

6-1 Skills Practice

Angles of Polygons

$$(n-2)180$$

Formulas

$$(n-2)180$$

Find the sum of the measures of the interior angles of each convex polygon.

1. nonagon
 $n=9$

$$(9-2)180 = 1260^\circ$$

2. heptagon
 $n=7$

$$(7-2)180 = 900^\circ$$

3. decagon
 $n=10$

$$(10-2)180 = 1440^\circ$$

The measure of an interior angle of a regular polygon is given. Find the number of sides in the polygon.

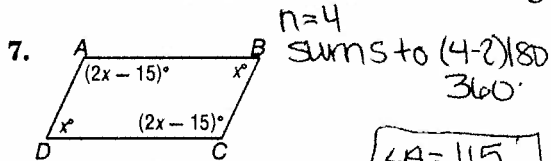
$$\frac{(n-2)180}{n}$$

4. $108 = \frac{(n-2)180}{n}$
 $108n = 180n - 360$
 $-72n = -360$
 $n = 5$

5. $120 = \frac{(n-2)180}{n}$
 $120n = 180n - 360$
 $-60n = -360$
 $n = 6$

6. $150 = \frac{(n-2)180}{n}$
 $150n = 180n - 360$
 $-30n = -360$
 $n = 12$

Find the measure of each interior angle.

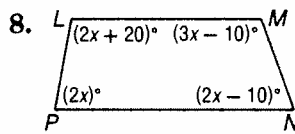


$$(2x-15) + x + x + (2x-15) = 360$$

$$6x - 30 = 360$$

$$x = 65$$

$$\begin{aligned} \angle A &= 115^\circ \\ \angle B &= 65^\circ \\ \angle C &= 115^\circ \\ \angle D &= 65^\circ \end{aligned}$$

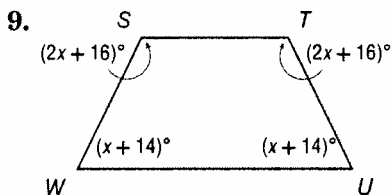


$$(2x+20) + (3x-10) + (2x) + (2x-10) = 360$$

$$9x = 360$$

$$x = 40$$

$$\begin{aligned} \angle L &= 100^\circ & \angle N &= 70^\circ \\ \angle M &= 110^\circ & \angle P &= 80^\circ \end{aligned}$$

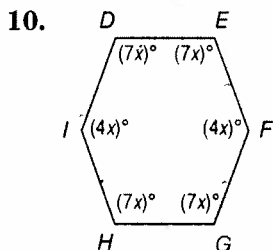


$$(2x+16) + (x+14) + (x+14) + (2x+16) = 360$$

$$6x + 60 = 360$$

$$x = 50$$

$$\begin{aligned} \angle S &= 116^\circ & \angle U &= 64^\circ \\ \angle T &= 116^\circ & \angle W &= 64^\circ \end{aligned}$$



$$(7x) + (7x) + (4x) + (7x) + (7x) + (4x) = 720$$

$$36x = 720$$

$$x = 20$$

$$\begin{aligned} \angle D &= \angle E = \angle G = \angle H = 140^\circ \\ \angle I &= \angle F = 80^\circ \end{aligned}$$

Find the measures of each interior angle of each regular polygon.

11. quadrilateral $n=4$

$$\frac{(4-2)180}{4} = 90^\circ$$

12. pentagon $n=5$

$$\frac{(5-2)180}{5} = 108^\circ$$

13. dodecagon $n=12$

$$\frac{(12-2)180}{12} = 150^\circ$$

Find the measures of each exterior angle of each regular polygon.

14. octagon $n=8$

$$\frac{360}{8} = 45^\circ$$

15. nonagon $n=9$

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

16. 12-gon $n=12$

$$\frac{360}{12} = 30^\circ$$

Lesson 6-1