

10/31/07 Objective: TSWBAT: Use the Pythagorean Theorem to find the missing sides of right triangles

You will need to know how to find the square root of a number to use the Pythagorean theorem.

$$\sqrt{4} = 2 \quad \sqrt{13} = 3.6$$

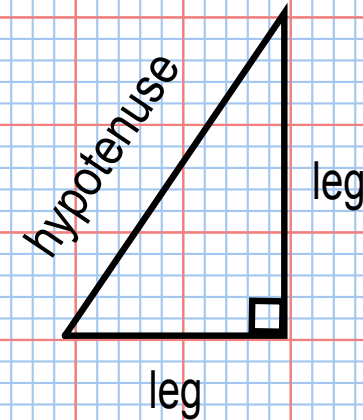
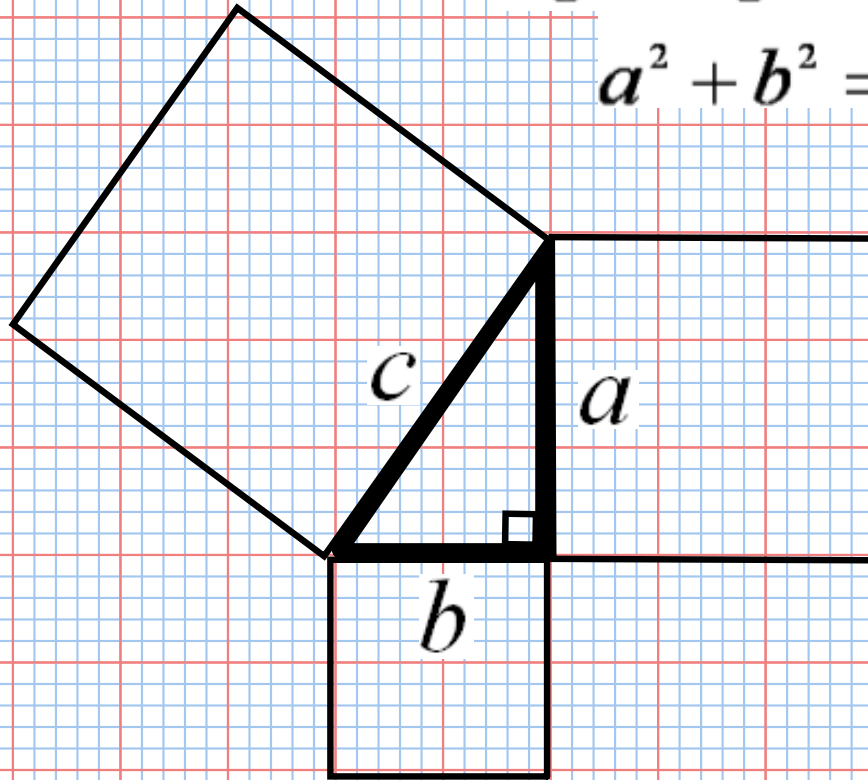
$$\sqrt{9} = 3 \quad \sqrt{11} = 3.3$$

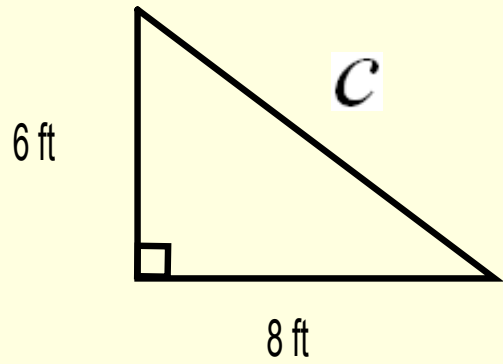
Use a calculator to find these square roots

Pythagoras found out that when you have a right triangle,

$$\text{leg}^2 + \text{leg}^2 = \text{hypotenuse}^2$$

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





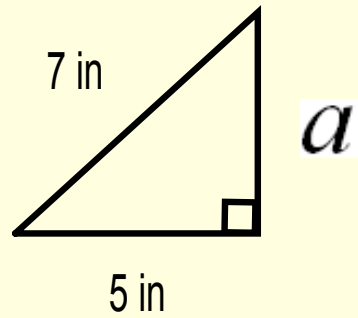
$$a^2 + b^2 = c^2$$

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

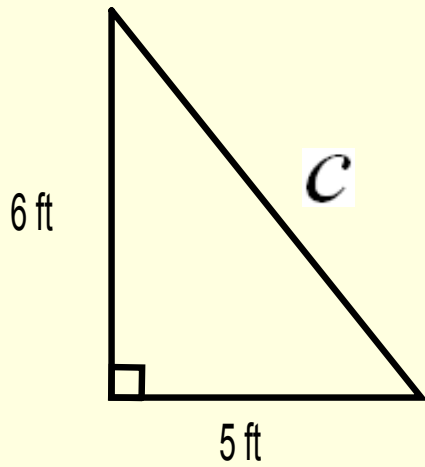
$$36 + 64 = c^2$$

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

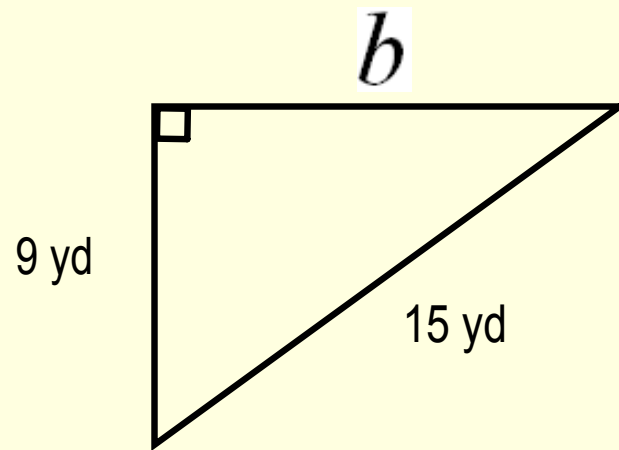
$$10 = c$$



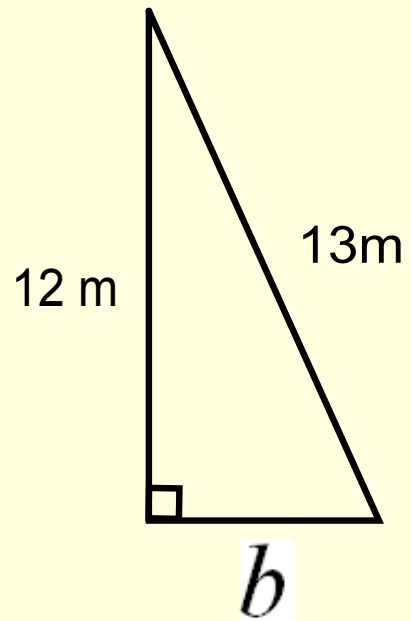
$$\begin{aligned} a^2 + b^2 &= c^2 \\ a^2 + 5^2 &= 7^2 \\ a^2 + 25 &= 49 \\ \sqrt{a^2} &= \sqrt{49 - 25} \\ a &= 4.9 \end{aligned}$$



$$\begin{aligned} a^2 + b^2 &= c^2 \\ 5^2 + 6^2 &= c^2 \\ 25 + 36 &= c^2 \\ \sqrt{61} &= \sqrt{c^2} \\ 7.8 &= c \end{aligned}$$



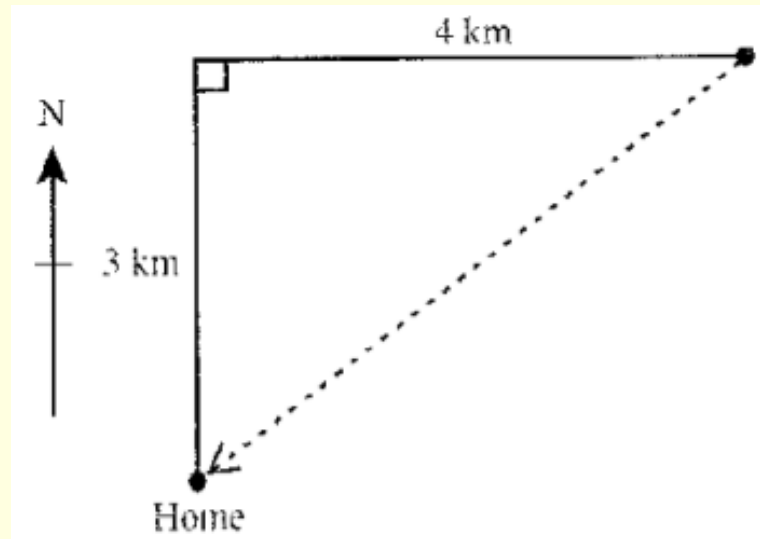
$$\begin{aligned} a^2 + b^2 &= c^2 \\ 9^2 + b^2 &= 15^2 \\ 81 + b^2 &= 225 \\ \underline{-81} \quad \quad \quad \underline{-81} \\ \sqrt{b^2} &= \sqrt{144} \\ b &= 12 \end{aligned}$$



$$\begin{aligned} a^2 + b^2 &= c^2 \\ 12^2 + b^2 &= 13^2 \\ 144 + b^2 &= 169 \\ \underline{-144} \quad \quad \underline{-144} \\ \sqrt{b^2} &= \sqrt{25} \\ b &= 5 \end{aligned}$$

A man hiked 3 kilometers north and 4 kilometers east, but then went directly home as shown by the dotted line. How far did he travel to get home?

- A 4 km
- B 5 km**
- C 6 km
- D 7 km



3, 4, 5
Triangle !

$$3^2 + 4^2 = c^2$$
$$9 + 16 = c^2$$
$$\sqrt{25} = \sqrt{c^2}$$

5 = c

Is each Triangle with the given side lengths a right triangle?

① 16in, 63in, 65in

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

$$16^2 + 63^2 = 65^2$$

$$256 + 3969 = 4,225$$

$$\sqrt{4,225} = 4,225 \text{ True}$$

so, right Triangle

② 2.9, 2.0, 2.1

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

$$(2.0)^2 + (2.1)^2 = (2.9)^2$$

$$4 + 4.41 = 8.41$$

true, so right Triangle

④ $\sqrt{1}$, $\sqrt{2}$, $\sqrt{3}$

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

$$(\sqrt{1})^2 + (\sqrt{2})^2 = (\sqrt{3})^2$$

$$1 + 2 = 3$$

True