

Digits Lesson 11-3/114

4/15/2019

Goal: I will be able to **determine the interior and exterior angles in triangles.**

Tool Bag
Formulas, equations,
Vocabulary, etc.

Here's How... Notes & Examples

Interior Angles of a Triangle

add up to 180°

Example 1

$$\begin{aligned} \angle 1 + 75 + 25 &= 180 \\ \angle 1 + 100 &= 180 \\ \angle 1 &= 80 \end{aligned}$$

Example 2

$$\begin{aligned} \angle 1 + 90 + 63 &= 180 \\ \angle 1 + 153 &= 180 \\ \angle 1 &= 27 \end{aligned}$$

Example 3

$$\begin{aligned} \angle 1 &= 2x - 14 = 2(31) - 14 = 62 - 14 = 48 \\ \angle 2 &= 3x + 10 = 3(31) + 10 = 93 + 10 = 103 \\ \angle 3 &= x - 2 = 31 - 2 = 29 \end{aligned}$$

$$\begin{aligned} \angle 1 + \angle 2 + \angle 3 &= 180 \\ (2x - 14) + (3x + 10) + (x - 2) &= 180 \\ 2x + 3x + x - 14 + 10 - 2 &= 180 \\ 6x - 6 + 6 &= 180 + 6 \\ 6x &= 186 \\ x &= 31 \end{aligned}$$

Exterior Angles of a Triangle

The outside angle on the other side of an interior angle

Interior \angle 's: 1, 2, 3
Exterior \angle 's: 4, 6, 7, 9, 10, 12
Congruent \angle 's: $\angle 1 = \angle 5$, $\angle 3 = \angle 8$, $\angle 2 = \angle 11$, $\angle 4 = \angle 6$, $\angle 7 = \angle 9$, $\angle 12 = \angle 10$

U try

a)

$$\begin{aligned} \angle 2 + 71 &= 180 \\ \angle 2 &= 109 \end{aligned}$$

$$\begin{aligned} \angle 1 + \angle 2 + \angle 3 &= 180 \\ \angle 1 + 109 + 43 &= 180 \\ \angle 1 + 152 &= 180 \\ \angle 1 &= 28 \end{aligned}$$

b)

$$\begin{aligned} \angle 1 &= 26 \\ \angle 2 &= 3x - 2 \\ \angle 3 &= 5x - 8 \end{aligned}$$

What is $\angle 2$?

$$\begin{aligned} \angle 4 &= 180 - \angle 3 \\ &= 180 - (5x - 8) \\ &= 180 - 5x + 8 \\ &= 188 - 5x \end{aligned}$$

$$\begin{aligned} \angle 1 + \angle 2 + \angle 4 &= 180 \\ 26 + (3x - 2) + (188 - 5x) &= 180 \\ 3x - 5x + 26 - 2 + 188 &= 180 \\ -2x + 212 &= 180 \\ -2x &= -32 \\ x &= 16 \end{aligned}$$