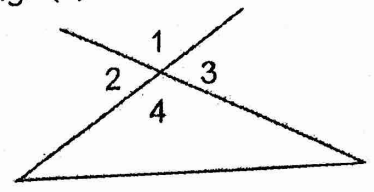


Master E

Day 01 - Interior and Exterior Angles

1. Which of the numbered angle(s) in the diagram are interior angle(s)?

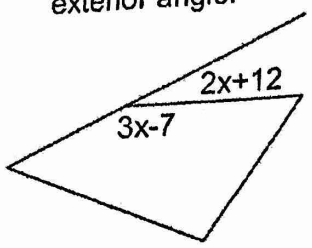


$\angle 4$

2. Which angle(s) are exterior angle(s)?

$\angle 2$ & $\angle 3$

3. Write & solve an equation to find the value of x, then find the exact degree measure of the exterior angle.



$$3x - 7 + 2x + 12 = 180$$

$$5x + 5 = 180$$

$$5x = 175$$

$$x = 35$$

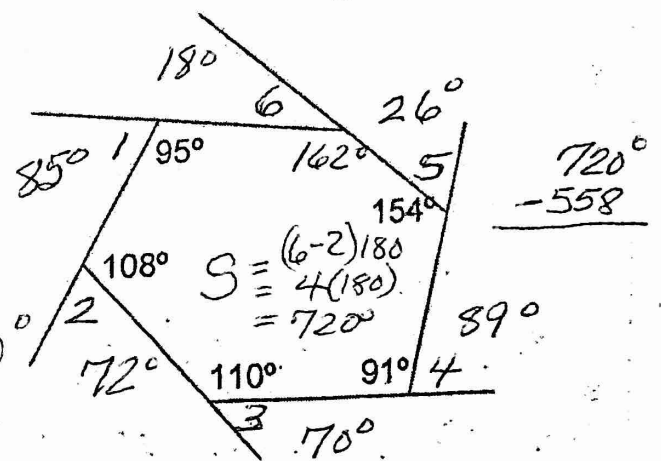
$$Ext \angle = 2x + 12$$

$$= 2(35) + 12$$

$$= 70 + 12$$

$$= 82$$

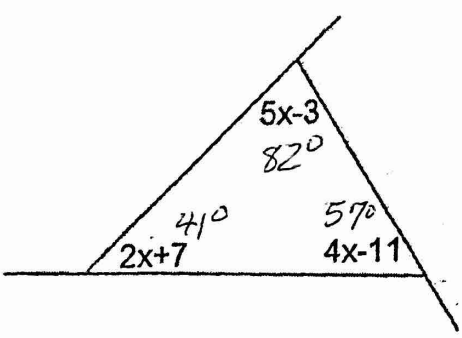
4. Label each exterior angle in the diagram, and find its degree measure.



5. What is the sum of the measures of the exterior angles?

$$85^\circ + 72^\circ + 70^\circ + 89^\circ + 26^\circ + 18^\circ = 360^\circ$$

6. Write & solve an equation to find the value of x, then find the measures of all interior AND exterior angles.



$$5x - 3 + 2x + 7 + 4x - 11 = 180$$

$$11x - 7 = 180$$

$$11x = 187$$

$$x = 17$$

$$5(17) - 3 = 82^\circ$$

$$85 - 3 = 82^\circ$$

$$2(17) + 7 = 41^\circ$$

$$34 + 7 = 41^\circ$$

$$4(17) - 11 = 57^\circ$$

$$68 - 11 = 57^\circ$$

ck 180°

7. What is the sum of the measures of the interior angles in a regular dodecagon?

$$(12 - 2)180^\circ = 1800^\circ$$

8. What is the measure of each interior angle?

$$1800 \div 12 = 150^\circ$$

9. What is the measure of each exterior angle?

$$180^\circ - 150^\circ = 30^\circ$$

10. What is the sum of the exterior angles?

$$360^\circ$$

In Exercises 1-3, find the indicated angle measures, x .

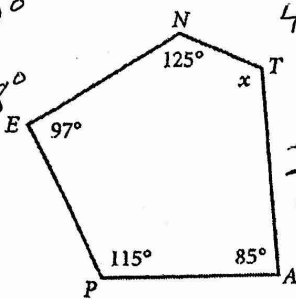
1. $x = 118^\circ$

2. $x = 125^\circ$

3. $x = 159^\circ$

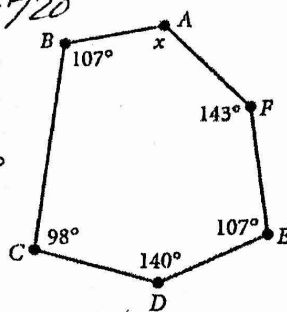
$3(180) = 540^\circ$

$46^\circ - 422^\circ = 118^\circ$



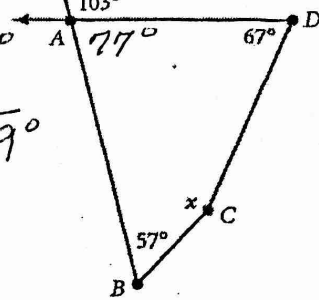
$4(180) = 720^\circ$

$$\begin{array}{r} 720 \\ -595 \\ \hline 125 \end{array}$$



$2(180) = 360^\circ$

$$\begin{array}{r} 360 \\ -201 \\ \hline 159 \end{array}$$



For each polygon, determine the measure of an interior angle and the measure of an exterior angle.

4. a regular octagon $E = 45^\circ$, $I = 135^\circ$

5. a regular decagon $E = 36^\circ$, $I = 144^\circ$

For Exercises 6-7, an interior angle measure of a regular polygon is given. Find n , the number of sides of the polygon.

6. 140° $E = 40^\circ$ $n = \frac{360}{40} = 9$

7. 156° $E = 24^\circ$ $n = \frac{360}{24} = 15$

For Exercises 8-9, an exterior angle measure of a regular polygon is given. Find n , the number of sides of the polygon.

8. 30° $n = \frac{360}{30} = 12$

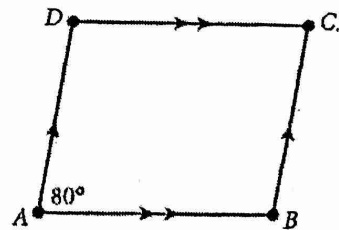
9. 20° $n = \frac{360}{20} = 18$

For Exercises 10-12, use the figure at the right to find the indicated measures.

10. $m\angle D$ $180^\circ - 88^\circ = 100^\circ$

11. $m\angle C$ 80°

12. $m\angle B$ 100°



A regular polygon has an exterior angle measure of $(x + 3)^\circ$ and an interior angle measure of $(13x - 33)^\circ$.

13. Find the measure of each angle. $E = 15 + 3 = 18^\circ$, $I = 13(15) - 33 = 162^\circ$

14. How many sides does this polygon have? $n = 20$ sides

13.
$$\begin{aligned} x + 3 + 13x - 33 &= 180^\circ \\ 14x - 30 &= 180 \\ 14x &= 210^\circ \\ x &= 15 \end{aligned}$$

14. $n = \frac{360^\circ}{18^\circ} = 20$