



Topic E:

Proving Properties of Geometric Figures

G-CO.C.9, G-CO.C.10, G-CO.C.11

Focus Standard:	G-CO.C.9	Prove ¹ theorems about lines and angles. <i>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.</i>
	G-CO.C.10	Prove theorems about triangles. <i>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.</i>
	G-CO.C.11	Prove theorems about parallelograms. <i>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.</i>
Instructional Days:	3	
Lesson 28:	Properties of Parallelograms (P) ²	
Lessons 29–30:	Special Lines in Triangles (P, P)	

In Topic E, students extend their work on rigid motions and proof to establish properties of triangles and parallelograms. In Lesson 28, students apply their recent experience with triangle congruence to prove problems involving parallelograms. In Lessons 29 and 30, students examine special lines in triangles, namely midsegments and medians. Students prove why a midsegment is parallel to and half the length of the side of the opposite triangle. In Lesson 30, students prove why the medians are concurrent.

¹ Prove *and apply* (in preparation for Regents Exams).

² Lesson Structure Key: **P**-Problem Set Lesson, **M**-Modeling Cycle Lesson, **E**-Exploration Lesson, **S**-Socratic Lesson