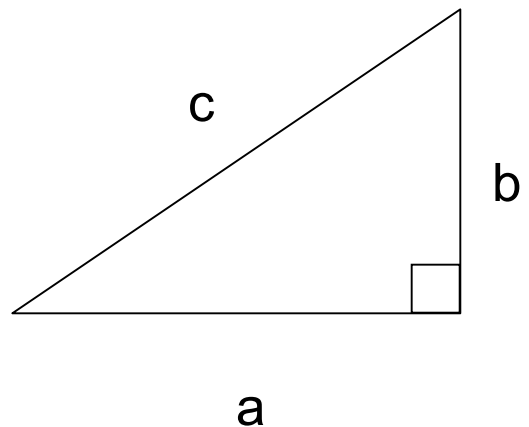
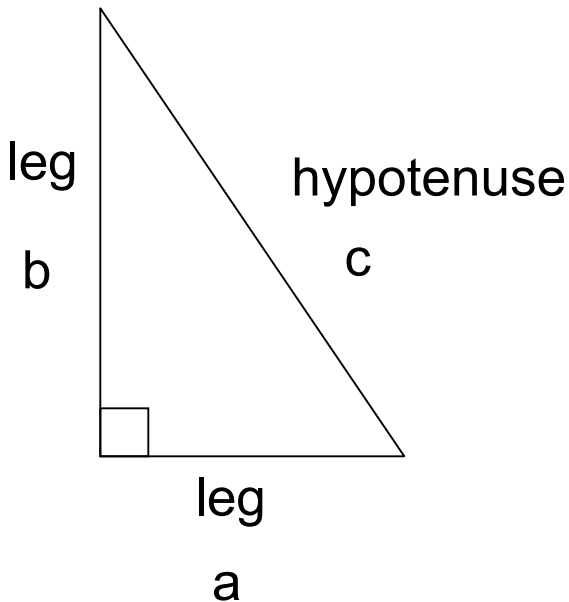


Chapter 11 § 4

The Pythagorean Theorem

Definition

Pythagorean Theorem – If a and b are the measures of the legs of a right triangle c is the measure of the hypotenuse, then $c^2 = a^2 + b^2$



$$a = 12, \quad b = 16$$

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

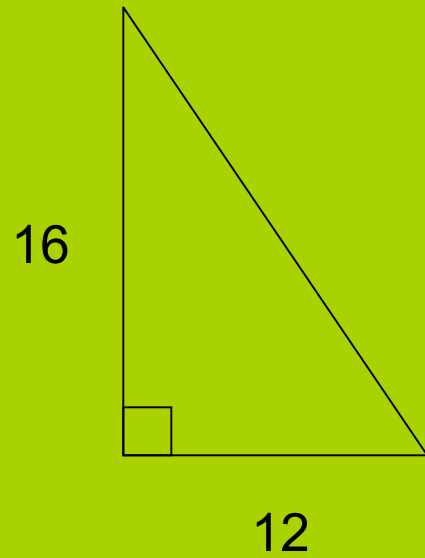
$$(12)^2 + (16)^2 = c^2$$

$$144 + 256 = c^2$$

$$400 = c^2$$

$$\sqrt{400} = \sqrt{c^2}$$

$$20 = c$$



$$a = 6, \quad b = 8$$

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

$$(6)^2 + (8)^2 = c^2$$

$$36 + 64 = c^2$$

$$100 = c^2$$

$$\sqrt{100} = \sqrt{c^2}$$

$$10 = c$$

$$a = 4, \quad c = 10$$

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

$$(4)^2 + b^2 = 10^2$$

$$16 + b^2 = 100$$

$$\begin{array}{r} -16 \qquad \qquad -16 \\ \hline \end{array}$$

$$b^2 = 84$$

$$\sqrt{b^2} = \sqrt{84}$$

$$b = 9.17$$

$$a = 5, \quad c = 6$$

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

$$(5)^2 + b^2 = 6^2$$

$$25 + b^2 = 36$$

$$\begin{array}{r} -25 \qquad -25 \\ \hline \end{array}$$

$$b^2 = 11$$

$$\sqrt{b^2} = \sqrt{11}$$

$$b = 3.32$$