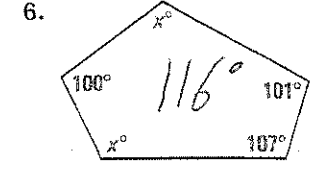
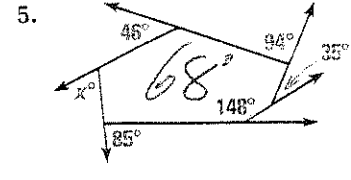
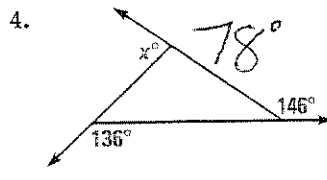
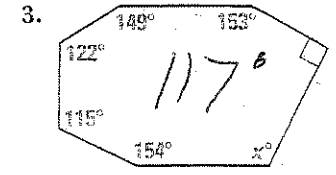
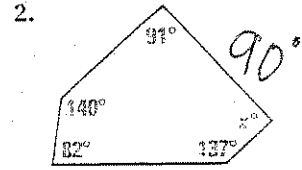
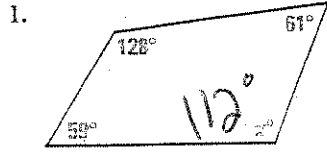
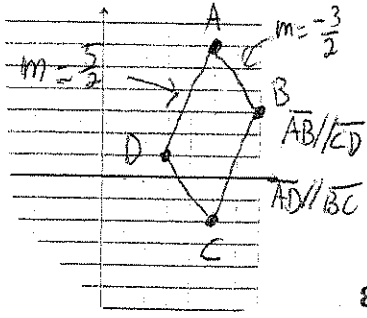


# Chapter 8

key

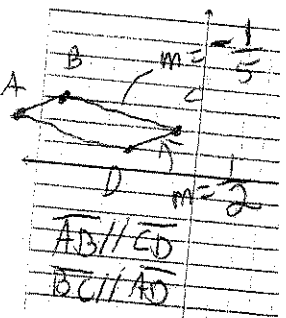
## 8.1 Find the value of x.

22



## 8.1 Find the measure of an interior angle and an exterior angle of the indicated regular polygon.

23

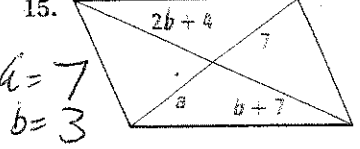
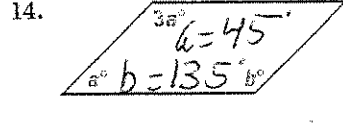
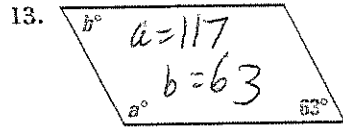
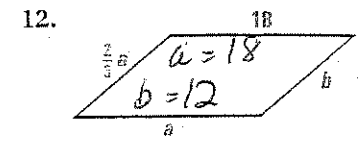
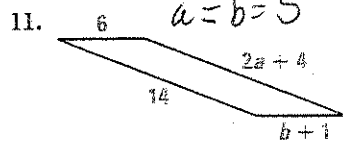
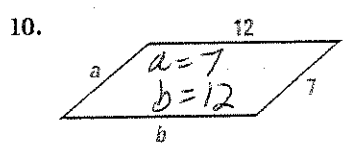


7. Regular hexagon  
Int.  $120^\circ$  Ext.  $60^\circ$

8. Regular 9-gon  
Int.  $140^\circ$  Ext.  $40^\circ$

9. Regular 17-gon  
Int.  $158.8^\circ$  Ext.  $21.2^\circ$

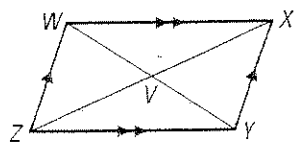
## 8.2 Find the value of each variable in the parallelogram.



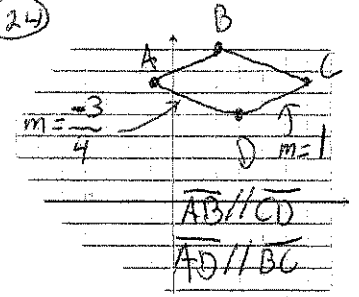
## 8.2 Use the diagram to copy and complete the statement.

16.  $\angle WXV \cong ? \angle YZV$   
18.  $\angle WVX \cong ? \angle YVZ$   
20.  $WZ = ? YX$

17.  $\angle ZWV \cong ? \angle XYV$   
19.  $WV = ? YV$   
21.  $2 \cdot ZV = ? ZX$



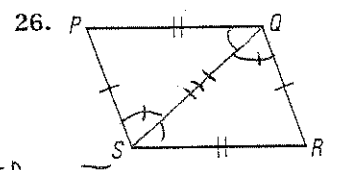
24



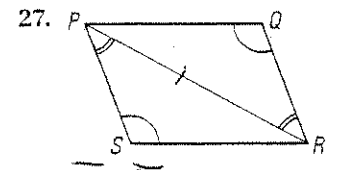
## 8.3 The vertices of quadrilateral ABCD are given. Draw ABCD in a coordinate plane and show that it is a parallelogram.

22.  $A(5, 6), B(7, 3), C(5, -2), D(3, 1)$   
23.  $A(-8, 2), B(-6, 3), C(-1, 2), D(-3, 1)$   
24.  $A(-1, 11), B(2, 14), C(6, 11), D(3, 8)$   
25.  $A(-1, -5), B(4, -4), C(6, -9), D(1, -10)$

## 8.3 Describe how to prove that quadrilateral PQRS is a parallelogram.

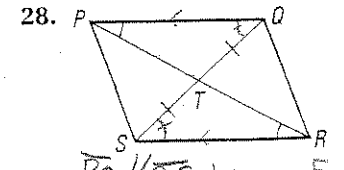


Draw  $\overline{QS}$ ,  $\triangle PQS \cong \triangle RSQ$   
&  $\triangle PQT \cong \triangle RSQ \rightarrow \overline{PQ} \parallel \overline{RS}$   
&  $\triangle RST \cong \triangle PSQ \rightarrow \overline{PS} \parallel \overline{RQ}$



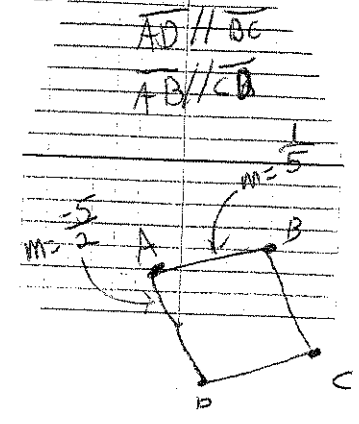
$\overline{PR} \cong \overline{PR}$ ,  $\triangle SPR \cong \triangle QRP$   
 $\overline{PS} \cong \overline{RQ}$  &  $\overline{PQ} \cong \overline{RS}$   
 $\therefore PQRS$  is  $\square$

(Many other ways to do this problem)



$\overline{PQ} \parallel \overline{RS}$  because of  $\triangle SRT \cong \triangle TPQ$ ,  $\triangle PQT \cong \triangle RST$  because of Alternate Interior Angles  
 $\triangle PQT \cong \triangle RST$  by AAS  
 $\overline{PT} \cong \overline{RT}$  by CPCTC  
 $\therefore PQRS$  is  $\square$  because diagonals bisect each other.

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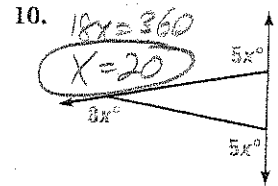
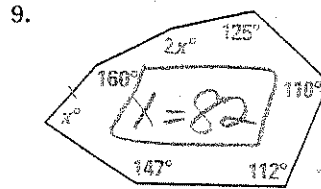
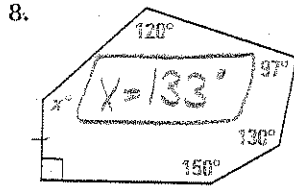


$$\begin{aligned} (7) (n-2)180 &= 3960 \\ 180n - 360 &= 3960 \\ 180n &= 4320 \\ n &= 24 \end{aligned}$$

7. The sum of the measures of the interior angles of a convex regular polygon is 3960°. Classify the polygon by the number of sides. What is the measure of each interior angle?

$$\frac{3960}{24} = 165^\circ$$

In Exercises 8–10, find the value of  $x$ .

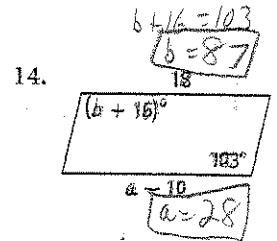
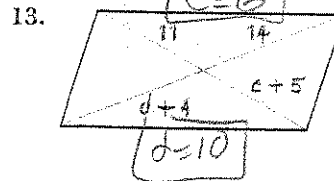
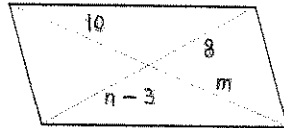


11. In a regular <sup>9 sides</sup> nonagon, the exterior angles are all congruent. What is the measure of one of the exterior angles? Explain.

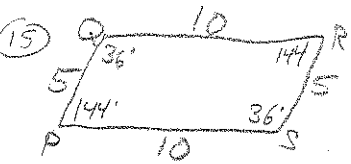
$$\frac{360}{9} = 40^\circ$$

Find the value of each variable in the parallelogram.

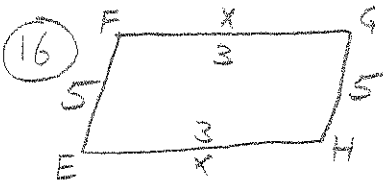
12.  $m = 10$   
 $n = 11$



15. In  $\square PQRS$ ,  $PQ = 5$  centimeters,  $QR = 10$  centimeters, and  $m\angle PQR = 36^\circ$ . Sketch  $PQRS$ . Find and label all of its side lengths and interior angle measures.

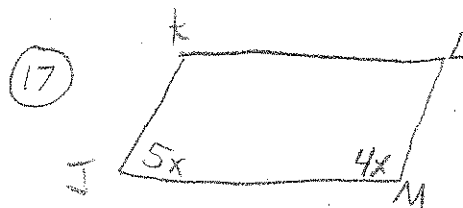


16. The perimeter of  $\square EFGH$  is 16 inches. If  $EF$  is 5 inches, find the lengths of all the other sides of  $EFGH$ . Explain your reasoning. *Opposite sides =*



$$\begin{aligned} 5+x+5+x &= 16 \\ 10+2x &= 16 \\ x &= 3 \end{aligned}$$

17. In  $\square JKLM$ , the ratio of the measure of  $\angle J$  to the measure of  $\angle M$  is 5 : 4. Find  $m\angle J$  and  $m\angle M$ . Explain your reasoning.



$$\begin{aligned} 5x + 4x &= 180 \\ 9x &= 180 \\ x &= 20 \end{aligned}$$

$$\begin{aligned} \angle J &= 100^\circ \\ \angle M &= 80^\circ \end{aligned}$$