

Geometry CC - Unit 9
Lesson 2: Angles of Polygons (Day 2)
M1 L8

HW Answers 9.1

- 1) 1080°
- 2) 4140°
- 3) 120°
- 4) 157.5°
- 5) 360°
- 6) 12°
- 7) 16 sides
- 8) 36 sides
- 9) 13 sides
- 10) 32 sides

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PRACTICE: Interior & Exterior Angles of Polygons

Formulas Review

Sum of Interior Angles of a Polygon: $S = \frac{180(n-2)}{1}$

Interior Angle of a Regular Polygon: $= \frac{180(n-2)}{n}$

Sum of Exterior Angles of a Polygon: 360°

Exterior Angle of a Regular Polygon: $= \frac{360}{n}$

Number of Sides of a Regular Polygon: n

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Practice Questions

1) What is the sum of the measures of the interior angles of a pentagon?
 $S = 180(n-2)$
 $= 180(5-2)$
 $= 540^\circ$

2) What is the sum of the measures of the interior angles of a 27-gon?
 $S = 180(27-2)$
 $= 4,500^\circ$

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3) What is the measure of each interior angle of a regular octagon?
 $= \frac{180(n-2)}{n}$
 $= \frac{180(8-2)}{8}$
 $= 135^\circ$

4) What is the measure of each interior angle of a regular 20-gon?
 $\frac{180(20-2)}{20}$
 162°

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5) Five angles of a hexagon measure 119° , 129° , 104° , 139° , and 95° . What is the measure of the sixth angle?
 $n = 6$
 $S = 180(6-2)$
 $= 180(4)$
 $= 720^\circ$
 $119 + 129 + 104 + 139 + 95 + x = 720^\circ$
 $586 + x = 720^\circ$
 $x = 134^\circ$

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5) The sum of the interior angles of a polygon is 1620° . How many sides does the polygon have?
 $S = 180(n-2)$ \uparrow find n
 $\frac{1620}{180} = \frac{180(n-2)}{180}$
 $9 = n-2$
 $n = 11$

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7) The sum of the interior angles of a polygon is 3960° . How many sides does the polygon have?

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8) What is the sum of the measures of the exterior angles of a nonagon?

$$360^\circ$$

9) What is the measure of each exterior angle of a 20-gon?

$$\frac{360}{20} \rightarrow 18^\circ$$

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10) If the exterior angle of a regular polygon measures 9° , how many sides does the polygon have?

$$9 = \frac{360}{n}$$

$$9n = 360$$

$$n = 40$$

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11) If the interior angle of a regular polygon measures 108° , how many sides does the polygon have?

$$\text{Each int} = \frac{180(n-2)}{n}$$

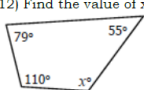
$$\frac{108}{1} = \frac{180(n-2)}{n}$$

$$108n = 180(n-2)$$

$$\begin{array}{r} 108n = 180n - 360 \\ -180n \quad -180n \\ \hline -72n = -360 \\ \frac{-72n}{-72} = \frac{-360}{-72} \\ n = 5 \end{array}$$

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12) Find the value of x.



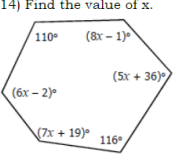
$$S = 180(4-2) = 360^\circ$$

$$79 + 110 + 55 + x = 360$$

$$x = 116$$

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14) Find the value of x.



$$n = 6$$

$$S = 180(6-2) = 720^\circ$$

$$110 + 8x - 1 + 5x + 36 + 116 + 7x + 19 + 6x - 2 = 720$$

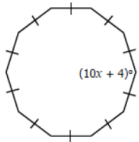
$$26x + 278 = 720$$

$$\frac{26x}{26} = \frac{442}{26}$$

$$x = 17$$

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16) Find the value of x.



regular decagon
 $n = 10$
 Each int \angle is $10x + 4$

$$\frac{10x + 4}{1} = \frac{180(8)}{10}$$
~~$$\frac{10(10x + 4)}{10} = \frac{180(8)}{10}$$~~

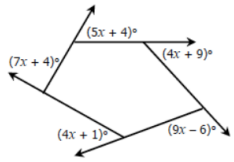
$$10x + 4 = 144$$

$$10x = 140$$

$$x = 14$$

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17) Find the value of x.



Sum of the ext. \angle 's = 360°

$$7x + 4 + 5x + 4 + 4x + 9 + 4x + 1 + 9x - 6 = 360$$

$$29x + 12 = 360$$

$$\frac{29x}{29} = \frac{348}{29}$$

$$x = 12$$

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