Warm Up

Draw a quadrilateral with the given property. Do not draw the same quadrilateral twice.

1. congruent angles

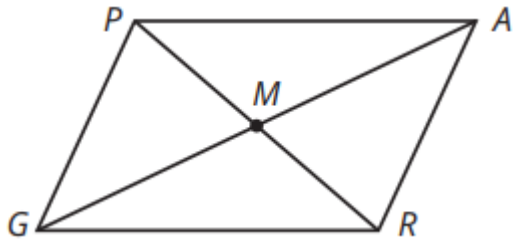
2. congruent diagonals

3. congruent sides

2. Use parallelogram *PARG* to prove that opposite sides of a parallelogram are congruent.

Given: Parallelogram *PARG* with diagonals $\overline{PR}$ and $\overline{AG}$ intersecting at point *M*

Prove: $\overline{PG} \cong \overline{AR}$ and $\overline{GR} \cong \overline{PA}$



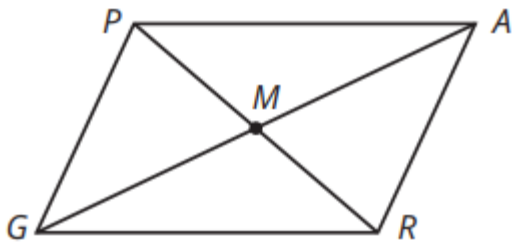
Statements	Reasons

Now that you have proved that opposite sides of a parallelogram are congruent, you can use this property as a valid reason in future proofs.

4. Use parallelogram *PARG* to prove that opposite angles of a parallelogram are congruent.

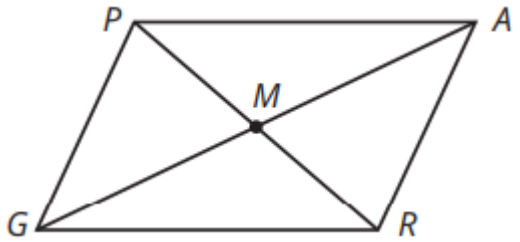
Given: Parallelogram *PARG* with diagonals $\overline{PR}$ and $\overline{AG}$ intersecting at point *M*

Prove: $\angle GPA \cong \angle ARG$



Statements	Reasons

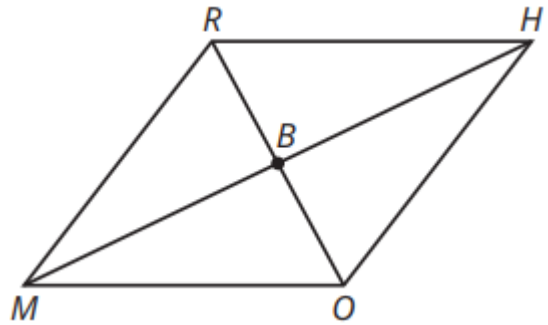
5. Prove that the diagonals of a parallelogram bisect each other using what you have already proved about the angles and sides of the parallelogram in Question 1.



Statements	Reasons

The **Parallelogram/Congruent–Parallel Side Theorem** states: "If one pair of opposite sides of a quadrilateral is both congruent and parallel, then the quadrilateral is a parallelogram."

A rhombus is a parallelogram with all sides congruent. Can this classification be proved?



7. Prove that rhombus *RHOM* is a parallelogram.

Statements	Reasons