



Topic B:

Unknown Angles

G-CO.C.9

Focus Standard: G-CO.C.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.*

Instructional Days: 6

Lesson 6: Solve for Unknown Angles—Angles and Lines at a Point (P)¹

Lesson 7: Solve for Unknown Angles—Transversals (P)

Lesson 8: Solve for Unknown Angles—Angles in a Triangle (P)

Lesson 9: Unknown Angle Proofs—Writing Proofs (P)

Lesson 10: Unknown Angle Proofs—Proofs with Constructions (P)

Lesson 11: Unknown Angle Proofs—Proofs of Known Facts (P)

By the time students embark on Topic B, they have seen several of the geometric figures that they studied prior to Grade 8. Topic B incorporates even more of these previously learned figures, such as the special angles created by parallel lines cut by a transversal. As part of the journey to solving proof problems, students begin by solving unknown angle problems in Lessons 6–8. Students will develop mastery over problems involving angles at a point, angles in diagrams with parallel lines cut by a transversal, angles within triangles, and all of the above within any given diagram. A base knowledge of how to solve for a given unknown angle lays the groundwork for orchestrating an argument for a proof. In the next phase, Lessons 9–11, students work on unknown angle proofs. Instead of focusing on the computational steps needed to arrive at a particular unknown value, students must articulate the algebraic and geometric concepts needed to arrive at a given relationship. Students continue to use precise language and relevant vocabulary to justify steps in finding unknown angles and to construct viable arguments that defend their method of solution.

¹ Lesson Structure Key: **P**-Problem Set Lesson, **M**-Modeling Cycle Lesson, **E**-Exploration Lesson, **S**-Socratic Lesson