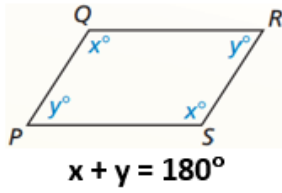
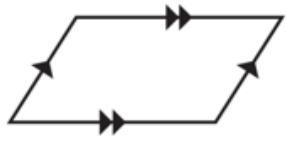


# Properties of Special Parallelograms

Lesson 7.4



**Rectangle**

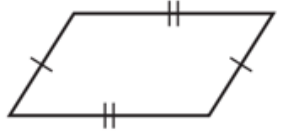
A parallelogram with four right angles

**Parallelogram**

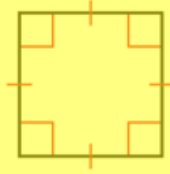
A quadrilateral with consecutive angles that are supplementary.

**Parallelogram**

A quadrilateral with both pairs of opposite sides parallel.



$(n - 2) \cdot 180$



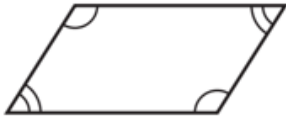
**Square**

A parallelogram with four congruent sides and four right angles

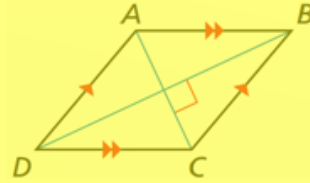
The sum of the interior angles of a convex polygon with n sides

**Parallelogram**

Both pairs of opposite sides are congruent.



$\frac{(n - 2) \cdot 180}{n}$



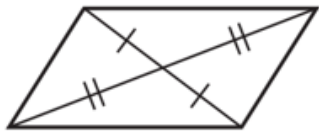
**Rhombus**

The diagonals of a rhombus are perpendicular.

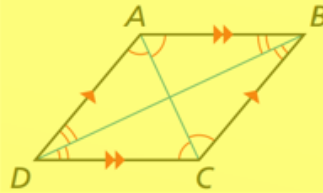
The measure of each interior angle of a regular convex polygon with n sides

**Parallelogram**

A quadrilateral with both pairs of opposite angles congruent.



$\frac{360}{n}$



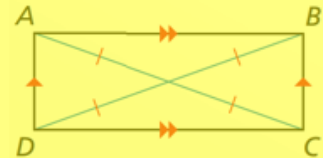
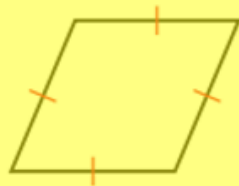
**Rhombus**

Each diagonal of a rhombus bisects a pair of opposite angles.

The measure of an exterior angle of a regular convex polygon with n sides

**Parallelogram**

The diagonals bisect each other.



**Rectangle**

The diagonals of a rectangle are congruent.

**Rhombus**

A parallelogram with four congruent sides

**Parallelogram**

A quadrilateral with one pair of opposite sides parallel and congruent.

# Rhombuses, Rectangles, and Squares

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

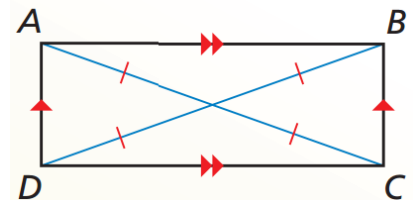
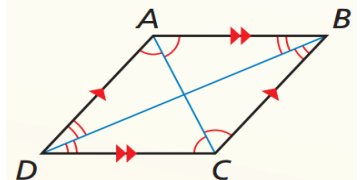
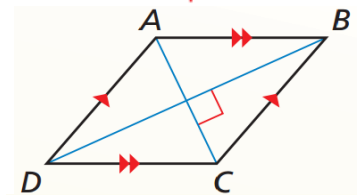
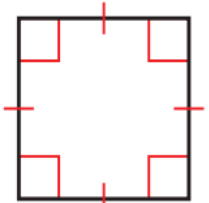
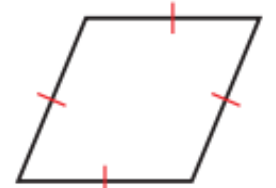
A **rectangle** is a parallelogram with four right angles

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

The diagonals of a **rhombus** are perpendicular.

Each diagonal of a **rhombus** bisects a pair of opposite angles.

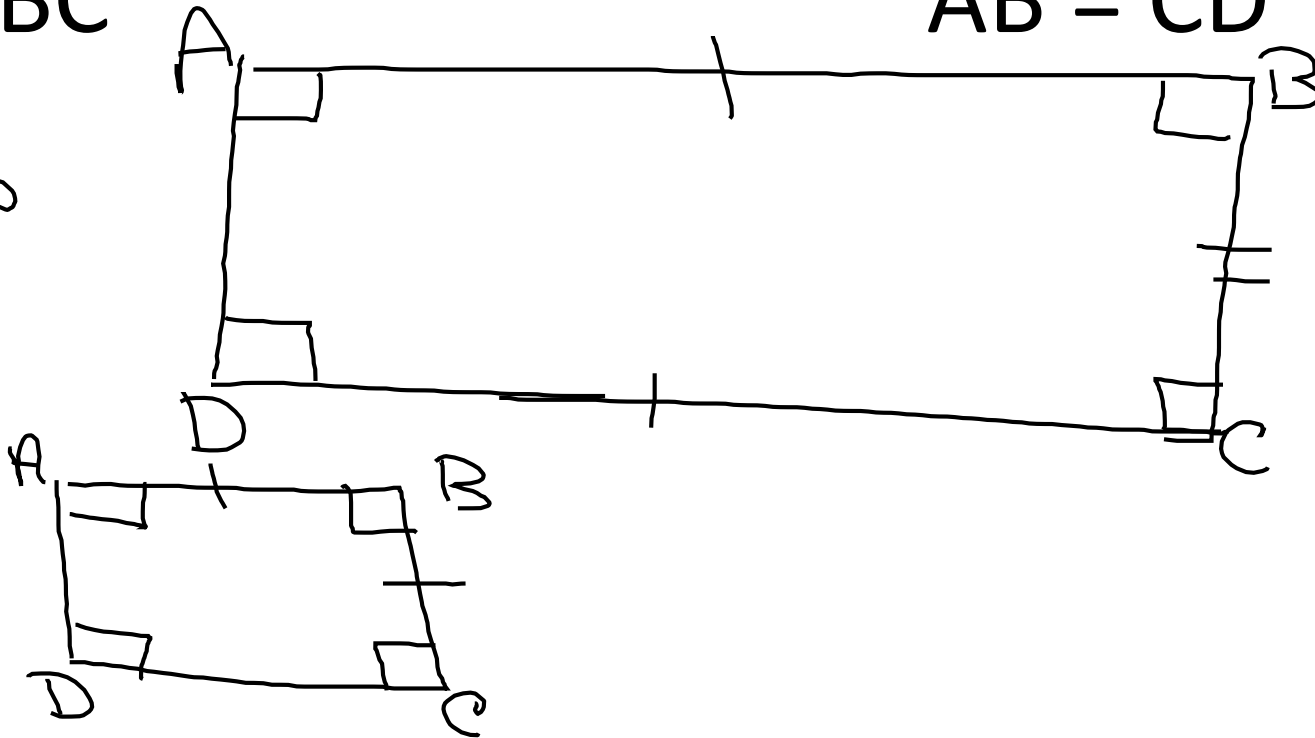
The diagonals of a **rectangle** are congruent.



For any rectangle ABCD, decide whether the statement is always or sometimes true. Explain your reasoning.

$AB = BC$

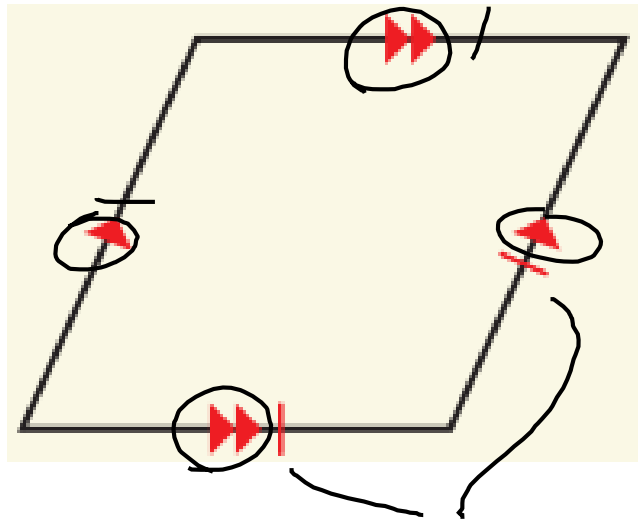
Sometimes  
if it's a  
square



$AB = CD$

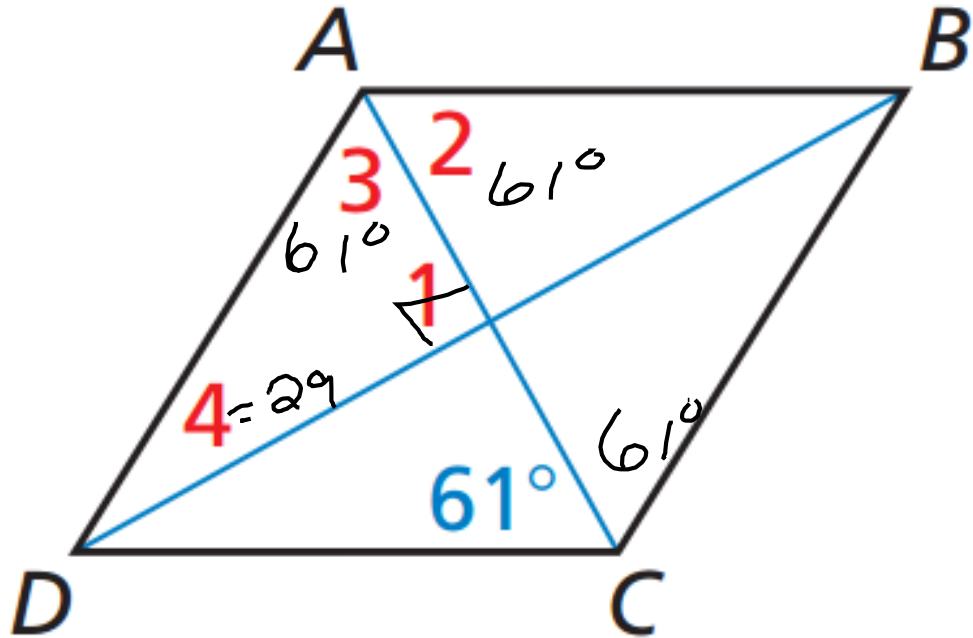
always.  
rectangles are  
▭ & opp sides  
of ▭  $\cong$

Classify the special quadrilateral. Explain your reasoning.

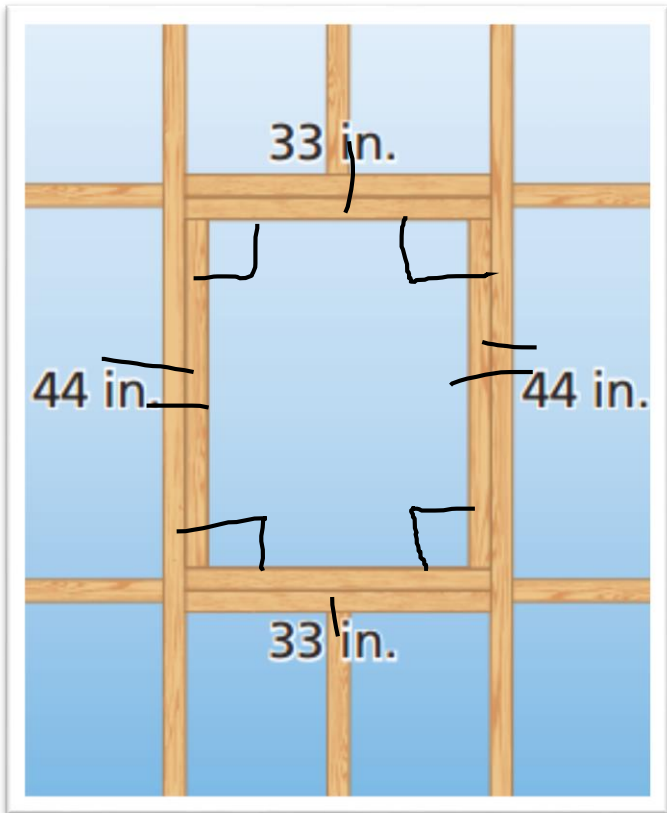


rhombus - parallelogram w/  
Consec. sides  $\cong$   
So all 4 sides  $\cong$

Find  $m\angle ABC$  and  $m\angle ACB$  in rhombus  $ABCD$ .



Suppose you measure one angle of the window opening and its measure is  $90^\circ$ . Can you conclude that the shape of the opening is a rectangle? Explain.

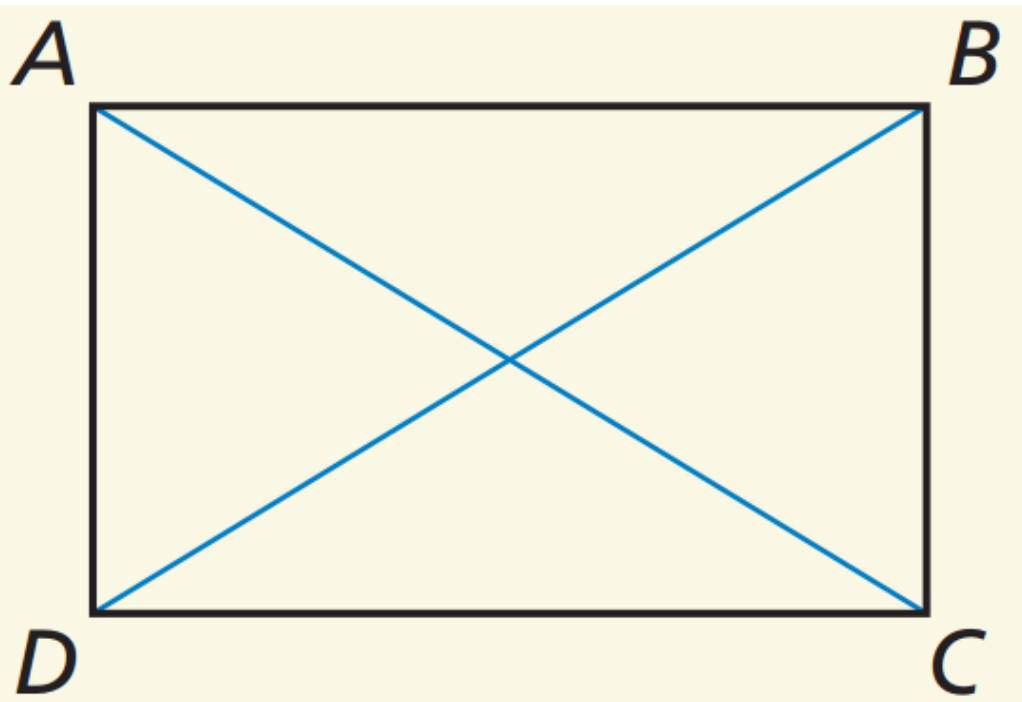


$\square$  w/ opp sides  $\cong$

Opp  $\angle$ s  $\cong$

Consec  $\angle$ s suppl

In rectangle ABCD,  $AC = 7x - 15$  and  $BD = 2x + 25$ . Find the lengths of the diagonals of ABCD.



$$\begin{array}{r} 7x - 15 = 2x + 25 \\ - 2x + 15 - 2x + 15 \\ \hline 5x = 40 \end{array}$$

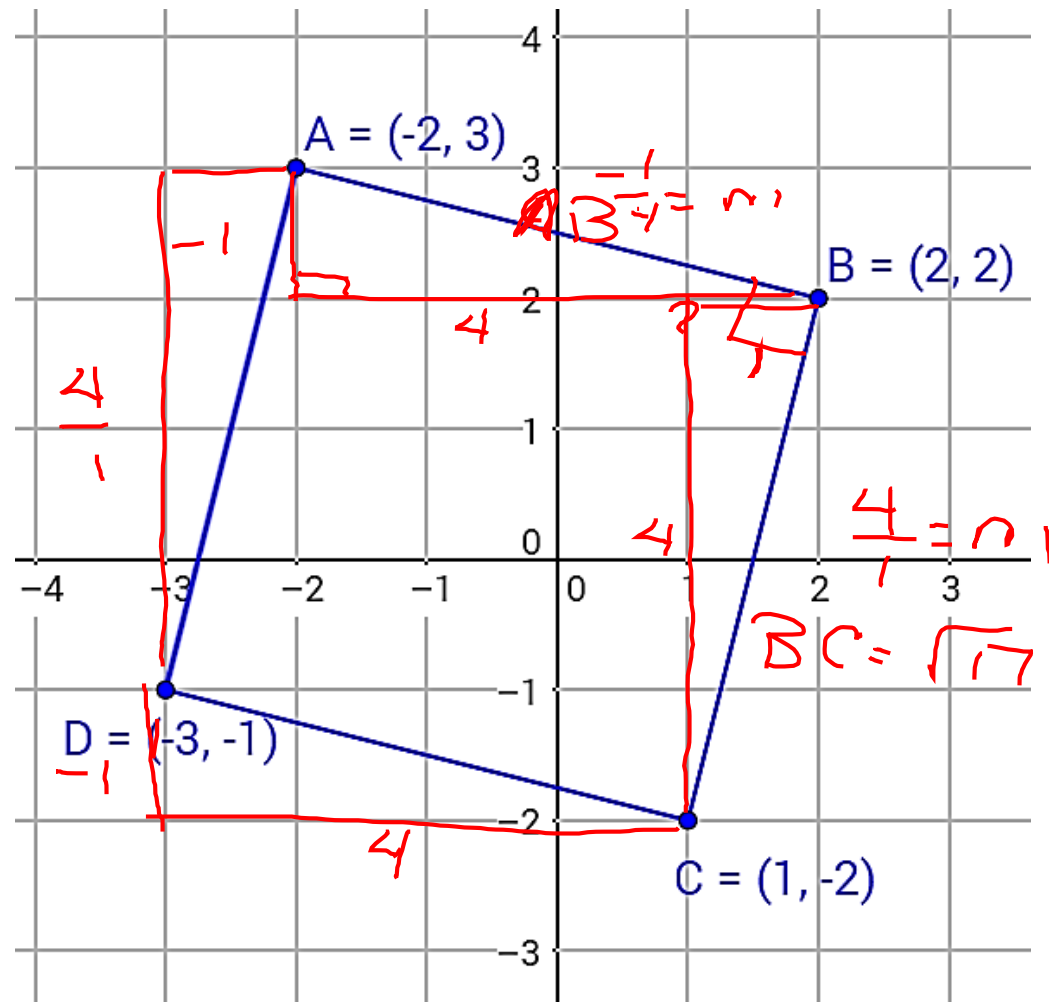
$$x = 8$$

$$7(8) - 15$$

$$41 = AC = BD$$



Decide whether  $\square ABCD$  with vertices  $A(-2, 3)$ ,  $B(2, 2)$ ,  $C(1, -2)$ , and  $D(-3, -1)$  is a rectangle, a rhombus, or a square. Give all names that apply.



$$(-1)^2 + (4)^2 = (AB)^2$$

$$1 + 16 = (AB)^2$$

$$\sqrt{17} = AB$$

rhombus,  
rectangle,  
square,  
parallelogram

Lesson 7.4 p. 393; 1, 2, 6-58 even, 65-70, 89-91 Note: This is a two day assignment.