

Bellwork
01/24/2012

Find the value of the variable.

- 1. Find the sum of the measures of the interior angles of a convex 24-gon.**

$$180(24-2)$$
$$180 \cdot 22 = 3960$$

- 2. The sum of the measures of the interior angles of a convex polygon is 5040° .
Classify the polygon by the number of sides.**

$$180(n-2) = 5040$$

$$n-2 = 28$$

$$n = 30$$

Geometry

8.2 Use Properties of Parallelograms

Standard(s): 6, 9

Vocabulary:

Parallelogram: A quadrilateral with both pairs of opposite sides parallel.

THEOREMS

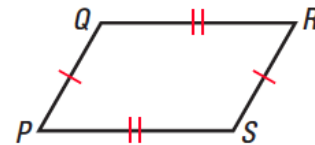
For Your Notebook

THEOREM 8.3

If a quadrilateral is a parallelogram, then its opposite sides are congruent.

If $PQRS$ is a parallelogram, then $\overline{PQ} \cong \overline{RS}$ and $\overline{QR} \cong \overline{PS}$.

Proof: p. 516

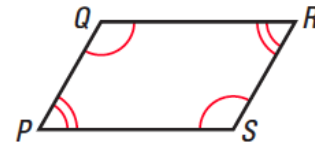


THEOREM 8.4

If a quadrilateral is a parallelogram, then its opposite angles are congruent.

If $PQRS$ is a parallelogram, then $\angle P \cong \angle R$ and $\angle Q \cong \angle S$.

Proof: Ex. 42, p. 520



THEOREM

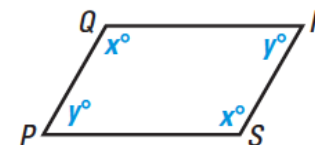
For Your Notebook

THEOREM 8.5

If a quadrilateral is a parallelogram, then its consecutive angles are supplementary.

If $PQRS$ is a parallelogram, then $x^\circ + y^\circ = 180^\circ$.

Proof: Ex. 43, p. 520



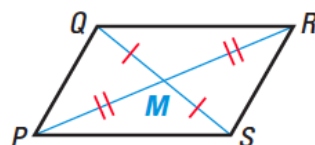
THEOREM

For Your Notebook

THEOREM 8.6

If a quadrilateral is a parallelogram, then its diagonals bisect each other.

Proof: Ex. 44, p. 521



$$\overline{QM} \cong \overline{SM} \text{ and } \overline{PM} \cong \overline{RM}$$

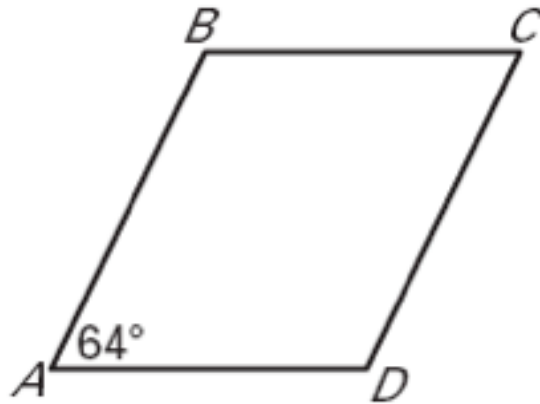
Find Angle Measures

Find the measure of the indicated angle in the parallelogram.

$m\angle B$

$$m\angle B + 64 = 180$$

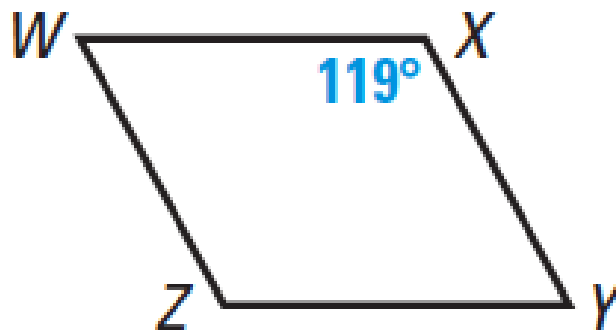
$$m\angle B = 116^\circ$$



$m\angle Y$

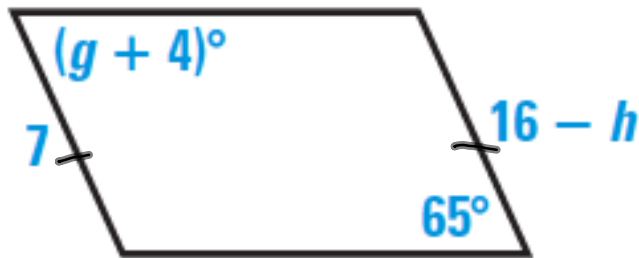
$$\begin{array}{r} 180 \\ - 119 \\ \hline 061 \end{array}$$

$m\angle Y = 61^\circ$



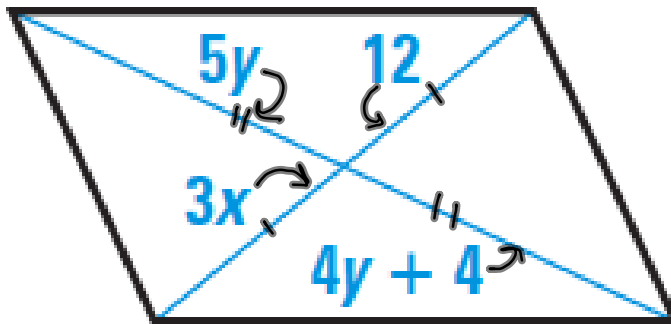
Using Algebra and Properties of Parallelograms

Find the value of each variable in the parallelogram.



$$\begin{aligned} 16 - h &= 7 \\ -h &= -9 \\ h &= 9 \end{aligned}$$

$$\begin{aligned} g + 4 &= 65 \\ g &= 61 \end{aligned}$$

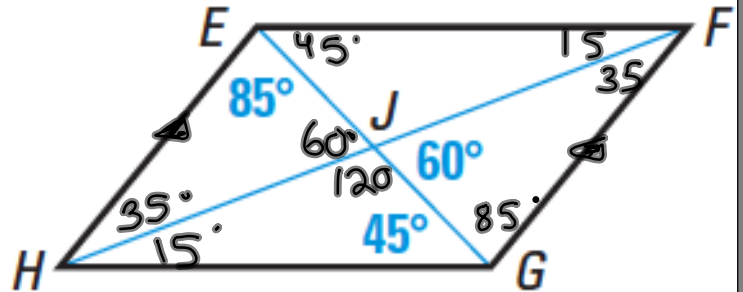


$$\begin{aligned} 3x &= 12 \\ x &= 4 \end{aligned}$$

$$\begin{aligned} 5y &= 4y + 4 \\ y &= 4 \end{aligned}$$

Use a Diagram to Find Angle Measures

Find the indicated measure in parallelogram EFGH. *Explain.*



$$m\angle EJF$$

$$120^\circ$$

$$m\angle HFG$$

$$35^\circ$$

$$m\angle HGF$$

$$130^\circ$$

$$m\angle EGF$$

$$85^\circ$$

$$m\angle GEF$$

$$45^\circ$$

$$m\angle EHG$$

$$50^\circ$$

Apply Algebra to Find Angle Measures

The measure of one interior angle of a parallelogram is 0.25 times the measure of another angle. Find the measure of each angle.

$$m\angle 1 = x = 144^\circ$$

$$m\angle 2 = 0.25x = 36^\circ$$

$$x + 0.25x = 180$$

$$1.25x = 180$$

$$x = 144$$

The measure of one interior angle of a parallelogram is 50° more than 4 times the measure of another angle. Find the measure of each angle.

$$m\angle 1 = x = 26^\circ$$

$$m\angle 2 = 4x + 50 = 154^\circ$$

$$x + (4x + 50) = 180$$

$$5x + 50 = 180$$

$$5x = 130$$

$$x = 26$$

Homework Assignment

Worksheet 8.2B

