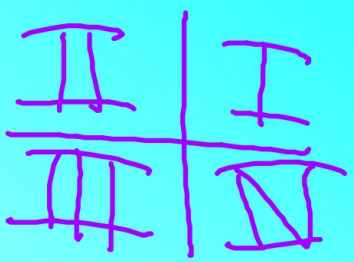
Warm-Up
Take out your homework

1. A system of equations is shown below.

$$y = x^2 + 2x + 8$$
$$y = -4x$$

What is the smallest value of y in the solution set of the system?

A. -4 B. -2 C. 8 D. 16



4. The point S(x,y) = (-y,x). What transformation is S?

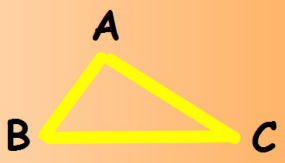
A. R_{270} B. R_{90} C. r_{x-axis} D. R_{180}

Triangles are the simplest polygons used in the design of furniture, buildings, and bridges.

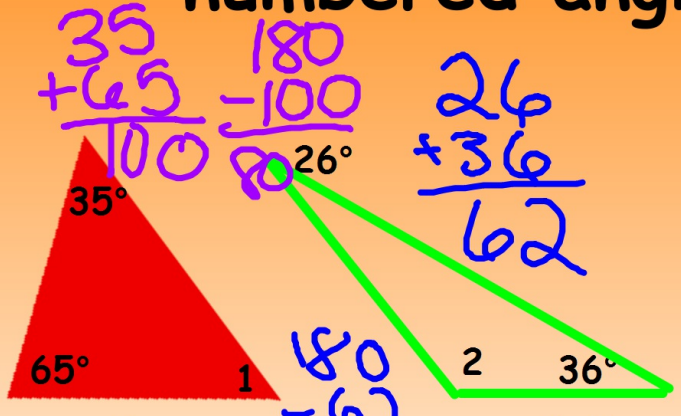
Theorem 2-1 Triangle Angle-Sum Theorem

The sum of the measures of the angles of a triangle is 180

$$m\angle A + m\angle B + m\angle C = 180$$



Find the measure of each numbered angle.



35 + 65 = 100

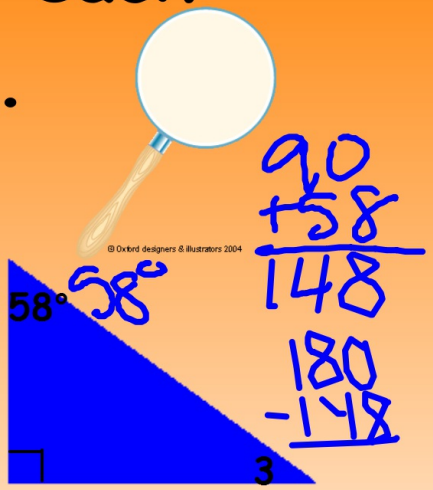
180 − 100 = 80

26 + 36 = 62

180 − 62 = 118°

80

118°



90 + 58 = 148

180 − 148 = 32°

32°

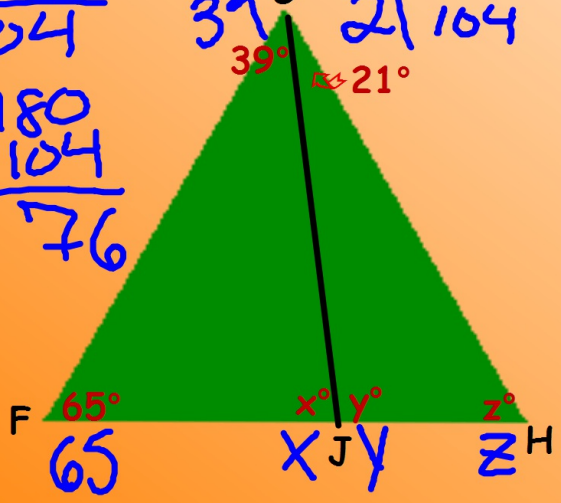
$104 + 21$ 125 $180 - 125$

Find the value of *x*, *y*, and *z*.

$39 + 65 = 104$

$180 - 104 = 76$

$180 - 76 = 2\overline{)104}$



$x = 76°$
$y = 104°$
$z = 55°$

Use the Triangle-Sum Theorem

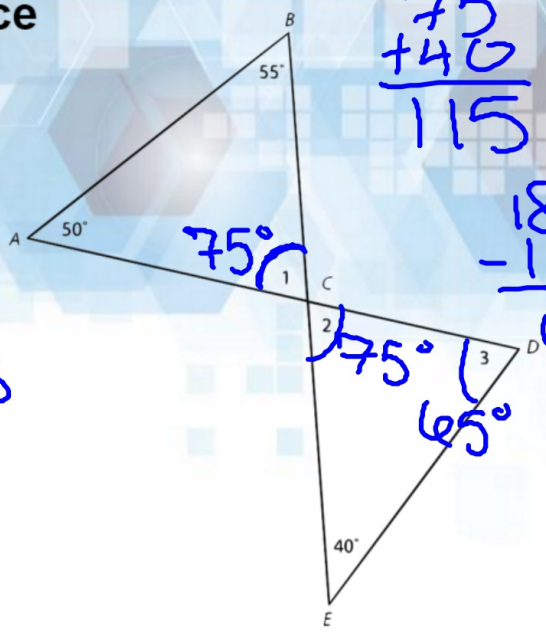
Guided Practice

Example 2

Find the missing angle measures.

$55 + 50 = 105$

$180 - 105 = 75$



$75 + 40 = 115$

$180 - 115 = 65$

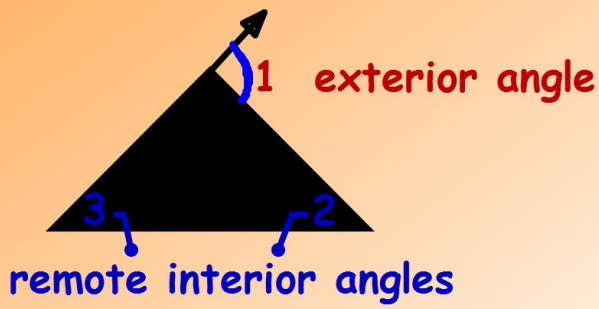
$75°$ $75°$ $65°$

Exterior Angles of a Triangle

an angle formed by a side and an extension of a side

Remote Interior Angles

the two non-adjacent interior angles for each exterior angle

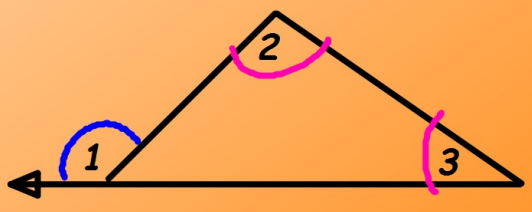


Theorem 2-2

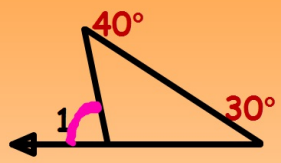
Exterior Angle Theorem

The measure of each angle exterior angle of a triangle equals the sum of the measures of its two remote interior angles.

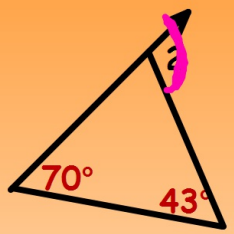
$$m\angle 1 = m\angle 2 + m\angle 3$$



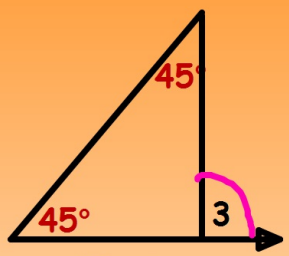
Find the measure of each numbered exterior angle.



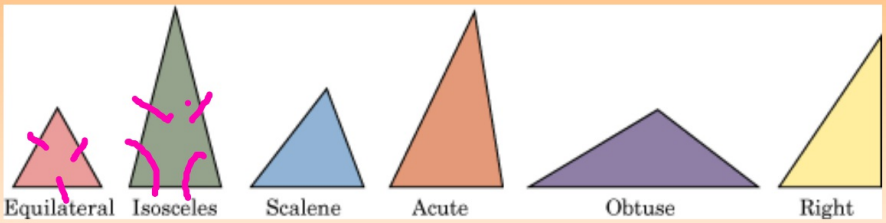
70°



113°



90°

Triangle Classification

Equilateral All sides have the same length.
Isosceles Two sides have the same length.
Scalene All sides have different lengths.
Acute All angles are less than 90 degrees.
Obtuse One angle is greater than 90 degrees.
Right One angle is 90 degrees.