

## Lesson 6.2 Properties of Parallelograms

A parallelogram is a quadrilateral with both pairs of opposite sides parallel. There are special properties for parallelograms.

Theorem 6.3: If a quadrilateral is a parallelogram, then its opposite sides are congruent.

Theorem 6.4: If a quadrilateral is a parallelogram, then its consecutive angles are supplementary.

Theorem 6.5: If a quadrilateral is a parallelogram, then its opposite angles are equal.

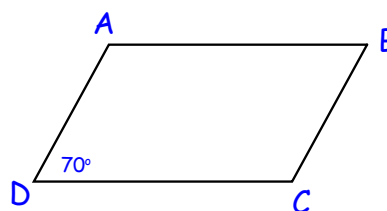
Theorem 6.6: If a quadrilateral is a parallelogram, then its diagonals bisect each other.

Multiple Choice What is  $m\angle P$  in  $\square PQRS$ ?

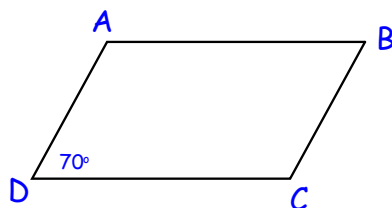
- ☐ A 26      ☐ C 116  
☐ B 64      ☐ D 126



1 Given the parallelogram below, what is the measure of  $\angle A$ ?



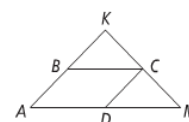
2 Given the parallelogram below, what is the measure of  $\angle B$ ?



Use the diagram at the right.

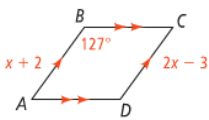
**Given:**  $\square ABCD$ ,  $\overline{AK} \cong \overline{MK}$

**Prove:**  $\angle BCD \cong \angle CMD$



Use the diagram of  $\square ABCD$  to find each value.

1.  $m\angle A$
2.  $m\angle D$
3.  $x$
4.  $AB$

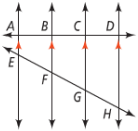


**Take Note**  
**Theorem 6-7**  
**Theorem**  
If three (or more) parallel lines cut off congruent segments on one transversal, then they cut off congruent segments on every transversal.

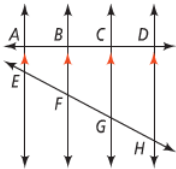
**If . . .**  
 $\overleftrightarrow{AB} \parallel \overleftrightarrow{CD} \parallel \overleftrightarrow{EF}$  and  $\overline{AC} \cong \overline{CE}$

**Then . . .**  
 $\overline{BD} \cong \overline{DF}$

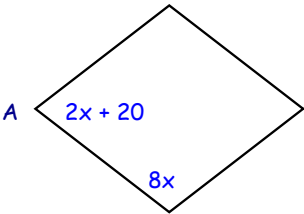
In the figure,  $\overleftrightarrow{AE} \parallel \overleftrightarrow{BF} \parallel \overleftrightarrow{CG} \parallel \overleftrightarrow{DH}$ ,  $AB = BC = CD = 2$ , and  $EF = 2.25$ . What is  $EH$ ?



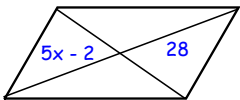
3 Use the figure below. If  $EF = FG = GH = 6$  and  $AD = 15$ , what is  $CD$ ?



4 From the parallelogram below, find  $m\angle A$ .



5 Find the value of  $x$  in the parallelogram below.



CHALLENGE: Given the parallelogram below, find the values of  $x$  and  $y$ . What are  $KM$  and  $LN$ ?

