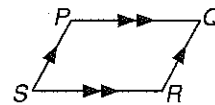


## 8-2 Study Guide and Intervention

### Parallelograms

**Sides and Angles of Parallelograms** A quadrilateral with both pairs of opposite sides parallel is a **parallelogram**. Here are four important properties of parallelograms.



	If $PQRS$ is a parallelogram, then
The opposite sides of a parallelogram are congruent.	$\overline{PQ} \cong \overline{SR}$ and $\overline{PS} \cong \overline{QR}$
The opposite angles of a parallelogram are congruent.	$\angle P \cong \angle R$ and $\angle S \cong \angle Q$
The consecutive angles of a parallelogram are supplementary.	$\angle P$ and $\angle S$ are supplementary; $\angle S$ and $\angle R$ are supplementary; $\angle R$ and $\angle Q$ are supplementary; $\angle Q$ and $\angle P$ are supplementary.
If a parallelogram has one right angle, then it has four right angles.	If $m\angle P = 90$ , then $m\angle Q = 90$ , $m\angle R = 90$ , and $m\angle S = 90$ .

#### Example

If  $ABCD$  is a parallelogram, find  $a$  and  $b$ .

$\overline{AB}$  and  $\overline{CD}$  are opposite sides, so  $\overline{AB} \cong \overline{CD}$ .

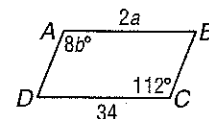
$$2a = 34$$

$$a = 17$$

$\angle A$  and  $\angle C$  are opposite angles, so  $\angle A \cong \angle C$ .

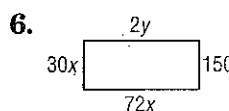
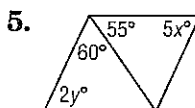
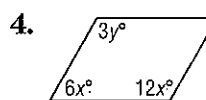
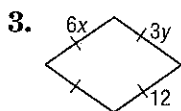
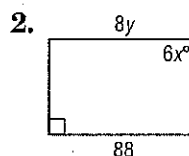
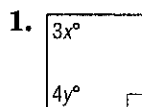
$$8b = 112$$

$$b = 14$$



#### Exercises

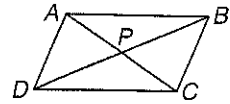
Find  $x$  and  $y$  in each parallelogram.



# 8-2 Study Guide and Intervention *(continued)*

## Parallelograms

**Diagonals of Parallelograms** Two important properties of parallelograms deal with their diagonals.



	<b>If <math>ABCD</math> is a parallelogram, then:</b>
The diagonals of a parallelogram bisect each other.	$AP = PC$ and $DP = PB$
Each diagonal separates a parallelogram into two congruent triangles.	$\triangle ACD \cong \triangle CAB$ and $\triangle ADB \cong \triangle CBD$

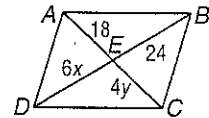
**Example**

Find  $x$  and  $y$  in parallelogram  $ABCD$ .

The diagonals bisect each other, so  $AE = CE$  and  $DE = BE$ .

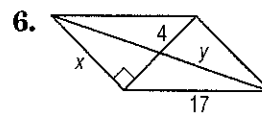
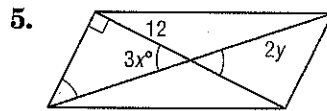
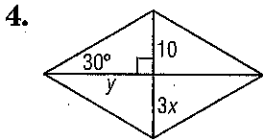
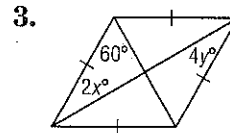
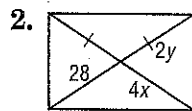
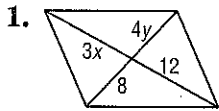
$$6x = 24 \quad 4y = 18$$

$$x = 4 \quad y = 4.5$$

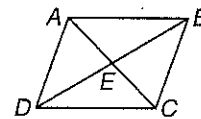


**Exercises**

Find  $x$  and  $y$  in each parallelogram.



Complete each statement about  $\square ABCD$ . Justify your answer.



7.  $\angle BAC \cong$

8.  $\overline{DE} \cong$

9.  $\triangle ADC \cong$

10.  $\overline{AD} \parallel$

NAME \_\_\_\_\_ DATE \_\_\_\_\_ PERIOD \_\_\_\_\_

## 8-2 Study Guide and Intervention

### Parallelograms

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NAME \_\_\_\_\_ DATE \_\_\_\_\_ PERIOD \_\_\_\_\_

## 8-2 Study Guide and Intervention

### Parallelograms

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 $x = 4$          $y = 4.5$

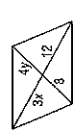


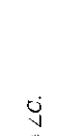
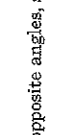
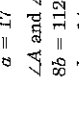
Lesson 8-2

NAME \_\_\_\_\_ DATE \_\_\_\_\_ PERIOD \_\_\_\_\_

## 8-2 Study Guide and Intervention

### Parallelograms

**Find  $x$  and  $y$  in each parallelogram.**

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NAME \_\_\_\_\_ DATE \_\_\_\_\_ PERIOD \_\_\_\_\_

## 8-2 Study Guide and Intervention

### Parallelograms

**Complete each statement about  $\square ABCD$ . Justify your answer.**

- $\angle BAC \cong \angle ACD$   
If lines are  $\parallel$ , then alt. int.  $\angle$ s are  $\cong$ .
- $\overline{DE} \cong \overline{BE}$   
The diags. of a parallelogram bisect each other.
- $\triangle ADC \cong \triangle CBA$   
The diagonal of a parallelogram divides the parallelogram into 2  $\cong$   $\triangle$ s.
- $\overline{AD} \parallel \overline{CB}$   
Opposite sides of a parallelogram are  $\parallel$ .

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423

NAME \_\_\_\_\_ DATE \_\_\_\_\_ PERIOD \_\_\_\_\_

## 8-2 Study Guide and Intervention

### Parallelograms

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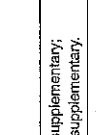
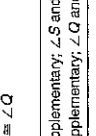
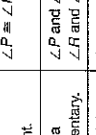
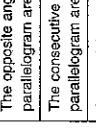


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NAME \_\_\_\_\_ DATE \_\_\_\_\_ PERIOD \_\_\_\_\_

## 8-2 Study Guide and Intervention

### Parallelograms

**Find  $x$  and  $y$  in each parallelogram.**

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Lesson 8-2

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424