geometric (measurement) formulas. Geometry provides a graphical and visual representation of the mathematical world around us. These representations should be included across all objectives. Students should be given an opportunity to develop spatial sense and an understanding of a variety means of providing reasoning, mathematical arguments, and proofs. The justifications used in geometry should include a variety of techniques including paragraph and algebraic proofs. Technology should be a component of the instruction. The instructional approach should provide opportunities for students to work together collaboratively and cooperatively as they solve routine and non-routine problems. Communication strategies should include reading, writing, speaking, and critical listening as students present and evaluate mathematical arguments, proofs, and explanations about their reasoning. Physical materials should continue to be part of the development of mathematical understanding.

The Tennessee State Standards will prepare students with essential knowledge and skills to compete in an increasingly global environment. These standards emphasize thinking, problem-solving and creativity through next generation assessments that go beyond multiple-choice tests to increase college and career-readiness among Tennessee students. Additional information for Tennessee educators, as well as curricular resources and math tasks can be found at the TN Core website at [www.tncore.org](http://www.tncore.org)

The Standards for Mathematical Practice describe varieties of expertise that mathematics educators at all levels should seek to develop in their students. These practices rest on important “processes and proficiencies” with longstanding importance in mathematics education. The first of these are the NCTM process standards of problem solving, reasoning and proof, communication, representation, and connections. The second are the strands of mathematical proficiency specified in the National Research Council’s report *Adding It Up*: adaptive reasoning, strategic competence, conceptual understanding (comprehension of mathematical concepts, operations and relations), procedural fluency (skill in carrying out procedures flexibly, accurately, efficiently and appropriately), and productive disposition (habitual inclination to see mathematics as sensible, useful, and worthwhile, coupled with a belief in diligence and one’s own efficacy).

[**The Standards for Mathematical Practice**](http://www.corestandards.org/Math/Practice)

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| **MP1. Make sense of problems and persevere in solving them.** | **MP2. Reason abstractly and quantitatively.** | **MP3. Construct viable arguments and critique the reasoning of others.** | **MP4. Model with mathematics.** |
| **MP5. Use appropriate tools strategically.** | **MP6. Attend to precision.** | **MP7. Look for and make use of structure.** | **MP8. Look for and express regularity in repeated reasoning.** |

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| **TN Standards** | **Scope/Clarification &**  **Learning Outcomes** | **Content & Tasks** | |
| **Chapter 4 - Congruent Triangles (Sections 5 – 8)**  **(Allow 1.5 weeks for instruction, review, and assessment)** | | | |
| Prove geometric theorems  G.CO.C.10   * Prove theorems about triangles. Theorems include but are not limited to: 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.   Make geometric constructions  G.CO.D.12   * 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.   Prove theorems using similarity  G.SRT.B.5   * Use congruence and similarity criteria for triangles to solve problems and to prove relationships in geometric figures. | *Scope & Clarifications*   * G.CO.C.10 – Proving includes, but is not limited to, completing partial proofs; constructing two-column or paragraph proofs; using transformations to prove theorems; analyzing proofs; and critiquing completed proofs.   Theorems include but are not limited to: measures of interior angles of a triangle sum to 180o; 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.   * G.CO.D.12 – Constructions include but are not limited to: copying a segment; copying an angle; bisecting a segment; bisecting an angle; constructing perpendicular lines, including the perpendicular bisector of a line segment; constructing a line parallel to a given line through a point not on the line, and constructing the following objects inscribed in a circle: an equilateral triangle, square, and a regular hexagon. * G.SRT.B.5 – There are no assessment limits for this standard. The entire standard is assessed in this course.   *Learning Outcomes*   * Construct congruent triangles using two sides and the included angle. * Prove congruence and similarity for triangles using Angle-Side-Angle and Angle-Angle-Side Postulates. | Lesson 4-5 – Proving Triangles Congruent –  ASA, AAS  [NCTM Activity – Pieces of Proof](http://illuminations.nctm.org/LessonDetail.aspx?id=L727)  [On Line Math – Congruent Triangles](http://www.onlinemathlearning.com/congruent-triangles.html)  [On Line Math – Shortcut Tests](http://www.onlinemathlearning.com/geometry-congruent-triangles.html) | |
| Prove geometric theorems  G.CO.C.10   * Prove theorems about triangles. Theorems include but are not limited to: 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. | *Scope & Clarifications*   * G.CO.C.10 – Proving includes, but is not limited to, completing partial proofs; constructing two-column or paragraph proofs; using transformations to prove theorems; analyzing proofs; and critiquing completed proofs.   Theorems include but are not limited to: measures of interior angles of a triangle sum to 180o; 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.  *Learning Outcomes*   * Prove that the base angles of isosceles triangles are congruent. * Prove that a triangle is equilateral if and only if it is equiangular. * Prove that each angle of an equilateral triangle measures 60o. | Lesson 4-6 – Isosceles and Equilateral Triangles  [Isosceles Triangle Theorems](http://www.regentsprep.org/Regents/math/geometry/GP6/Lisosceles.htm)  [On Line Math Learning - Triangles](http://www.onlinemathlearning.com/equilateral-triangle.html) | |
| Experiment with transformations in the plane  G.CO.A.2   * 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).   G.CO.A.5   * 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.   Understand congruence in terms of rigid motions  G.CO.B.6   * Use geometric descriptions of rigid motions to transform figures and to predict the effect of a given rigid motions on a given figure; given two figures, use the definition of congruence in terms of rigid motions to determine informally if they are congruent.   G.CO.B.7   * 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.   G.CO.B.8   * Explain how the criteria for triangle congruence (ASA, SAS, and SSS) follow from the definition of congruence in terms of rigid motions. | *Scope & Clarifications*   * G.CO.A.2 – There are no assessment limits for this standard. The entire standard is assessed in this course. * G.CO.A.5 – Rigid motions include rotations, reflections, and translations.   There are no assessment limits for this standard. The entire standard is assessed in this course.   * G.CO.B.6 – There are no assessment limits for this standard. The entire standard is assessed in this course. * G.CO.B.7 – There are no assessment limits for this standard. The entire standard is assessed in this course. * G.CO.B.8 – There are no assessment limits for this standard. The entire standard is assessed in this course.   *Learning Outcomes*   * Verify that reflections, translations, and rotations of triangles produce congruent triangles using SSS. * Perform transformations on triangles in the coordinate plane and test for congruence. | Lesson 4-7 – Congruence Transformations  Graphing Technology Lab 4.7 Congruence Transformations P.292-293 of textbook – Uses TI-Nspire to perform transformations  [On Line Math Learning - Transformations](http://www.onlinemathlearning.com/math-transformation.html)  **TASK** [Harold's Transformation](http://tncore.org/sites/www/Uploads/CRA_Tasks/npIFL/0GeomHaroldsTransformation.pdf) | |
| Prove geometric theorems  G.CO.C.10   * Prove theorems about triangles. Theorems include but are not limited to: 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.   Use coordinates to prove simple geometric theorems algebraically  G.GPE.B.5   * Know and use coordinates to compute perimeters of polygons and areas of triangles and rectangles.\* | *Scope & Clarifications*   * G.CO.C.10 - Proving includes, but is not limited to, completing partial proofs; constructing two-column or paragraph proofs; using transformations to prove theorems; analyzing proofs; and critiquing completed proofs.   Theorems include but are not limited to: measures of interior angles of a triangle sum to 180o; 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.   * G.GPE.B.5 – For example, use the distance formula. There are no assessment limits for this standard. The entire standard is assessed in this course.   *Learning Outcomes*   * Use coordinate proofs to verify properties and to prove theorems about triangles. | Lesson 4-8 – Triangles and Coordinate  [Using the Coordinate Plane in Proof](http://www.mathwarehouse.com/coordinate-geometry/) | |
| **Chapter 5 - Relationships in Triangles**  **(Allow 3 weeks for instruction, review, and assessment)** | | | |
| Prove geometric theorems  G.CO.C.9   * Prove theorems about lines and angles, Theorems include but are not limited to: 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.   G.CO.C.10   * Prove theorems about triangles. Theorems include but are not limited to: 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.   Make geometric constructions  G.CO.D.12   * 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.   Understand and apply theorems about circles  G.C.A.3   * Construct the incenter and circumcenter of a triangle and use their properties to solve problems in context. | *Scope & Clarifications*   * G.CO.C.9 – Proving includes, but is not limited to, completing partial proofs; constructing two-column or paragraph proofs; using transformations to prove theorems; analyzing proofs; and critiquing completed proofs.   Theorems include but are not limited to: 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.   * G.CO.C.10 - Proving includes, but is not limited to, completing partial proofs; constructing two-column or paragraph proofs; using transformations to prove theorems; analyzing proofs; and critiquing completed proofs.   Theorems include but are not limited to: measures of interior angles of a triangle sum to 180o; 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.   * G.CO.D.12 - Constructions include but are not limited to: copying a segment; copying an angle; bisecting a segment; bisecting an angle; constructing perpendicular lines, including the perpendicular bisector of a line segment; constructing a line parallel to a given line through a point not on the line, and constructing the following objects inscribed in a circle: an equilateral triangle, square, and a regular hexagon. * G.C.A.3 – There are no assessment limits for this standard. The entire standard is assessed in this course.   *Learning Outcomes*   * Construct a perpendicular bisector of the side of a triangle. * Construct an angle bisector of a triangle. * Prove that points on a perpendicular bisector of a line segment are exactly those equidistant from the segment’s endpoints. * Prove the Circumcenter, Incenter, and Centroid Theorems and use the theorems to solve problems. * Construct the median of a triangle. * Construct the altitude of a triangle. | Geometry Lab 5-1 – Constructing Bisectors  Lesson 5-1 – Bisectors of Triangles and  Lesson 5-2 – Medians and Altitudes of Triangles  [NCTM Interactive Applets](http://illuminations.nctm.org/ActivityDetail.aspx?ID=22)  [TI-Nspire Activity – Balancing Act](http://education.ti.com/en/us/activity/detail?id=DDAAF10337FF4CC6B9EB73FE1E3980F1) | |
| Make geometric constructions  G.CO.D.12   * Make formal geometric constructions with a variety of tools and methods (compass and straightedge, string, reflective devices, paper folding, dynamic geometric software, etc.). | *Scope & Clarifications*   * G.CO.D.12 - Constructions include but are not limited to: copying a segment; copying an angle; bisecting a segment; bisecting an angle; constructing perpendicular lines, including the perpendicular bisector of a line segment; constructing a line parallel to a given line through a point not on the line, and constructing the following objects inscribed in a circle: an equilateral triangle, square, and a regular hexagon.   *Learning Outcomes*   * Construct an equilateral triangle, square, and a regular hexagon inscribed in a circle. | ***Geometry Lab 10-5 (Inscribed and Circumscribed***  ***Circles)*** | |
| Prove geometric theorems  G.CO.C.10   * Prove theorems about triangles. | *Scope & Clarifications*   * G.CO.C.10 - Proving includes, but is not limited to, completing partial proofs; constructing two-column or paragraph proofs; using transformations to prove theorems; analyzing proofs; and critiquing completed proofs.   Theorems include but are not limited to: measures of interior angles of a triangle sum to 180o; 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.  *Learning Outcomes*   * Recognize and apply properties of inequalities to the measures of the angles of a triangle. * Recognize and apply properties of inequalities to the relationships between the angles and sides of a triangle. | Lesson 5-3 – Inequalities in One Triangle  [On Line Math Learning - Inequalities](http://www.onlinemathlearning.com/geometry-triangles.html)  [Properties of Inequality](http://www.sparknotes.com/math/algebra1/inequalities/section2.rhtml) | |
| Prove geometric theorems  G.CO.C.10   * Prove theorems about triangles   Make geometric constructions  G.CO.D.12   * Make formal geometric constructions with technology.   Apply geometric concepts in modeling situations  G.MG.A.2   * Apply geometric methods to solve real-world problems. | *Scope & Clarifications*   * G.CO.C.10 - Proving includes, but is not limited to, completing partial proofs; constructing two-column or paragraph proofs; using transformations to prove theorems; analyzing proofs; and critiquing completed proofs.   Theorems include but are not limited to: measures of interior angles of a triangle sum to 180o; 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.   * G.CO.D.12 - Constructions include but are not limited to: copying a segment; copying an angle; bisecting a segment; bisecting an angle; constructing perpendicular lines, including the perpendicular bisector of a line segment; constructing a line parallel to a given line through a point not on the line, and constructing the following objects inscribed in a circle: an equilateral triangle, square, and a regular hexagon. * G.MG.A.2 – Geometric methods may include but are not limited to using geometric shapes, the probability of a shaded region, density, and design problems.   There are no assessment limits for this  standard. The entire standard is assessed in this  course.  *Learning Outcomes*   * Use technology to investigate triangle inequalities. * Solve real-world problems using the triangle inequality theorem. * Use the triangle inequality theorem to identify possible triangles. * Prove triangle relationships using the Triangle Inequality Theorem. |  | |
| Prove geometric theorems  G.CO.C.10 | *Scope & Clarifications*   * G.CO.C.10 - Proving includes, but is not limited to, completing partial proofs; constructing two-column or paragraph proofs; using transformations to prove theorems; analyzing proofs; and critiquing completed proofs.   Theorems include but are not limited to: measures of interior angles of a triangle sum to 180o; 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.  *Learning Outcomes*   * Apply the hinge theorem or its converse to make comparisons in two triangles. * Prove triangle relationships using the Hinge Theorem or its converse. | Lesson 5-6 – Inequalities in Two Triangles  [Interactive Applet](http://www.geogebra.org/en/upload/files/english/nebsary/SasInequality/SAS.html) | |
| **Chapter 6 - Quadrilaterals**  **(Allow 3 weeks for instruction, review, and assessment)** | | | |
| Apply geometric concepts in modeling situations  G.MG.A.1   * Use geometric shapes, their measures, and their properties to describe objects.\* | *Scope & Clarifications*   * G.MG.A.1 – For example, model a tree trunk or a human torso as a cylinder. There are no assessment limits for this standard. The entire standard is assessed in this course.   *Learning Outcomes*   * Find and use the sum of the measures of the interior angles of a polygon. * Find and use the sum of the measures of the exterior angles of a polygon. | Lesson 6-1 – Angles of Polygons  [Interior Angles of Polygons](http://www.coolmath.com/lesson-interior-angles-of-polygons-1.htm)  [Activity from NCTM Illuminations](http://illuminations.nctm.org/LessonDetail.aspx?ID=L379) | |
| Prove geometric theorems  G.CO.C.11   * Prove theorems about parallelograms.   Use coordinates to prove simple geometric theorems algebraically  G.GPE.B.2   * Use coordinates to prove simple geometric theorems algebraically. | *Scope & Clarifications*   * G.CO.C.11 – Proving includes, but is not limited to, completing partial proofs; constructing two-column or paragraph proofs; using transformations to prove theorems; analyzing proofs; and critiquing completed proofs.   Theorems include but are not limited to:  opposite sides are congruent, opposite  angles are congruent, the diagonals of a  parallelogram bisect each other, and  conversely, rectangles are parallelograms  with congruent diagonals.   * G.GPE.B.2 – 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, lies on the circle centered at the origin and containing the point (0, 2).   There are no assessment limits for this standard. The entire standard is assessed in this course.  *Learning Outcomes*   * Recognize and apply properties of the sides and angles of parallelograms. * Recognize and apply properties of the diagonals of parallelgorams. * Prove that a parallelogram is a quadrilateral with both pairs of opposite sides parallel, including on a coordinate plane. | Lesson 6-2 – Parallelograms  **TASK** [Two Rectangles](http://tncore.org/sites/www/Uploads/CRA_Tasks/PhaseIII/GeometryTwoRectanglesTaskAnchorSet.pdf)  **TASK**  [Park City](http://tncore.org/sites/www/Uploads/CRA_Tasks/npIFL/0GeomParkCity.pdf) | |
| Prove geometric theorems  G.CO.C.11   * Prove theorems about parallelograms.   Make geometric constructions  G.CO.D.12   * Make formal geometric constructions with a variety of tools and methods.   Use coordinates to prove simple geometric theorems algebraically  G.GPE.B.2   * Use coordinates to prove simple geometric theorems algebraically. | *Scope & Clarifications*   * G.CO.C.11 - Proving includes, but is not limited to, completing partial proofs; constructing two-column or paragraph proofs; using transformations to prove theorems; analyzing proofs; and critiquing completed proofs.   Theorems include but are not limited to:  opposite sides are congruent, opposite  angles are congruent, the diagonals of a  parallelogram bisect each other, and  conversely, rectangles are parallelograms  with congruent diagonals.   * G.CO.D.12 - Constructions include but are not limited to: copying a segment; copying an angle; bisecting a segment; bisecting an angle; constructing perpendicular lines, including the perpendicular bisector of a line segment; constructing a line parallel to a given line through a point not on the line, and constructing the following objects inscribed in a circle: an equilateral triangle, square, and a regular hexagon. * G.GPE.B.2 - 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, lies on the circle centered at the origin and containing the point (0, 2).   There are no assessment limits for this standard. The entire standard is assessed in this course.  *Learning Outcomes*   * Recognize the conditions that ensure a quadrilateral is a parallelogram. * Prove that a set of points forms a parallelogram in the coordinate plane. * Construct a quadrilateral with one pair of sides that are both parallel and congruent using technology. | Lesson 6-3 – Tests for Parallelograms  [Properties of Parallelograms](http://education.ti.com/calculators/downloads/US/Activities/Detail?id=11932&ref=%2fcalculators%2fdownloads%2fUS%2fActivities%2fSearch%2fKeywords%3fk%3dnecessary+and+sufficient)  **TASK** [Parallelograms](http://tncore.org/sites/www/Uploads/CRA/GeoPII-ParallelogramAnchorSet_final.pdf) | |
| Prove geometric theorems  G.CO.C.11   * Prove theorems about parallelograms.   Make geometric constructions  G.CO.D.12   * Make formal geometric constructions with a variety of tools and methods.   Use coordinates to prove simple geometric theorems algebraically  G.GPE.B.2   * Use coordinates to prove simple geometric theorems algebraically. | *Scope & Clarifications*   * G.CO.C.11 - Proving includes, but is not limited to, completing partial proofs; constructing two-column or paragraph proofs; using transformations to prove theorems; analyzing proofs; and critiquing completed proofs.   Theorems include but are not limited to:  opposite sides are congruent, opposite  angles are congruent, the diagonals of a  parallelogram bisect each other, and  conversely, rectangles are parallelograms  with congruent diagonals.   * G.CO.D.12 - Constructions include but are not limited to: copying a segment; copying an angle; bisecting a segment; bisecting an angle; constructing perpendicular lines, including the perpendicular bisector of a line segment; constructing a line parallel to a given line through a point not on the line, and constructing the following objects inscribed in a circle: an equilateral triangle, square, and a regular hexagon. * G.GPE.B.2 - 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, lies on the circle centered at the origin and containing the point (0, 2).   There are no assessment limits for this standard. The entire standard is assessed in this course.  *Learning Outcomes*   * Recognize and apply properties of rectangles. * Determine whether parallelograms are rectangles. * Prove that parallelograms are rectangles. * Prove that a quadrilateral positioned on a coordinate plane is a rectangle given the coordinates of the vertices. | Lesson 6-4 – Rectangles  [Properties of a Rectangle](http://www.algebra.com/algebra/homework/Rectangles/properties-of-a-rectangle.lesson)  **TASK**  [Getting In Shape](http://tncore.org/sites/www/Uploads/CRA_Tasks/npIFL/0GeomGettinginShape.pdf) | |
| Prove geometric theorems  G.CO.C.11   * Prove theorems about parallelograms.   Make geometric constructions  G.CO.D.12   * Make formal geometric constructions with a variety of tools and methods.   Use coordinates to prove simple geometric theorems algebraically  G.GPE.B.2   * Use coordinates to prove simple geometric theorems algebraically. | *Scope & Clarifications*   * G.CO.C.11 - Proving includes, but is not limited to, completing partial proofs; constructing two-column or paragraph proofs; using transformations to prove theorems; analyzing proofs; and critiquing completed proofs.   Theorems include but are not limited to:  opposite sides are congruent, opposite  angles are congruent, the diagonals of a  parallelogram bisect each other, and  conversely, rectangles are parallelograms  with congruent diagonals.   * G.CO.D.12 - Constructions include but are not limited to: copying a segment; copying an angle; bisecting a segment; bisecting an angle; constructing perpendicular lines, including the perpendicular bisector of a line segment; constructing a line parallel to a given line through a point not on the line, and constructing the following objects inscribed in a circle: an equilateral triangle, square, and a regular hexagon. * G.GPE.B.2 - 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, lies on the circle centered at the origin and containing the point (0, 2).   There are no assessment limits for this standard. The entire standard is assessed in this course.  *Learning Outcomes*   * Recognize and apply the properties of rhombi and squares. * Use proofs to determine whether quadrilaterals are rectangles, rhombi, or squares. * Classify quadrilaterals using coordinate geometry. | Lesson 6-5 – Rhombi and Squares  [Proofs with Quadrilaterals](http://mrperezonlinemathtutor.com/G/2_4_Proofs_Quadrilaterals_and_Triangles.html)  [NCTM Applet to Discover Types of Quadrilaterals from Diagonals](http://illuminations.nctm.org/ActivityDetail.aspx?ID=148)  **TASK** [Lucio's Ride](http://tncore.org/sites/www/Uploads/CRA_Tasks/npIFL/0GeomLucio%27sRide.pdf) | |
| Prove geometric theorems  G.CO.C.11   * Prove theorems about parallelograms.   Use coordinates to prove simple geometric theorems algebraically  G.GPE.B.2   * Use coordinates to prove simple geometric theorems algebraically.   Apply geometric concepts in modeling situations G.MG.A.1   * Use geometric shapes, their measures, and their properties to describe objects.★ | *Scope & Clarifications*   * G.CO.C.11 – Proving includes, but is not limited to, completing partial proofs; constructing two-column or paragraph proofs; using transformations to prove theorems; analyzing proofs; and critiquing completed proofs.   Theorems include but are not limited to: opposite sides are congruent, opposite angles are congruent, the diagonals of a parallelogram bisect each other, and conversely, rectangles are parallelograms with congruent diagonals.   * G.GPE.B.2 - 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, lies on the circle centered at the origin and containing the point (0, 2).   There are no assessment limits for this standard. The entire standard is assessed in this course.   * G.MG.A.1 – For example, model a tree turnk or a human torso as a cylinder.   There are no assessment limits for this standard. The entire standard is assessed in this course.  *Learning Outcomes*   * Apply the properties of trapezoids and kites. * Prove the theorems of trapezoids and kites. * Given ordered pairs, show that they are the vertices of an isosceles trapezoid. | Lesson 6-6 – Trapezoids and Kites  [Proofs with Quadrilaterals](http://www.regentsprep.org/Regents/math/geometry/GP9/PracQuadPf.htm)  [Video of Quad Coordinate Proofs](http://www.youtube.com/watch?v=0289g1JFkpg) | |
| **Chapter 7 – Proportions and Similarity**  **(Allow 1.5 weeks for instruction, review, and assessment)** | | | |
| Apply geometric concepts in modeling situations  G.MG.A.2   * Apply geometric methods to solve real-world problems. | *Scope & Clarifications*   * Geometric methods may include but are not limited to using geometric shapes, the probability of a shaded region, density, and design problems.   There are no assessment limits for this standard. The entire standard is assessed in this course.  *Learning Outcomes*   * Use proportions to make predictions. | | Lesson 7-1 – Ratios and Proportion  Graphing Technology Lab 7-1 – Fibonacci Sequence and Ratios  [Exploration of the Golden Ratio](http://math.rice.edu/~lanius/Geom/golden.html)  [TI-84 Activity - Architecture](http://education.ti.com/calculators/downloads/US/Activities/Detail?id=7425) |
| Understand similarity in terms of similarity transformations  G.SRT.A.2   * 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. | *Scope & Clarifications*   * There are no assessment limits for this standard. The entire standard is assessed in this course.   *Learning Outcomes*   * Use proportions to identify similar polygons. * Solve problems using the properties of similar polygons. | | Lesson 7-2 – Similar Polygons  [Examples of Similar Polygons](http://www.math.com/school/subject1/lessons/S1U2L4GL.html) |
| Understand similarity in terms of similarity transformations  G.SRT.A.2   * 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.   G.SRT.A.3   * Use the properties of similarity transformations to establish the AA criterion for two triangles to be similar.   Prove theorems using similarity  G.SRT.B.4   * Prove theorems about similar triangles.   G.SRT.B.5   * Use congruence and similarity criteria for triangles to solve problems and to justify relationships in geometric figures. | *Scope & Clarifications*   * G.SRT.A.2 – There are no assessment limits for this standard. The entire standard is assessed in this course. * G.SRT.A.3 – There are no assessment limits for this standard. The entire standard is assessed in this course. * G.SRT.B.4 – Proving includes, but is not limited to, completing partial proofs; constructing two-column or paragraph proofs; using transformations to prove theorems; analyzing proofs; and critiquing completed proofs.   Theorems include but are not limited to: a line parallel to one side of a triangle divides the other two proportionally, and conversely; the Pythagorean Theorem proved using triangle similarity.   * G.SRT.B.5 – There are no assessment limits for this standard. The entire standard is assessed in this course.   *Learning Outcomes*   * Identify similar triangles using the AA Similarity Postulate and the SSS and SAS Similarity Theorems. * Use similar triangles to solve problems. * Prove that two triangles are similar using the SSS and SAS similarity theorems. | | Lesson 7-3 – Similar Triangles  [On Line Math – Similar Triangles](http://www.onlinemathlearning.com/similar-triangles-geometry.html) |

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| **RESOURCE TOOLBOX:**  **FORMATIVE ASSESSMENT**  Compass Learning Odyssey:<https://www.thelearningodyssey.com/>  Discovery Education:<http://www.discoveryeducation.com/>  **GLENCOE TOOLS**  [ConnectED Site - Textbook and Resources](http://connected.mcgraw-hill.com/connected/login.do)  [Glencoe Video Lessons](http://glencoe.mcgraw-hill.com/sites/0078884845/sitemap.html?resource=personaltutor)  [Hotmath - solutions to odd problems](http://hotmath.com/help/bookindexes/cumminsgtn12/)  **Comprehensive Geometry Help:**  <http://www.onlinemathlearning.com/geometry-help.html>  <http://illuminations.nctm.org/>  [I Love Math - Geometry](http://www.ilovemath.org/index.php?option=com_docman&task=cat_view&gid=27)  <http://jc-schools.net/dynamic/math/math11.html>  <https://njctl.org/courses/math/geometry/>  **Geometry Test Prep:**  [USA Test Prep](http://usatestprep.com/Member-Login)  [Regents Exam Prep Center](http://www.regentsprep.org/regents/math/geometry/math-GEOMETRY.htm#m1)  <http://cuacs8.mck.ncsu.edu/mathsampleitems/main.html>  **ACT Test Prep**: <http://www.actstudent.org/testprep/>  **GEOMETRY UNITS WITH EXAMPLES** <http://teachers.henrico.k12.va.us/math/igo/>  <http://caccssm.cmpso.org/geometry-task-force/geometry-resources>  <http://mdk12.org/instruction/curriculum/mathematics/index.html>  **VIDEOS**  <https://www.khanacademy.org/math/geometry>  <http://www.teachertube.com/>  [http://www.mathtv.com/videos\_by\_topic#](http://www.mathtv.com/videos_by_topic)  [The Teaching Channel](https://www.teachingchannel.org/)  **TECHNOLOGY-GRAPHING CALCULATORS:**  <http://www.ti-mathnspired.com>  <http://education.ti.com/educationportal/activityexchange/activity>  <http://www.casioeducation.com/educators>  <http://www.stemresources.com/>  <http://www.ilovemath.org/index.php?option=com_docman>  <http://mathbits.com/MathBits/TISection/Openpage.htm> | **ADDITIONAL TASK RESOURCES:**  [Mathematics Assessment Project](http://map.mathshell.org/materials/tasks.php?taskid=265&subpage=apprentice)  [The Charles A Dana Center](http://www.utdanacenter.org/k12mathbenchmarks/tasks/tasks.php)  [NYC Dept of Education - Units with Tasks](http://schools.nyc.gov/Academics/CommonCoreLibrary/TasksUnitsStudentWork/default.htm)  [Georgia Dept of Education - Units with Tasks](https://www.georgiastandards.org/Common-Core/Pages/Math-9-12.aspx)  **\*Graphing Calculator Note:** [TI tutorials](http://movies.atomiclearning.com/k12/search?p=25&lang=en*&q=TI+84&submit=Go%21) are available through **Atomic Learning** and also at the following link: [Math Bits - graphing calculator steps](http://mathbits.com/MathBits/TISection/Openpage.htm)  Some activities require calculator programs and/or applications. Use the following link to access **FREE software for your MAC**. This will enable your computer and TI Calculator to communicate**:** [Free TI calculator downloads](http://education.ti.com/educationportal/downloadcenter/SoftwareDetail.do?website=US&tabId=1&appId=286)  SOFTWARE  [GeoGebra](http://www.geogebra.org/cms/en/) – Free software for dynamic math and science learning  [NCTM Math Tools](http://www.nctm.org/resources/content.aspx?id=32702)  <http://www.keycurriculum.com/products/sketchpad> (Not free)  Any activity using Geometer’s Sketchpad can also be done with any software that allows construction of figures and measurement, such as Cabri, Cabri Jr. on the TI-83 or 84 Plus, TI-92 Plus, or TI-Nspire. |