

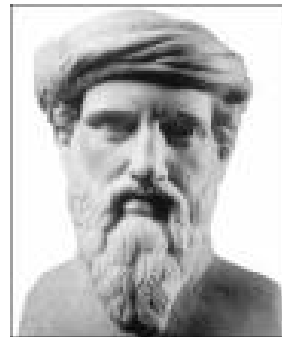
12.6
Pythagorean
Theorem

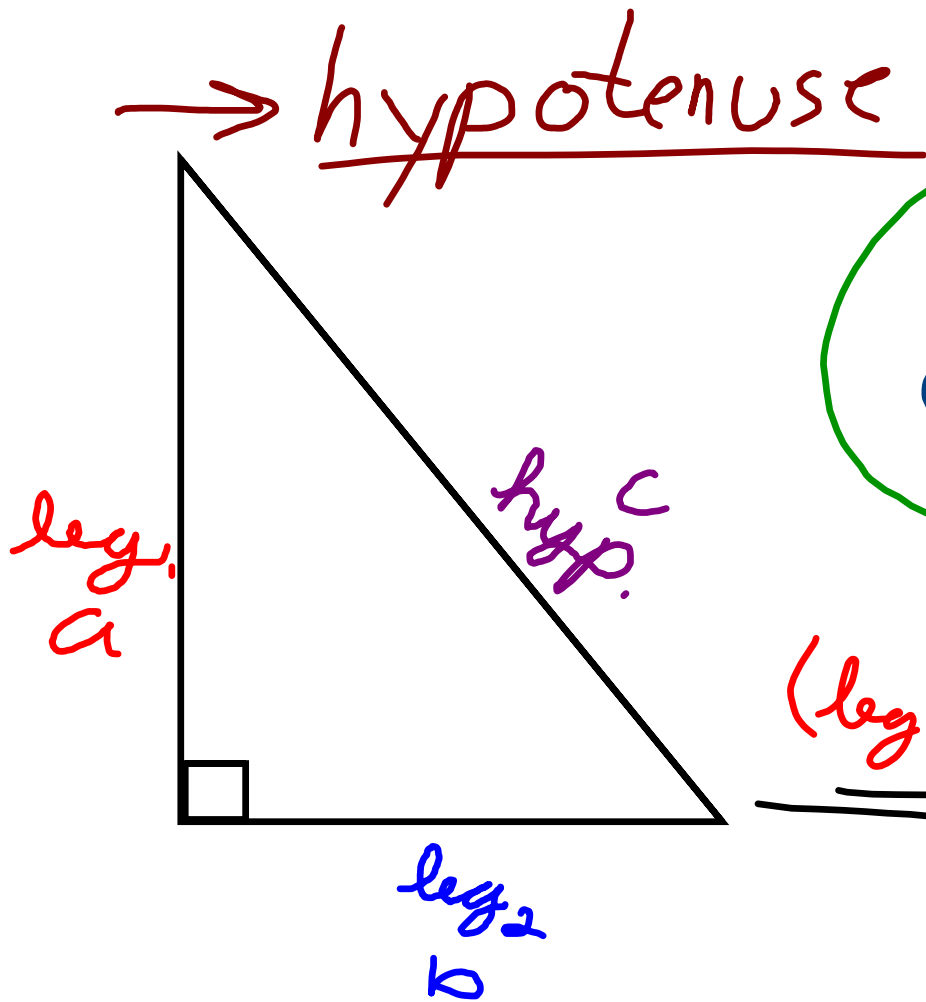
May 22, 2007

* Spelling
* counts Th^m

Pythagoras

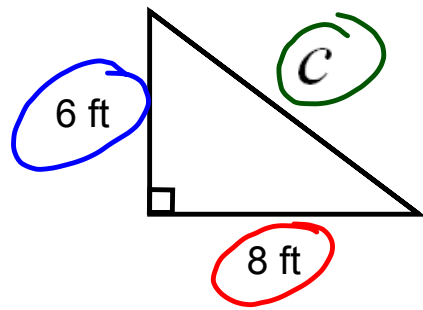
<http://www-groups.dcs.st-and.ac.uk/~history/Mathematicians/Pythagoras.html>





$$\cancel{a^2 + b^2 = c^2}$$

$$\underline{\underline{(leg_1)^2 + (leg_2)^2 = (hyp)^2}}$$



$$(\text{leg}_1)^2 + (\text{leg}_2)^2 = (\text{hyp})^2$$

$$(6\text{ft})^2 + (8\text{ft})^2 = (c)^2$$

$$\underline{36\text{ft}^2} + \underline{64\text{ft}^2} = c^2$$

$$\begin{array}{l} + \\ - \end{array} \sqrt{100\text{ft}^2} = \sqrt{c^2}$$

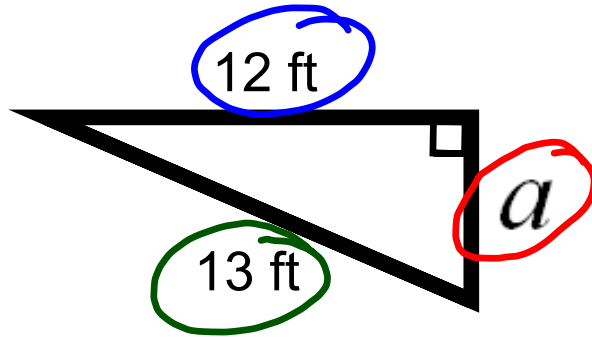
$$\begin{array}{l} + \\ - \end{array} 10\text{ft} = c$$

Since Distance Cannot be Negative ...

$$c = 10\text{ft}$$

only

2.



$$(leg_1)^2 + (leg_2)^2 = (hyp.)^2$$

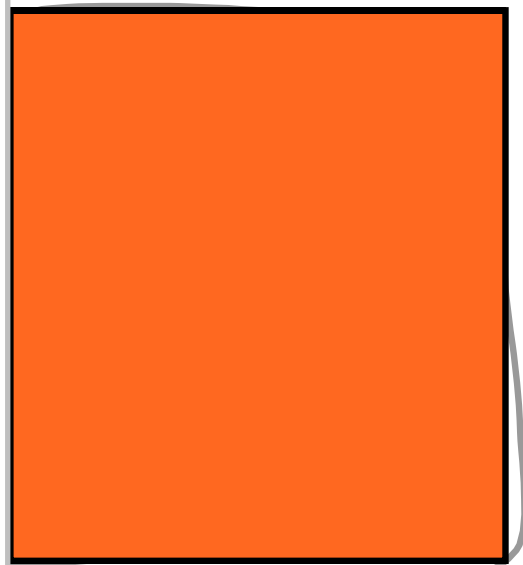
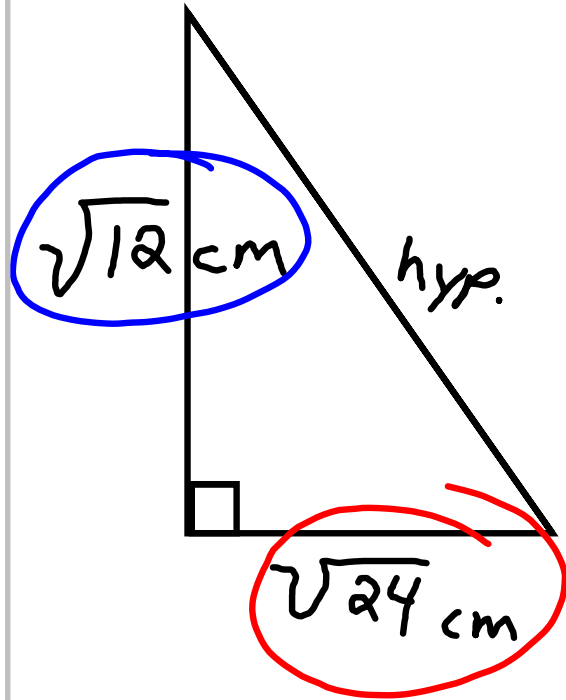
$$(12ft)^2 + (a)^2 = (13ft)^2$$

$$144ft^2 + a^2 = 169ft^2$$

$$\begin{array}{r} -144ft^2 \qquad \qquad -144ft^2 \\ \hline \end{array}$$

$$\sqrt{a^2} = \sqrt{25ft^2}$$

$$\underline{\underline{a = 5ft}}$$



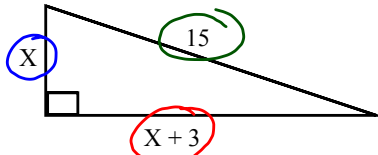
$$(\text{leg.})^2 + (\text{leg.})^2 = (\text{hyp.})^2$$

$$(\sqrt{12} \text{ cm})^2 + (\sqrt{24} \text{ cm})^2 = (\text{hyp.})^2$$

$$12 \text{ cm}^2 + 24 \text{ cm}^2 = \text{hyp.}^2$$

$$\sqrt{36 \text{ cm}^2} = \text{hyp.}$$

$$\underline{\underline{6 \text{ cm} = \text{hyp.}}}$$



$$(\text{leg.})^2 + (\text{leg.})^2 = (\text{hyp.})^2$$

$$(x)^2 + (x+3)^2 = (15)^2$$

$$x^2 + (x+3)(x+3) = 225$$

$$x^2 + x^2 + 3x + 3x + 9 = 225$$

$$2x^2 + 6x + 9 = 225$$

$$\begin{array}{r} -225 \quad -225 \\ \hline \end{array}$$

$$2x^2 + 6x - 216 = 0$$

$$2(x^2 + 3x - 108) = 0$$

$$2(x-9)(x+12) = 0$$

~~2=0~~

$$x-9=0 \text{ or } x+12=0$$

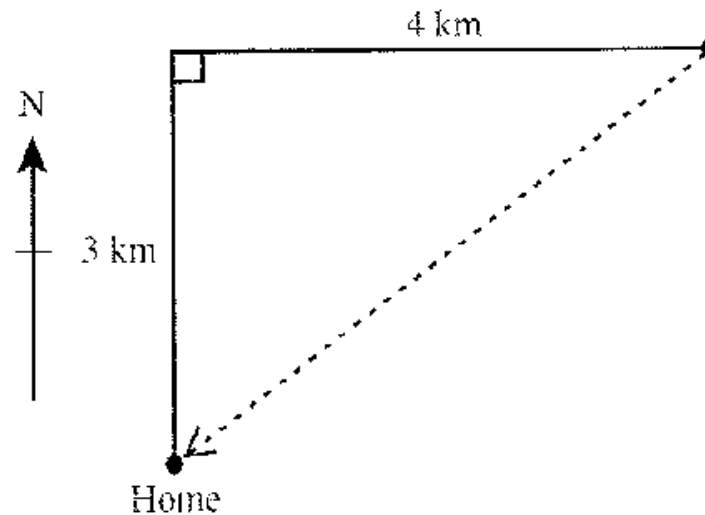
$$\begin{array}{r} +9 \quad +9 \\ \hline x=9 \end{array} \quad \begin{array}{r} -12 \quad -12 \\ \hline x=-12 \end{array}$$

So ..

$$x=9 \text{ only}$$

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

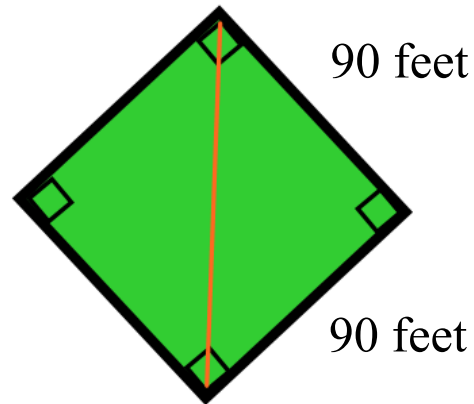


How Much did he save
by taking the shortcut

Why is this important?

O.T.L.

You can solve real world problems like this...

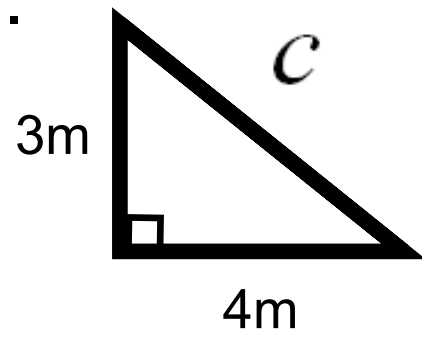


On a baseball diamond the distance from one base to the next is 90 feet.

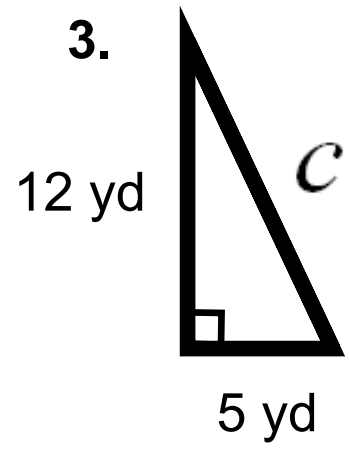
① How far is it from home base to second?

② Pitcher mound is 60 ft from H.B. is that half the distance from Δ to 2nd

1.

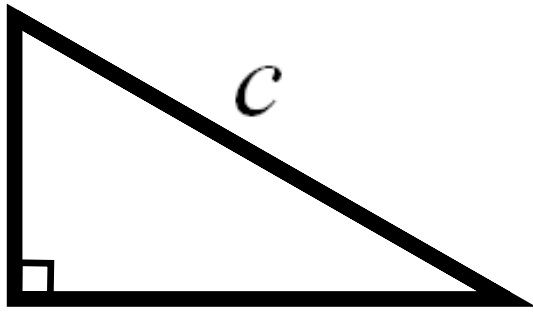


(leg)



4.

8 in



15 in

