

# 6-4

## Properties of Rhombuses, Rectangles, and Squares

**Content Standards**  
**G.CO.11** Prove theorems about parallelograms . . . rectangles are parallelograms with congruent diagonals.  
 Also **G.SRT.5**

**Objectives** To define and classify special types of parallelograms  
 To use properties of diagonals of rhombuses and rectangles

Take note

### Key Concept Special Parallelograms

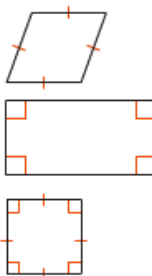
**Definition**

A **rhombus** is a parallelogram with four congruent sides.

A **rectangle** is a parallelogram with four right angles.

A **square** is a parallelogram with four congruent sides and four right angles.

**Diagram**



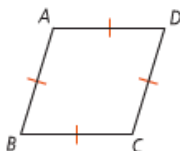
Take note

### Theorem 6-13

**Theorem**

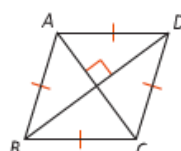
If a parallelogram is a rhombus, then its diagonals are perpendicular.

**If . . .**  
 $ABCD$  is a rhombus



**Then . . .**

$\overline{AC} \perp \overline{BD}$

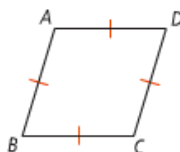


### Theorem 6-14

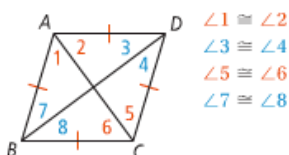
**Theorem**

If a parallelogram is a rhombus, then each diagonal bisects a pair of opposite angles.

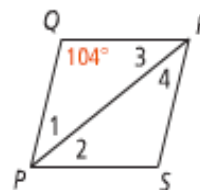
**If . . .**  
 $ABCD$  is a rhombus



**Then . . .**



**Got It?** 2. What are the measures of the numbered angles in rhombus  $PQRS$ ?



Take note

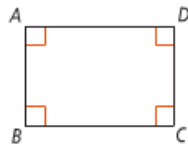
**Theorem 6-15**

**Theorem**

If a parallelogram is a rectangle, then its diagonals are congruent.

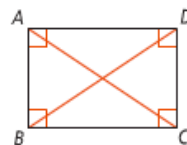
If ...

$ABCD$  is a rectangle



Then ...

$$\overline{AC} \cong \overline{BD}$$



**Got It?**

3. a. If  $LN = 4x - 17$  and  $MO = 2x + 13$ , what are the lengths of the diagonals of rectangle  $LMNO$ ?

~~b. Reasoning What type of triangle is  $\triangle PMN$ ? Explain.~~

