

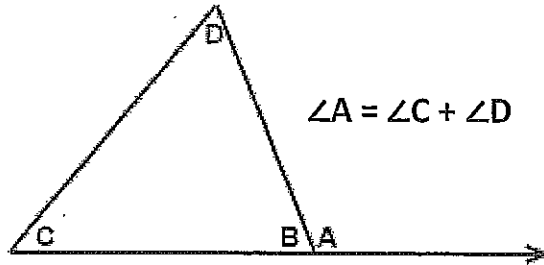
Name: Key

Date: _____

Period: _____

Exterior Angles Practice

Remember: The Exterior Angle Theorem says that the exterior angle of a triangle is equal to the sum of the two remote interior angles. See the picture below for an example.



Use the Exterior Angle Theorem to help you solve for missing angles and values below. Remember to try and set up an equation that represents the relationships you know about triangle angles and straight lines.

1.

$$\begin{array}{r} 147 = n + 111 \\ -111 \quad -111 \\ \hline 36 = n \end{array}$$

$n = \underline{36}$

2.

$$\begin{array}{r} d = 37 + 27 \\ \hline d = 62 \end{array}$$

$d = \underline{62}$

3.

$$\begin{array}{r} x + 54 = 180 \\ -54 \quad -54 \\ \hline x = 126 \end{array}$$

$$\begin{array}{r} 126 = s + 63 \\ -63 \quad -63 \\ \hline 63 = s \end{array}$$

$s = \underline{63}$

4.

$$\begin{array}{r} k = 36 + 108 \\ \hline k = 144 \end{array}$$

$k = \underline{144}$

5.

$$\begin{array}{r} z = 36 + 25 \\ \hline z = 61 \end{array}$$

$z = \underline{61}$

6.

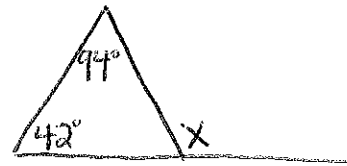
$$\begin{array}{r} x + 46 = 180 \\ -46 \quad -46 \\ \hline x = 134 \end{array}$$

$$\begin{array}{r} 134 = e + 67 \\ -67 \quad -67 \\ \hline 67 = e \end{array}$$

$e = \underline{67}$

7. The two remote interior angles of a triangle are 42° and 94° . What is the measure of the exterior angle?

Draw it:



$$X = 42 + 94$$

$$X = 136^\circ$$

Missing Angle Measure: 136

Use the drawing below for question 8.

8. Find $m\angle 3$ if $m\angle 5$ is 130° and $m\angle 4$ is 70° . $m\angle 3 = 60^\circ$

$$m\angle 3 + 70 = 130$$

$$m\angle 3 = 60$$

- Find $m\angle 1$ if $m\angle 5$ is 142° and $m\angle 4$ is 65° . $m\angle 1 = 103^\circ$

$$m\angle 3 + m\angle 4 = m\angle 5$$

$$m\angle 3 + 65 = 142$$

$$m\angle 3 = 77$$

$$m\angle 3 + m\angle 1 = 180$$

$$77 + m\angle 1 = 180$$

$$m\angle 1 = 103$$

- Find $m\angle 2$ if $m\angle 3$ is 135° and $m\angle 4$ is 23° . $m\angle 2 = 22^\circ$

$$m\angle 2 + m\angle 3 + m\angle 4 = 180$$

$$m\angle 2 + 135 + 23 = 180$$

$$m\angle 2 + 158 = 180$$

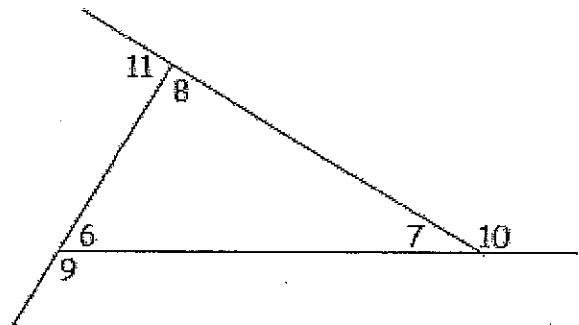
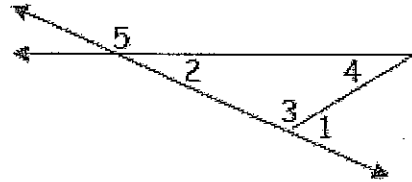
$$m\angle 2 = 22$$

Use the drawing below for questions 9 and 10.

9. $m\angle 6 + m\angle 7 + m\angle 8 = 180^\circ$

$$m\angle 11 = m\angle 6 + m\angle 7$$

$$m\angle 9 = m\angle 7 + m\angle 8$$



10. If the measure of angle 10 is equal to the sum of angles 6 and 8. The sum of angles 7 and 10 is 180° because they are supplementary. How can you use both of these facts to support the Interior Angle Theorem?

$$m\angle 10 = m\angle 6 + m\angle 8$$

$$m\angle 7 + m\angle 10 = 180$$

$$m\angle 7 + (m\angle 6 + m\angle 8) = 180 \text{ (interior angle theorem)}$$