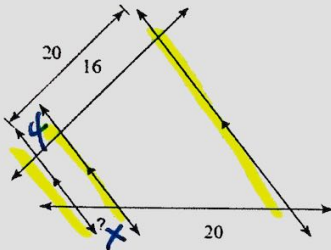


**WARM-UP:**

1. Solve for the ?.

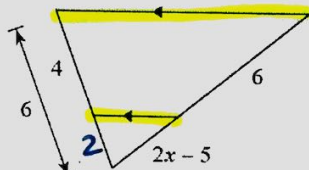


$$\frac{4}{x} = \frac{16}{20}$$

$$16x = 80$$

$$\boxed{x = 5}$$

2. Solve for x.



$$\frac{2}{2x-5} = \frac{4}{6}$$

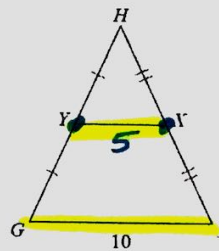
$$4(2x-5) = 2(6)$$

$$8x - 20 = 12$$

$$8x = 32$$

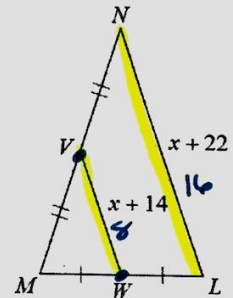
$$\boxed{x = 4}$$

3.  $XY = 5$



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

4. Solve for x.



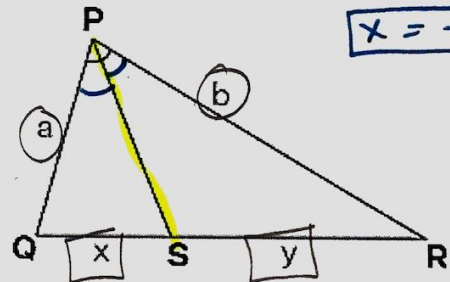
$$2(x+14) = x+22$$

$$2x + 28 = x + 22$$

$$\boxed{x = -6}$$

**Triangle Bisector Theorem:**

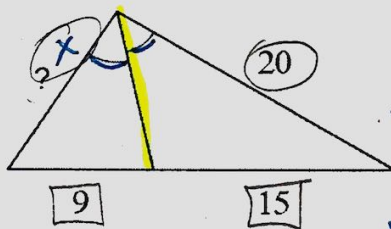
the bisector of any angle inside a triangle divides the opposite side into two parts proportional to the other two sides of the triangle which contain the angle.



$$\frac{a}{b} = \frac{x}{y}$$

Let's Try!

1.

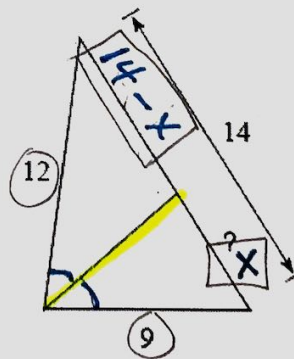


$$\frac{x}{20} = \frac{9}{15}$$

$$15x = 180$$

$$\boxed{x = 12}$$

2.



$$\frac{9}{12} = \frac{x}{14-x}$$

$$9(14-x) = 12x$$

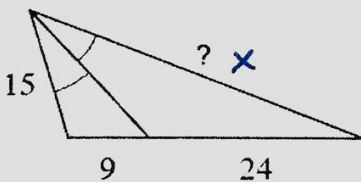
$$126 - 9x = 12x$$

$$126 = 21x$$

$$\boxed{x = 6}$$

You're Turn!!

3.

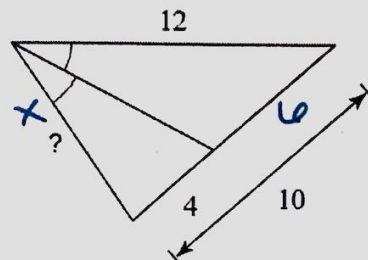


$$\frac{15}{x} = \frac{9}{24}$$

$$9x = 360$$

$$\boxed{x = 40}$$

4.

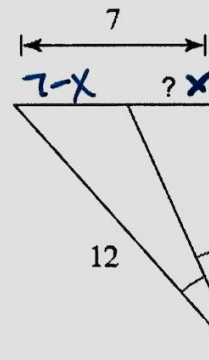


$$\frac{x}{12} = \frac{4}{6}$$

$$6x = 48$$

$$\boxed{x = 8}$$

5.



$$\frac{12}{9} = \frac{7-x}{x}$$

$$12x = 9(7-x)$$

$$9(12x) = 63 - 9x$$

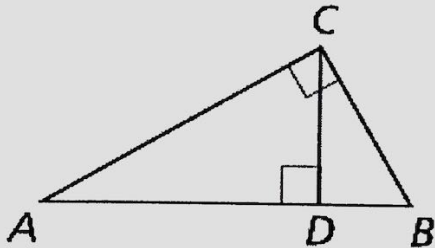
$$21x = 63$$

$$\boxed{x = 3}$$

### Right Triangle Similarity Theorem:

If the altitude is drawn to the hypotenuse of a right triangle, then the two triangles formed are similar to the original triangle and to each other.

**Geometric Mean Theorem:** In a right triangle, if the altitude drawn from the right angle to the hypotenuse divides the hypotenuse into two segments, then the length of the altitude is the geometric mean of the lengths of the two segments.

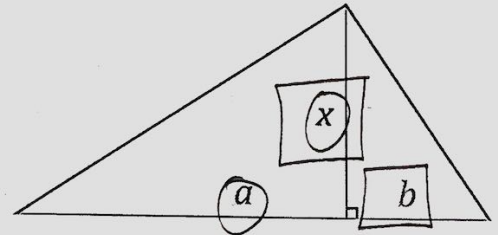


$$\triangle CBD \sim \triangle ABC$$

$$\triangle ACD \sim \triangle ABC$$

and

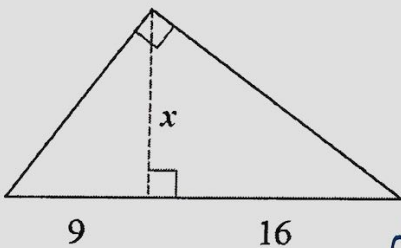
$$\triangle CBD \sim \triangle ACD$$



$$\frac{a}{x} = \frac{x}{b}$$

Let's Try!!

1.



$$\frac{9}{x} = \frac{x}{16}$$

$$x^2 = 144$$

$$\sqrt{x^2} = \sqrt{144}$$

$$\boxed{x = 12}$$

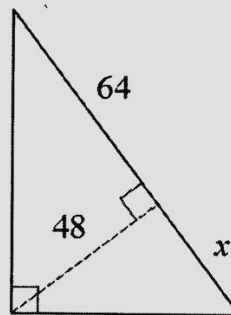
check

$$\frac{9}{12} \stackrel{?}{=} \frac{12}{16}$$

$$.75 = .75$$

✓

2.



$$\frac{x}{48} = \frac{48}{64}$$

$$64x = 2304$$

$$\boxed{x = 36}$$

check

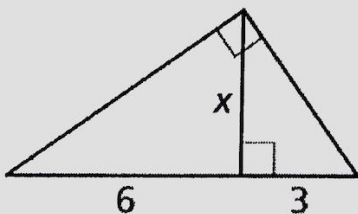
$$\frac{36}{48} \stackrel{?}{=} \frac{48}{64}$$

$$.75 = .75$$

✓

You're Turn!!

3.



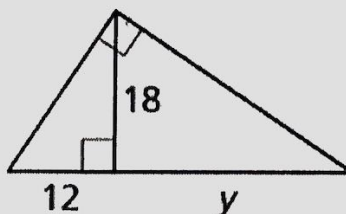
$$\frac{6}{x} = \frac{x}{3}$$

$$x^2 = 18$$

$$x = \sqrt{18}$$

$$x = \sqrt{9 \cdot 2} = \boxed{3\sqrt{2}}$$

4.

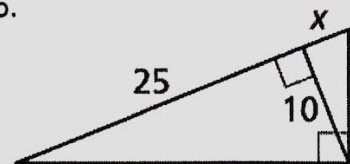


$$\frac{12}{18} = \frac{18}{y}$$

$$12y = 324$$

$$\boxed{y = 27}$$

5.



$$\frac{x}{10} = \frac{10}{25}$$

$$25x = 100$$

$$\boxed{x = 4}$$