

Common Core Standards - Resource Page

The resources below have been created to assist teachers' understanding and to aid instruction of this standard.

Domain	Standard: 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.
<u>Congruence</u> Prove geometric theorems	<p><u>Questions to Focus Learning</u></p> <p>What relationships between angles formed by intersections of lines are always true? What is true about the endpoints of a segment and its perpendicular bisector?</p> <p>When lines intersect, certain relationships among the created angles are always true. The same is true of points on perpendicular bisectors of segments.</p> <p><u>Student Friendly Objectives</u></p> <p><i>Knowledge Targets</i></p> <p>I know the angle relationships found when two lines are cut by a transversal, including alternate interior angles, alternate exterior angles, corresponding angles, and same-side interior angles.</p> <p>I know the relationships between pairs of angles, including vertical angles, supplementary angles, complementary angles, and linear pairs.</p> <p><i>Reasoning Targets</i></p> <p>I can prove relationships between pairs of angles including all right angles are congruent, supplements to the same angle are congruent, and vertical angles congruent.</p> <p>I can prove congruent angle relationships concerning parallel lines intersected by a transversal including alternate interior angles, alternate exterior angles, same-side interior angles and alternate exterior angles.</p> <p>I can prove points on a perpendicular bisector of a line segment are exactly equidistant from the segment's endpoints.</p>

Vocabulary

alternate interior angles
alternate exterior angles
angles
bisector
complementary angles
corresponding angles
equidistant
linear pair
lines
perpendicular
same-side interior angles
supplementary angles
transversal line
vertical angles

Teacher Tips

Encourage multiple ways of writing proofs, such as in narrative paragraphs, using flow diagrams, in two-column format, and using diagrams without words. Students should be encouraged to focus on the validity of the underlying reasoning while exploring a variety of formats for expressing that reasoning. Implementation of G.CO.10 may be extended to include concurrence of perpendicular bisectors and angle bisectors as preparation for G.C.3.

Vertical Progression

G.CO.10 - 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.

G.CO.11 - 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.

The above information and more can be accessed for free on the [Wiki-Teacher](#) website.

Direct link for this standard: [G.CO.9](#)