

**Brookfield Local Schools**  
**Curriculum Map for Geometry**  
**Unit # 5 Title: Properties of Triangles**

**Duration of Unit:**

4 weeks

**Topic Sequence:**

3 weeks

**Student Friendly Learning Targets:**

I can prove and apply theorems about perpendicular bisectors and angle bisectors.

I can identify the circumcenter, incenter, centroid, and orthocenter of a triangle.

I can prove and apply theorems about the circumcenter, incenter, centroid, and orthocenter of a triangle.

I can apply the Centroid Formula.

I can apply properties of medians and altitudes.

I can prove and apply properties of triangle midsegments.

I can construct an indirect proof.

I can apply inequalities in one triangle and two triangles.

I can prove and apply the Pythagorean Theorem and its converse.

I can identify and apply properties of  $45^{\circ}$ - $45^{\circ}$ - $90^{\circ}$  and  $30^{\circ}$ - $60^{\circ}$ - $90^{\circ}$  triangles.

**Common Core State Standards Addressed:**

G.CO.9: 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.*

G.CO.10: Prove theorems about triangles. *Theorems include: measures of interior angles of a triangle sum to  $180^{\circ}$ ; 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.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.*

G.SRT.4: 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.*

G.SRT.8: Use trigonometric ratios and the Pythagorean Theorem to solve right triangles in applied problems.

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**Vocabulary:**

Perpendicular bisector, angle bisector, median, altitude, inequalities in one triangle, inequalities in two triangles, circumcenter, incenter, centroid, orthocenter, indirect proof, Pythagorean Theorem, triangle midsegment,  $45^{\circ}$ - $45^{\circ}$ - $90^{\circ}$  triangle,  $30^{\circ}$ - $60^{\circ}$ - $90^{\circ}$  triangle

**Materials and/or Technology Needed:**

Smartboard, Holt-McDougal Geometry Textbook, Whiteboards, Protractors, Compasses, Straight Edges

**Instructional Notes:**

Instruction should integrate with the standards that comprise the Properties of Triangle Unit.

**Instructional and Assessment Resources:**

Formative Assessment Lessons: <http://map.mathshell.org/materials/lessons.php>

Formative Assessment Tasks: <http://map.mathshell.org/materials/tasks.php>

Illustrative Mathematics: <http://www.illustrativemathematics.org/standards/k8>

NCTM Illuminations: <http://illuminations.nctm.org/>

PARCC: [http://www.parcconline.org/mcf/mathematics/parc c - model - content - frameworks – browser](http://www.parcconline.org/mcf/mathematics/parc%20c%20-%20model%20-%20content%20-%20frameworks%20-%20browser)

Inside Mathematics: [http://insidemathematics.org/index.php/mathematical - content - standards](http://insidemathematics.org/index.php/mathematical%20-%20content%20-%20standards)

New York State: <http://www.engageny.org/mathematics>

<http://mathforum.org/>, <http://www.nctm.org/>, <http://plus.maths.org/content/>,

<http://www.pbslearningmedia.org/>, <http://www.mathwords.com/>,

<http://www.math.com/homeworkhelp/Geometry.html>, <http://mathworld.wolfram.com/>,

<http://nlvm.usu.edu/en/nav/vlibrary.html>, <http://www.purplemath.com/>, Holt-McDougal Geometry Textbook

**Assessment Notes:**

The Focus Topic will have three multiple choice questions and one extended response on the proficiency assessment.