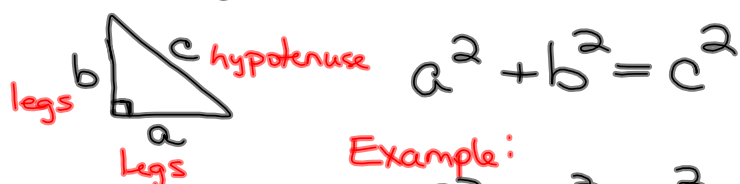


## 3-4 Pythagorean Theorem (Pt. 2)



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

Example:

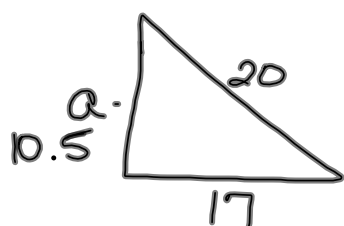
$$3^2 + 4^2 = c^2$$

$$9 + 16 = c^2$$

$$25 = c^2$$

$$\sqrt{25} = \sqrt{c^2}$$

$$5 = c$$



$$a^2 + 17^2 = 20^2$$

$$a^2 + 289 = 400$$

$$\begin{array}{r} -289 \\ \hline \end{array}$$

$$\sqrt{a^2} = \sqrt{111}$$

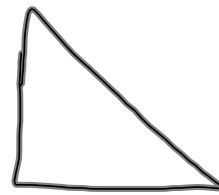
$$a = 10.5$$

$$\begin{array}{r|l} D & U \\ \hline +289 & -289 \end{array}$$

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

$b, 9\text{ft.}; c, 12\text{ft.}$

$b = 9\text{ft} \quad c = 12\text{ft.}$



$$\begin{array}{r} 9^2 + a^2 = 12^2 \\ 81 + a^2 = 144 \\ \hline -81 \qquad -81 \\ \hline a^2 = 63 \\ \sqrt{a^2} = \sqrt{63} \\ a = 7.9 \end{array}$$

$$\begin{array}{r} a^2 + 9^2 = 12^2 \\ a^2 + 81 = 144 \\ \hline -81 \qquad -81 \\ \hline \sqrt{a^2} = \sqrt{63} \\ a = 7.9 \end{array}$$

$$a, 3m; c, 8m$$

$$3^2 + b^2 = 8^2$$

$$\begin{array}{r} 9 + b^2 = 64 \\ -9 \quad -9 \end{array}$$

$$\begin{array}{r} \sqrt{b^2} = \sqrt{55} \\ \textcircled{b \approx 7.4} \end{array}$$

$$\begin{array}{r|l} D & u \\ \hline b^2 & -9 \\ +9 & \sqrt{5} \end{array}$$

$$\begin{array}{r|l} d & u \\ \hline +9 & -9 \end{array}$$

$$15^2 + 18^2 = c^2$$

$$225 + 324 = c^2$$

$$549 = c^2$$

$$\sqrt{549} = \sqrt{c^2}$$

$$23.4 \text{ inches} \approx c$$

15      8      17      Is it a right triangle?

$$a^2 + b^2 = c^2$$
$$8^2 + 15^2 = 17^2$$
$$64 + 225 = 289$$
$$\sqrt{289} = 17$$

Yes!

g.  $18^2 + 24^2 \stackrel{=}{=} 30^2$   
 $324 + 576 = 900$   
 $\sqrt{900} = 30$   
yes



$$\begin{aligned} a^2 + b^2 &= c^2 \\ 4^2 + 5^2 &= 7^2 \\ 16 + 25 &= 49 \\ 41 &\neq 49 \quad \text{so } \textcircled{\text{NO.}} \end{aligned}$$