

Brookfield Local Schools
Curriculum Map for Geometry
Unit # 3 Title: Parallel and Perpendicular Lines

Duration of Unit:

3 weeks

Topic Sequence:

3 weeks

Student Friendly Learning Targets:

I can identify parallel, perpendicular, and skew lines.

I can identify special pairs of angles formed by two lines and a transversal.

I can prove and apply theorems about pairs of angles formed by parallel lines and a transversal.

I can apply theorems to prove lines are parallel.

I can prove and apply theorems about perpendicular lines.

I can identify and explain the concept of slope.

I can calculate slope and apply it to identify lines as parallel, perpendicular, and intersecting.

I can write linear equations in Slope-Intercept Form, Point-Slope Form, and Standard Form.

I can use linear equations to identify lines as parallel, perpendicular, intersecting, or coinciding.

Common Core State Standards Addressed:

G.CO.1: 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.

G.CO.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.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.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.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 $(0, 2)$.*

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).

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Vocabulary:

Parallel, perpendicular, transversal, alternate interior angles, alternate exterior angles, same side interior angles, corresponding angles, slope, coinciding, input, output, coordinates, construction, slope-intercept form, point-slope form, standard form, linear equation

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 Parallel and Perpendicular Lines 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/parcc-model-content-frameworks-browser>

Inside Mathematics: <http://insidemathematics.org/index.php/mathematical-content-standards>

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 Unit Topic will have three multiple choice questions on the proficiency assessment.

Foundational standards should be formatively assessed early in the cycle to identify foundational gaps of students.