MAFS.912.G-CO.3.11	Prove theorems about parallelograms; use theorems about parallelograms to solve problems. *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.*
Item Types	Editing Task Choice – May require choosing a statement in a narrative proof. Equation Editor – May require creating numerical values, expressions, or equations. GRID – May require completing a proof as a diagram, such as a flowchart. Hot Text – May require completing a proof by selecting statements. Matching Item – May require choosing true statements about a parallelogram. Multiple Choice – May require selecting from choices. Multiselect – May require identifying statements or values. Open Response – May require explaining a proof in a narrative paragraph or providing a justification.
Clarifications	Students will prove theorems about parallelograms. Students will use properties of parallelograms to solve problems.
Assessment Limits	Items may require the student to be familiar with similarities and differences between types of parallelograms (eg., squares and rectangles). Items may require the student to identify a specific parallelogram. Items may assess theorems and their converses for opposite sides of a parallelogram, opposite angles of a parallelogram, diagonals of a parallelogram, and consecutive angles of a parallelogram. Items may assess theorems and their converses for rectangles and rhombuses. Items may include narrative proofs, flow-chart proofs, two-column proofs, or informal proofs. In items that require the student to justify, the student should not be required to recall from memory the formal name of a theorem.
Stimulus Attribute	Items may be set in real-world or mathematical context.

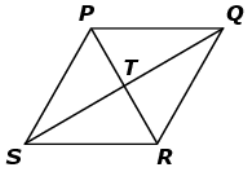
Response Attributes	Items may require the student to classify a quadrilateral as a parallelogram based on given properties or measures. Items may require the student to prove that a quadrilateral is a parallelogram.
Calculator	Neutral

Sample Item	Item Type
	Hot Text – Drag and Drop

A proof with some missing statements and reasons is shown.

Given: *PQRS* is a parallelogram.
$\overline{PQ} \cong \overline{QR}$

Prove: *PQRS* is a rhombus.



Statement	Reason
1.	1. Given
2.	2. Given
3.	3.
4.	4.
5. $\overline{PQ} \cong \overline{QR} \cong \overline{RS} \cong \overline{SP}$	5.
6. *PQRS* is a rhombus.	6.

Drag the correct statement from the statements column and the correct reason from the reasons column to the table to complete line 3 of the proof.

Statements
$\overline{PQ} \cong \overline{SR}$ and $\overline{PS} \cong \overline{QR}$
$\overline{PT} \cong \overline{TR}$ and $\overline{ST} \cong \overline{TQ}$
$\triangle PTQ \cong \triangle QTR$
$\angle SPQ \cong \angle QRS$

Reasons
Diagonals of a parallelogram bisect each other.
Opposite angles of a parallelogram are congruent.
Opposite sides of a parallelogram are congruent.
Side-Side-Side