Work with a partner...

Parallel lines cut by a transversal matching

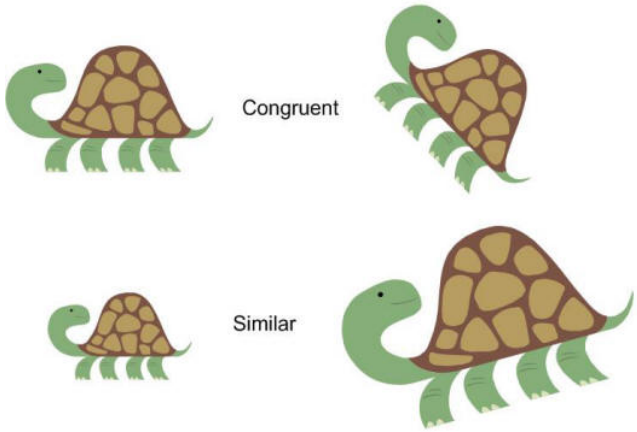
HW Questions???

Correct pg 123 #'s 4-24 evens /11pts

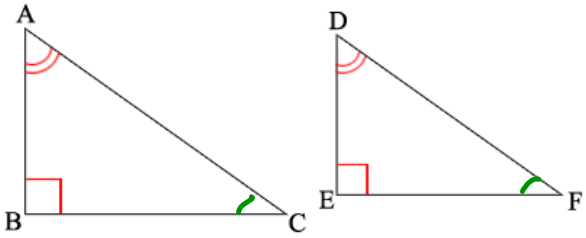
Essential Question

How can you use angles to tell whether triangles are similar?

What is the difference between congruent and similar?



Similar Triangles



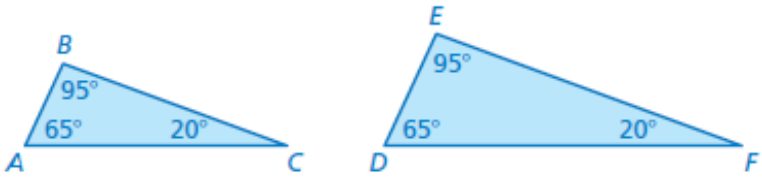
If two angles of one triangle are congruent to two angles of another triangle, then the triangles are Similar.

Key Idea

Angles of Similar Triangles

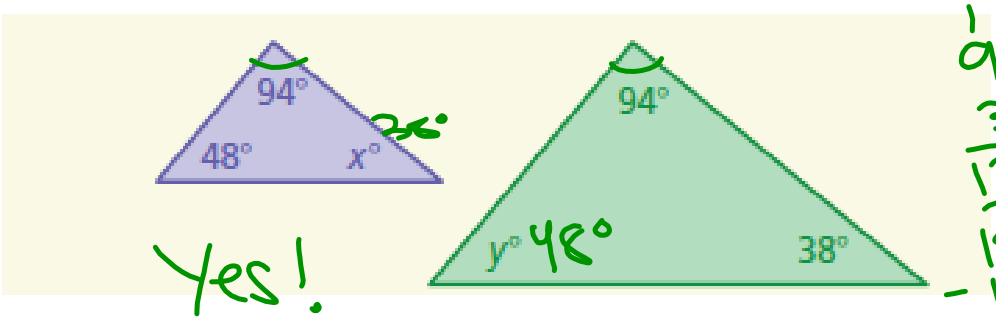
Words When two angles in one triangle are congruent to two angles in another triangle, the third angles are also congruent and the triangles are similar.

Example



Triangle ABC is similar to Triangle DEF: $\triangle ABC \sim \triangle DEF$.

Are the two triangles similar? Explain.

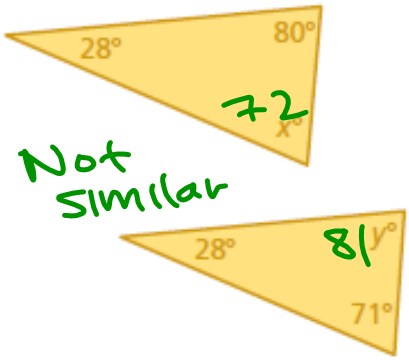


Yes!

94
34
132
180
- 132
48

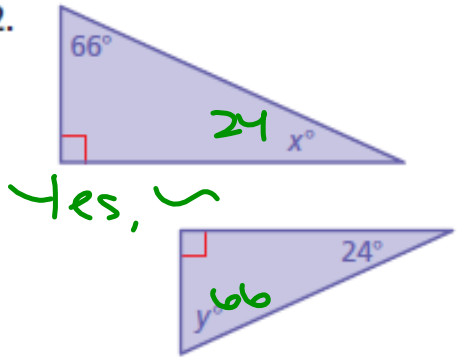
Tell whether the triangles are similar. Explain.

1.



Not similar

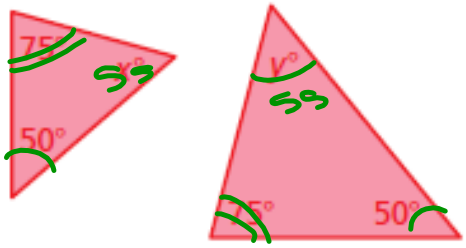
2.



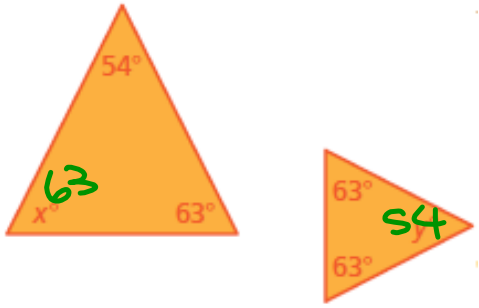
Yes, ~

Tell whether the triangles are similar. Explain.

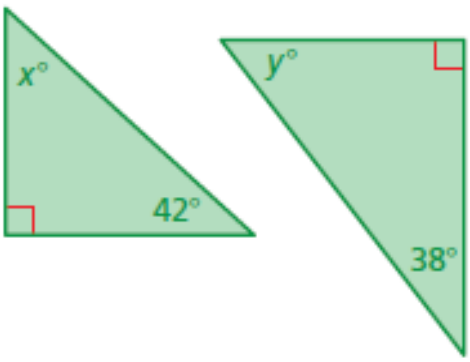
a.



b.

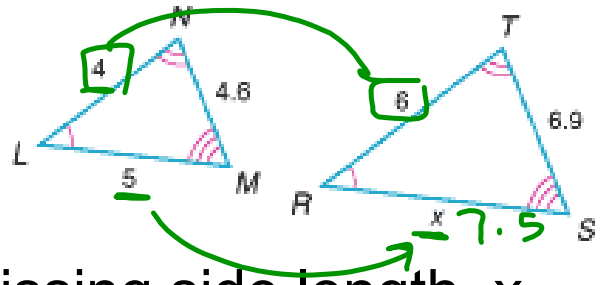


c.



Are the triangles similar?

Yes!



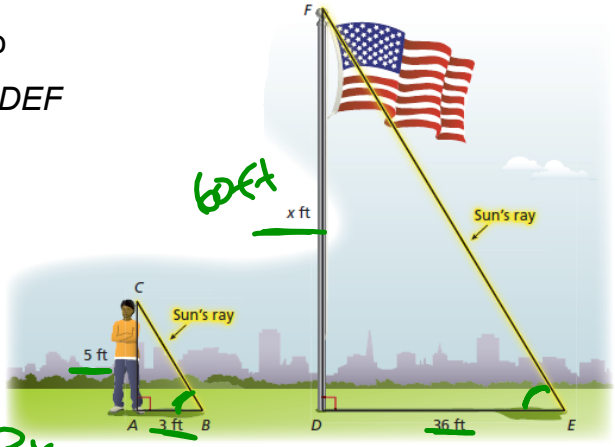
$\frac{5}{x} = \frac{4}{6}$

$\frac{4x}{4} = \frac{30}{4}$

Find the missing side length, x

a. Use the fact that two rays from the Sun are parallel to explain why $\triangle ABC$ and $\triangle DEF$ are similar.

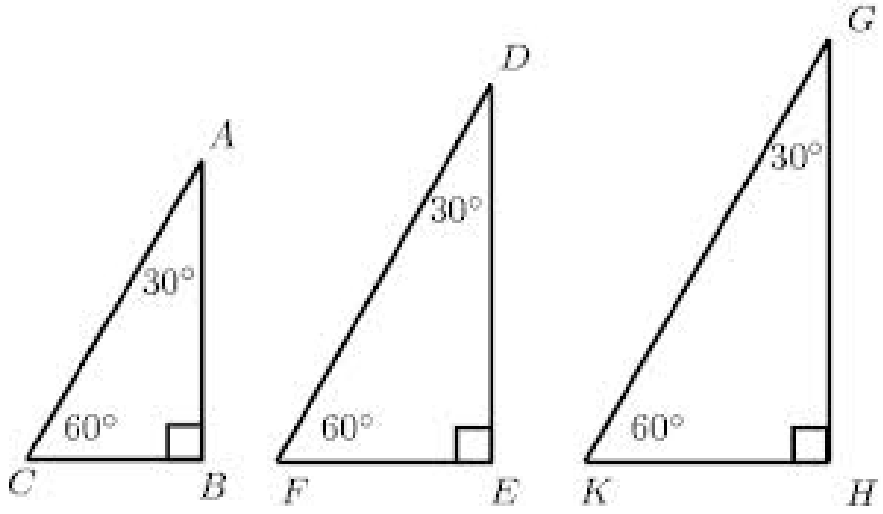
They have 2 ≅ ∠s



$\frac{5}{x} = \frac{3}{36}$ $180 = 3x$

b. Explain how to use similar triangles to find the height of the flagpole.

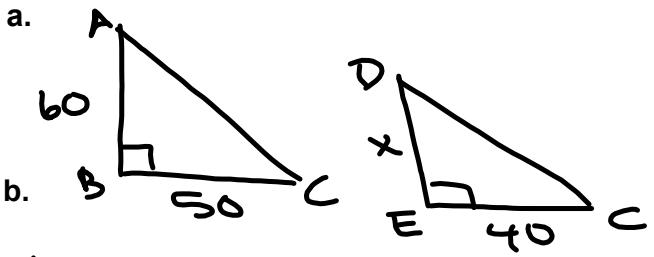
Are all 30°- 60°- 90° triangles congruent? Similar? Explain.


A
30°
60°
C
B
D
30°
60°
F
E
G
30°
60°
K
H

You plan to cross a river and want to know how far it is to the other side. You take measurements on your side of the river and make the drawing shown. (a) Explain why $\triangle ABC$ and $\triangle DEC$ are similar. (b) What is the distance x across the river?

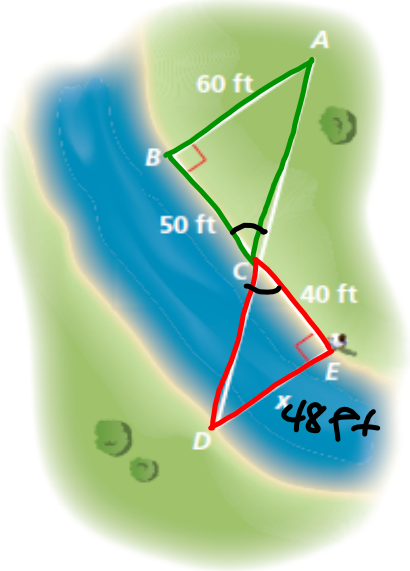
a.

b.



$\frac{60}{x} = \frac{50}{40}$

$\frac{2400}{50} = \frac{50x}{50} = 48 \text{ ft}$



Review...

3. Use the figure to find the measures of the numbered angles.

How do the angles relate?

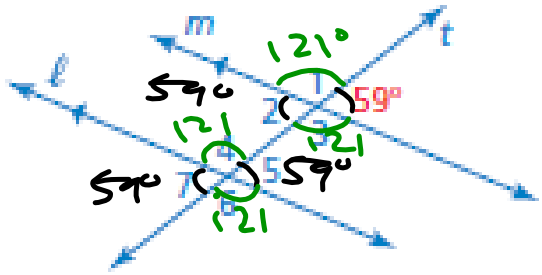
1 and 3 Vert.

2 and 7 Corresp.

6 and 1 alt. ext.

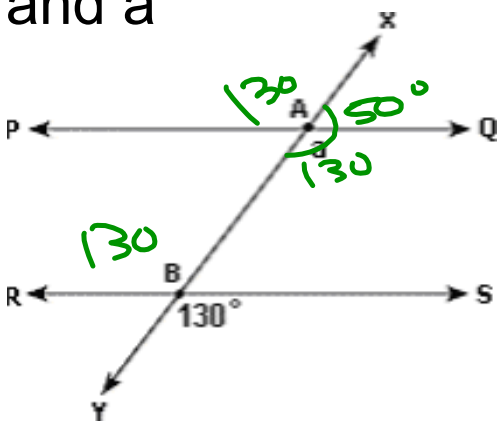
4 and 3 alt. int.

1 and 2 linear pair



Review...

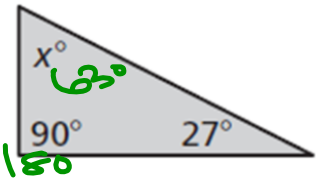
Find A, B, and a



Review...

Find the measures of the interior angles.

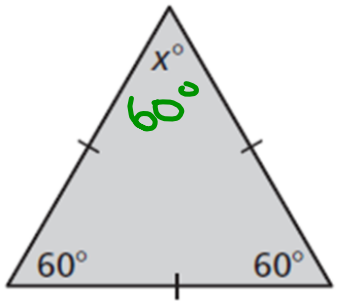
5.



63°

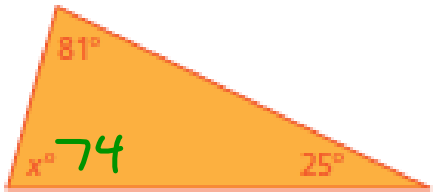
180
- 117
63°

6.



Review...

Find the value of *x*.



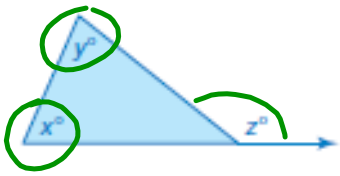
Review...

Key Idea

Exterior Angle Measures of a Triangle

Words The measure of an exterior angle of a triangle is equal to the sum of the measures of the two nonadjacent interior angles.

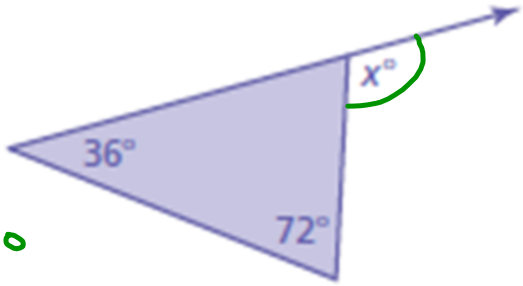
Algebra $z = x + y$



Review...

Find the measure of the exterior angle.

a.



$X = 108°$

Review...

Find the measure of the exterior angle.

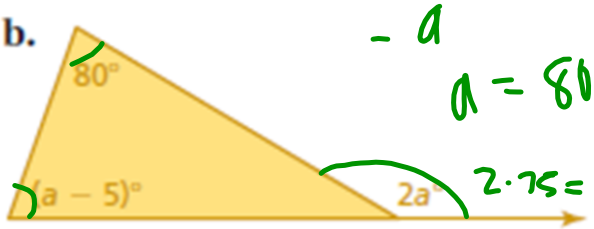
3.

$y = 70°$

Review...

Find the measure of the exterior angle.

b.



$2a = 80 + a - 5$

$-a \quad -a$

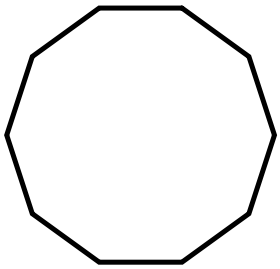
$a = 80 - 5$

$a = 75$

$2 \cdot 75 = 150°$

Review...

What is the sum of the interior angles of a decagon?

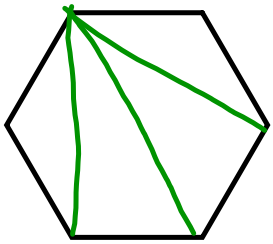


$10-2 = 8(180) = 1440$

$S = (n-2) \cdot 180$

What is the sum of the interior angles of a hexagon?

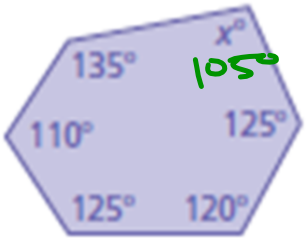
$6-2 = 4(180) = 720°$



Review...

Find the value of *x*.

3.



$615 + x = 720$

$-615 \quad -615$

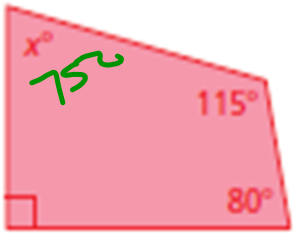
105

Review...

Find the value of *x*.

$2(180) = 360°$

4.



$285 + x = 360$
$-285 \quad -285$
$75°$

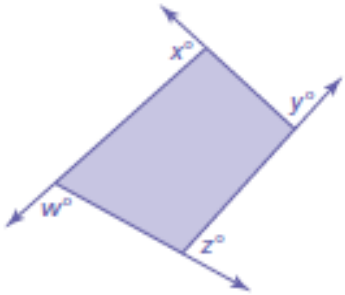
Review...

Key Idea

Exterior Angle Measures of a Polygon

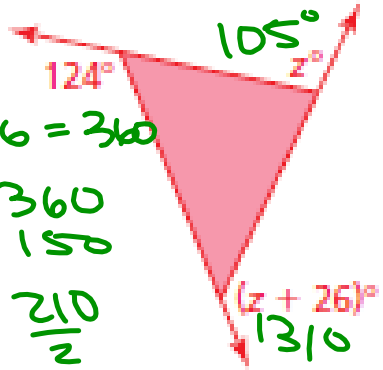
Words The sum of the measures of the exterior angles of a convex polygon is 360°.

Algebra $w + x + y + z = 360$



Find the measures of the exterior angles of each polygon.

b.



$124 + z + z + 26 = 360$

$150 + 2z = 360$

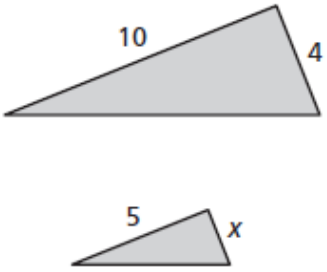
$-150 \quad -150$

$\frac{2z}{2} = \frac{210}{2}$

$z = 105$

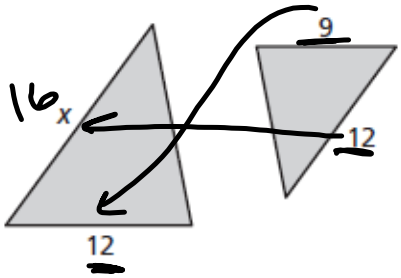
The triangles are similar. Find the value of *x*.

1.



$\frac{5}{x} = \frac{10}{4}$ $x = 2$

2.



$\frac{9}{12} = \frac{12}{x}$ $\frac{144}{9} = \frac{9x}{9}$

HW 3.4

pg 130 #'s 6-15 all

Extra Credit Ch 3 Review (5 pts)

Pg 136 #'s 1-15