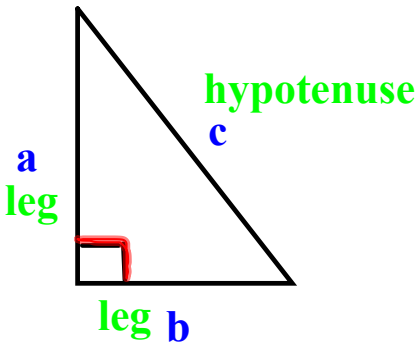
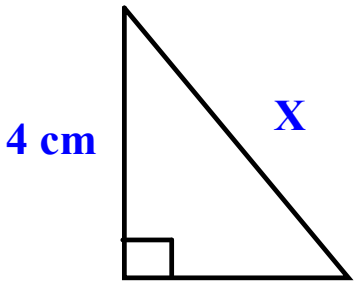
Sec. 4.9 Pythagorean Theorem

In any right triangle, the sum of the squares of the lengths of the legs is equal to the square of the length of the hypotenuse.

$$a^2 + b^2 = c^2$$

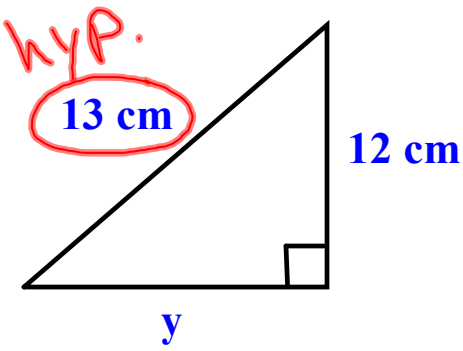


Example:



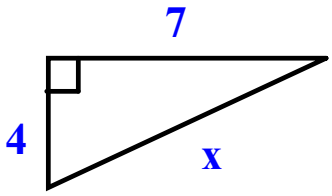
$$a^2 + b^2 = c^2$$
$$3^2 + 4^2 = x^2$$
$$9 + 16 = x^2$$
$$25 = x^2$$
$$\sqrt{25} = x$$
$$5 = x$$

Example:

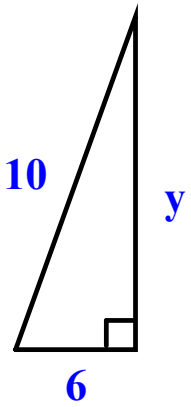


$$a^2 + b^2 = c^2$$
$$y^2 + 12^2 = 13^2$$
$$y^2 + 144 = 169$$
$$y^2 + 144 - 144 = 169 - 144$$
$$y^2 = 25$$
$$y = \sqrt{25}$$
$$y = 5 \text{ cm}$$

Find each missing variable.



$a^2 + b^2 = c^2$



Homework:

p.228, # 1-8 all, 18, 28, 46

****show work on all problems****