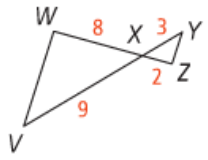
Warm Up:

1. A postcard is 6 in. by 4 in. A printing shop will enlarge it so that the longer side is any length up to 3 ft. Find the dimensions of the biggest enlargement.

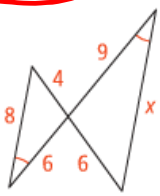
$\frac{6}{4} = \frac{3}{x}$ $6x = 12$ $x = 2$ ft

2. **Are the triangles similar? If so, write a similarity statement and name the postulate or theorem you used. If not, explain.**



$\frac{8}{2} = 4$ $\frac{9}{3} = 3$ not similar

3. **Error Analysis** Which solution for the value of x in the figure at the right is *not* correct? Explain.



A.

$\frac{4}{8} = \frac{8}{x}$
$4x = 72$
$x = 18$

B.

$\frac{8}{x} = \frac{4}{6}$
$48 = 4x$
$12 = x$

Learning Goal: Today I will learn about proportions in triangles.

Success Criteria: I am able to apply the side splitter and triangle angle bisector theorems to create proportions and solve.

7.5 Proportions in Triangles

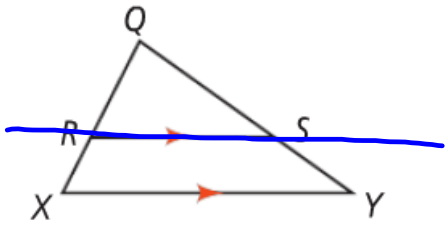
*Theorem 7-4 Side-Splitter Theorem

Theorem

If a line is parallel to one side of a triangle and intersects the other two sides, then it divides those sides proportionally.

If . . .

$\overleftrightarrow{RS} \parallel \overleftrightarrow{XY}$

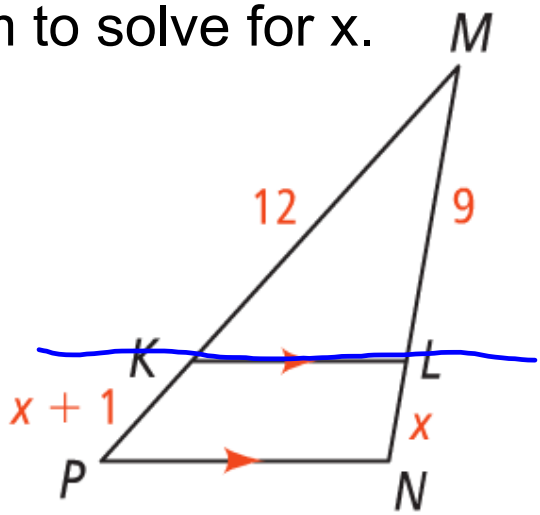


Then . . .

$\frac{XR}{RQ} = \frac{YS}{SQ}$

$\frac{QR}{Rx} = \frac{6s}{5-1}$

Use the side splitter theorem to solve for x.



$\frac{12}{(x+1)} = \frac{9}{x}$

$12x = 9(x+1)$

$12x = 9x + 9$

$-9x \quad -9x$

$\frac{3x}{3} = \frac{9}{3}$

$x = 3$

Use the side splitter theorem to solve for x.

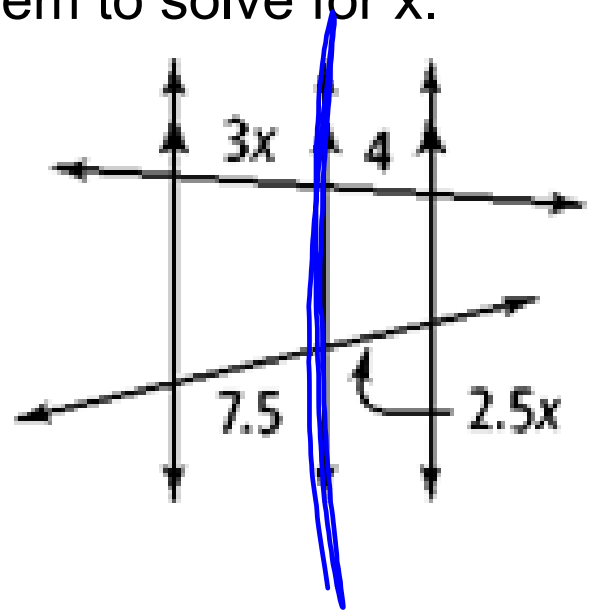
$\frac{4}{3x} = \frac{2.5x}{7.5}$

$4(7.5) = 2.5x(3x)$

$\frac{30}{7.5} = \frac{7.5x^2}{7.5}$

$\sqrt{4} = \sqrt{x^2}$

$x = 2$



Use the side splitter theorem to solve for x.

$\frac{12}{20} = \frac{x}{(40-x)}$

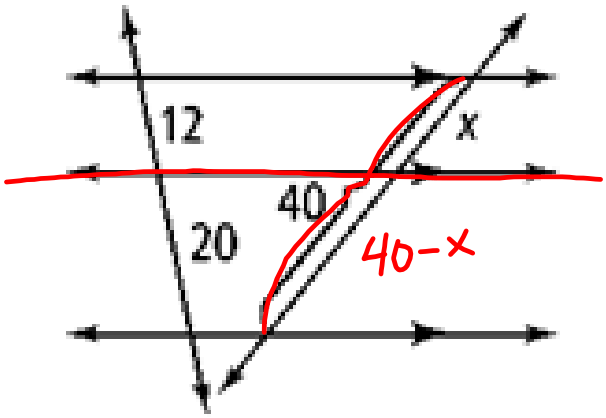
$12(40-x) = 20x$

$480 - 12x = 20x$

$+12x \quad +12x$

$\frac{480}{32} = \frac{32x}{32}$

$x = 15$



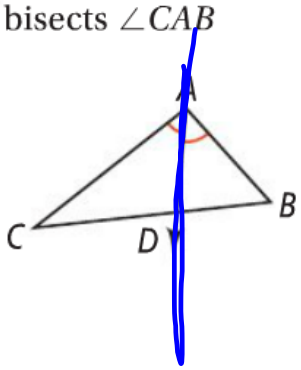
*Theorem 7-5 Triangle-Angle-Bisector Theorem

Theorem

If a ray bisects an angle of a triangle, then it divides the opposite side into two segments that are proportional to the other two sides of the triangle.

If . . .

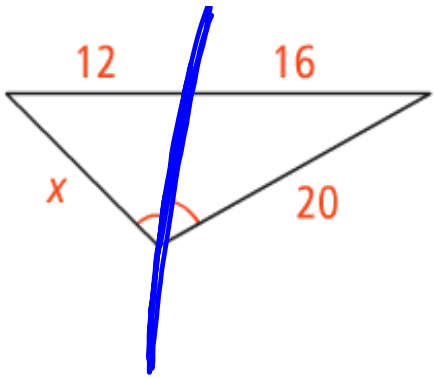
$\overrightarrow{AD}$ bisects $\angle CAB$



Then . . .

$\frac{CD}{DB} = \frac{CA}{BA}$

Solve for x.



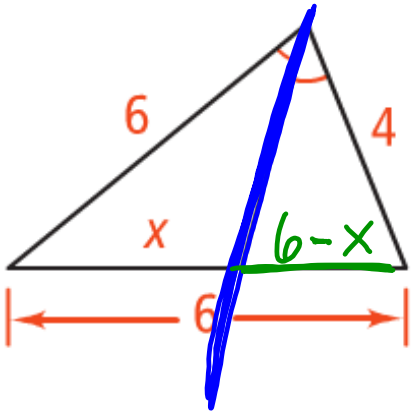
$\frac{12}{16} = \frac{x}{20}$

$12(20) = 16x$

$\frac{240}{16} = \frac{16x}{16}$

$x = 15$

Solve for x.



$$\frac{6}{4} = \frac{x}{(6-x)}$$

$$6(6-x) = 4x$$

$$36 - 6x = 4x$$

$$+6x \quad +6x$$

$$\frac{36}{10} = \frac{10x}{10}$$

$$x = 3.6$$

Closure: Today I learned about the proportions that exist in triangles.

I can set up proportions using the side splitter and triangle angle bisector theorems.

Today's Work:

Copy notes from classmate if absent.

OR

Complete PSAT#2

OR

Start HW#4

PSAT Prep:

PSAT1