

PRACTICE: Interior & Exterior Angles of Polygons

| Formulas Review | |
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| Sum of Interior Angles of a Polygon: | $S = (n-2) \cdot 180$ |
| Interior Angle of a Regular Polygon: | $\frac{S}{n}$ |
| Sum of Exterior Angles of a Polygon: | 360° |
| Exterior Angle of a Regular Polygon: | $\frac{360}{n}$ |
| Number of Sides of a Regular Polygon: | $\frac{360}{\text{Ext } \angle}$ |

| Practice Questions | |
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| 1. What is the sum of the measures of the interior angles of a pentagon? $S = (5-2) \cdot 180 = \boxed{540^\circ}$ | 2. What is the sum of the measures of the interior angles of a 27-gon? $S = (27-2) \cdot 180 = \boxed{4500^\circ}$ |

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| 3. What is the measure of <u>each</u> interior angle of a regular octagon? $S = (8-2) \cdot 180 = 1080$ $1080/8 = \boxed{135^\circ}$ | 4. What is the measure of <u>each</u> interior angle of a regular 20-gon? $S = (20-2) \cdot 180 = 3240$ $3240/20 = \boxed{162^\circ}$ |
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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? $S = (6-2) \cdot 180 = 720^\circ$ $720 - 586 = \boxed{134^\circ}$ |
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| 6. The sum of the interior angles of a polygon is 1620° . How many sides does the polygon have? $1620 = (n-2) \cdot 180$ $9 = n-2$ $\boxed{11 = n}$ |
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| 7. The sum of the interior angles of a polygon is 3960° . How many sides does the polygon have? $3960 = (n-2) \cdot 180$ $22 = n-2$ $\boxed{24 = n}$ |
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| 8. What is the sum of the measures of the exterior angles of a nonagon? $\boxed{360^\circ}$ | 9. What is the measure of each exterior angle of a 20-gon? $\frac{360}{20} = \boxed{18^\circ}$ |
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10. If the exterior angle of a regular polygon measures 9° , how many sides does the polygon have?

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

$$9n = 360$$

$$n = 40$$

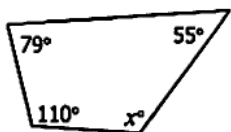
11. If the interior angle of a regular polygon measures 108° , how many sides does the polygon have? ext = 72°

$$\frac{360}{n} = 72$$

$$72n = 360$$

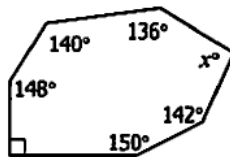
$$n = 5$$

12. Find the value of x .



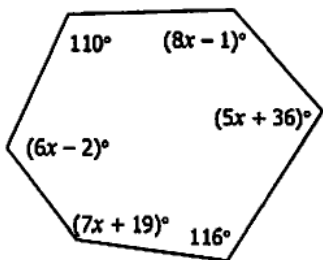
$$360 - 244 = 116^\circ$$

13. Find the value of x .



$$900 - 806 = 94^\circ$$

14. Solve for x .



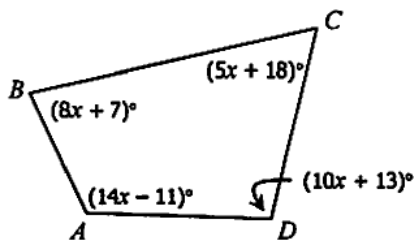
$$110 + 8x - 1 + 5x + 36 + 116 + 7x + 19 + 6x - 2 = 720$$

$$26x + 278 = 720$$

$$26x = 442$$

$$x = 17$$

15. Find $m\angle B$.



$$8x + 7 + 5x + 18 + 10x + 13 + 14x - 11 = 360$$

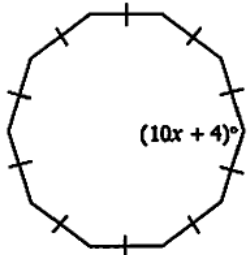
$$37x + 27 = 360$$

$$37x = 333$$

$$x = 9$$

$$m\angle B = 8(9) + 7 = 79^\circ$$

16. Solve for x .



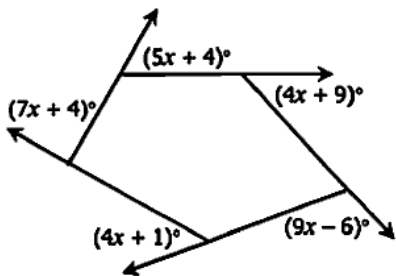
$$10(10x + 4) = 1440$$

$$100x + 40 = 1440$$

$$100x = 1400$$

$$x = 14$$

17. Solve for x .



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

$$29x + 12 = 360$$

$$29x = 348$$

$$x = 12$$