

MAFS.912.G-CO.3.9	Prove theorems about lines and angles; use theorems about lines and angles to solve problems. <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>
Item Types	<p>Editing Task Choice – May require choosing a statement in a narrative proof.</p> <p>Equation Editor – May require creating numerical values, expressions, or equations.</p> <p>GRID – May require completing a proof as a diagram, such as a flowchart.</p> <p>Hot Text – May require completing a proof by selecting statements.</p> <p>Matching Item – May require choosing true statements about lines and angles in a diagram.</p> <p>Multiselect – May require identifying statements or values.</p> <p>Multiple Choice – May require selecting from choices.</p> <p>Open Response – May require explaining a proof in a narrative paragraph or providing a justification.</p>
Clarifications	<p>Students will prove theorems about lines.</p> <p>Students will prove theorems about angles.</p> <p>Students will use theorems about lines to solve problems.</p> <p>Students will use theorems about angles to solve problems.</p>
Assessment Limits	<p>Items may assess relationships between vertical angles, special angles formed by parallel lines and transversals, angle bisectors, congruent supplements, congruent complements, and a perpendicular bisector of a line segment.</p> <p>Items may have multiple sets of lines and angles.</p> <p>Items may include narrative proofs, flow-chart proofs, two-column proofs, or informal proofs.</p> <p>In items that require the student to justify, the student should not be required to recall from memory the formal name of a theorem.</p>
Stimulus Attribute	Items may be set in a real-world or mathematical context.
Response Attributes	<p>Items may require the student to give statements and/or justifications to complete formal and informal proofs.</p> <p>Items may require the student to justify a conclusion from a construction.</p>

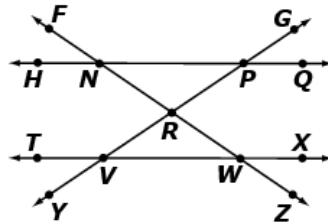
Calculator	Neutral
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Sample Item	Item Type
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Hot Text – Drag and Drop

Mrs. Henry gave her students an incomplete proof as shown.

Given: $\overleftrightarrow{HQ} \parallel \overleftrightarrow{TX}$
 $\angle FNH \cong \angle NPR$



Prove: $\angle RVW \cong \angle XWZ$

Statement	Reason
1. $\overleftrightarrow{HQ} \parallel \overleftrightarrow{TX}$	1. Given
2. $\angle FNH \cong \angle NPR$	2. Given
3. $\angle FNH \cong \angle RVW$	3.
4. $\angle RVW \cong \angle XWZ$	4. Vertical angles are congruent.
5. $\angle FNH \cong \angle XWZ$	5. Transitive property
6. $\angle NPR \cong \angle RVW$	6.
7. $\angle RVW \cong \angle XWZ$	7. Transitive property

Complete the proof by dragging the correct reasons to the table for lines 3 and 6.

Reason 3

- Vertical angles are congruent.
- If two parallel lines are cut by a transversal, the alternate exterior angles are congruent.
- If two parallel lines are cut by a transversal, the alternate interior angles are congruent.
- If two parallel lines are cut by a transversal, the corresponding angles are congruent.

Reason 6

- Vertical angles are congruent.
- If two parallel lines are cut by a transversal, the alternate exterior angles are congruent.
- If two parallel lines are cut by a transversal, the alternate interior angles are congruent.
- If two parallel lines are cut by a transversal, the corresponding angles are congruent.