12.6

Pythagorean Theorem

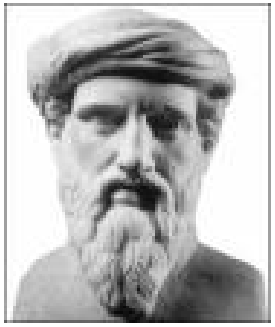
May 22, 2007

* spelling counts

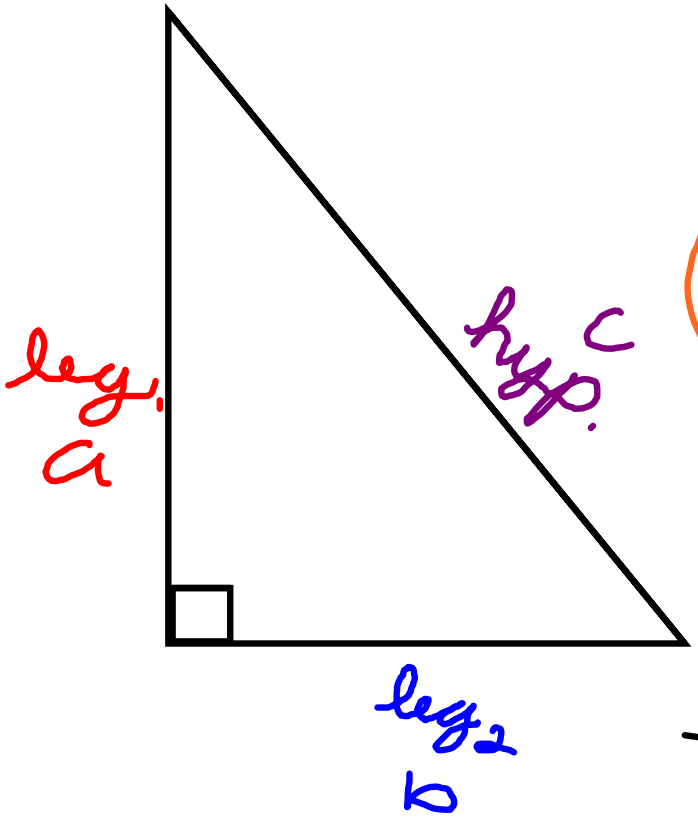
Th^m

Pythagoras

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

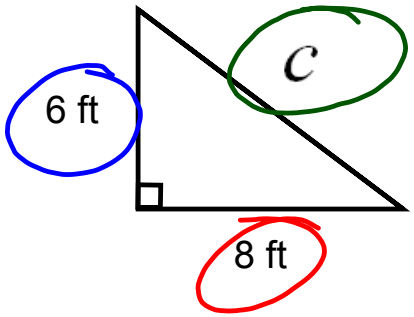


→ hypotenuse



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

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



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

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

$36ft^2 + 64ft^2 = c^2$

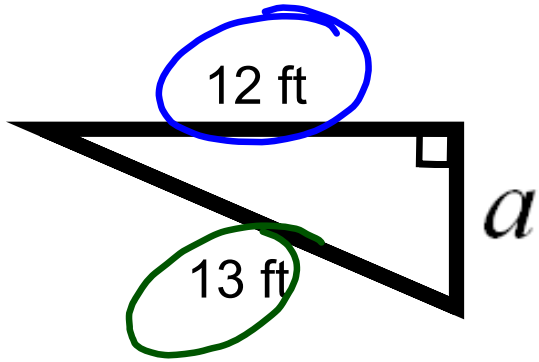
$\pm\sqrt{100ft^2} = \sqrt{c^2}$

$\pm 10\,ft = c$

Because we cannot have a Negative distance....

$10\,ft = c$ only

2.



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

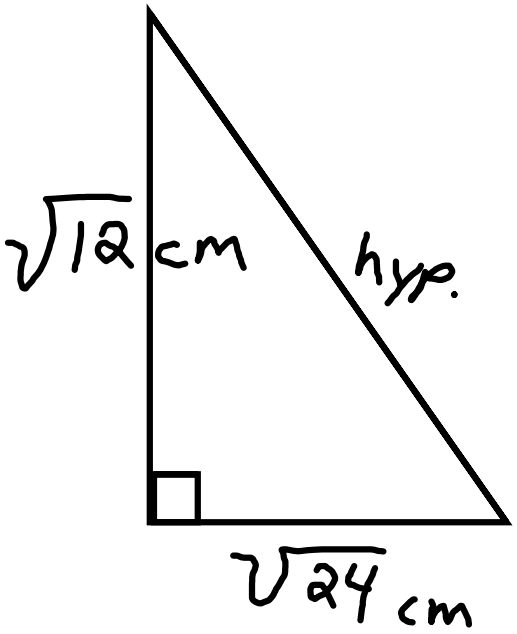
$(12\text{ft})^2 + (a)^2 = (13\text{ft})^2$

$144\text{ft}^2 + a^2 = 169\text{ft}^2$

$-144\text{ft}^2 \qquad -144\text{ft}^2$

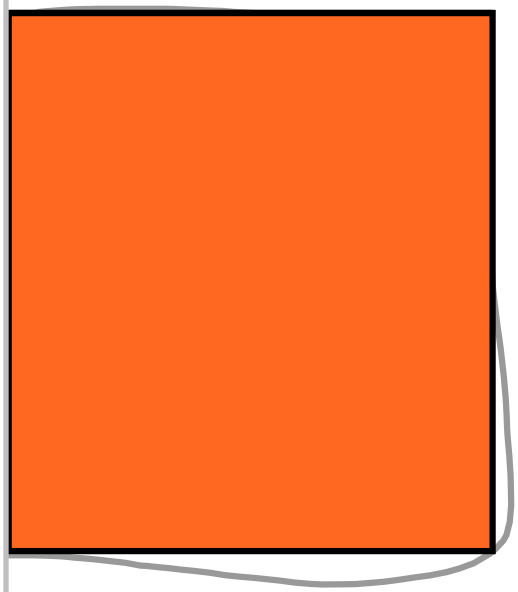
$\sqrt{a^2} = \pm\sqrt{25\text{ft}^2}$

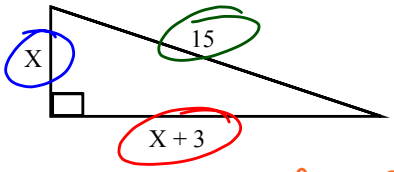
$a = 5\text{ft}$



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

$(\quad)^2 + (\quad)^2 = (\quad)^2$





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

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

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

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

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

$-225\quad -225$

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

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

1:08
2:54
3:36
4:27
6:18
9:12

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

$2=0$

$x-9=0$ or $x+12=0$

$+9\ +9$ $\qquad$ $-12\ -12$

$x=9$ or $x=-12$

X=9 only

Title: May 15 - 1:12 PM (6 of 12)

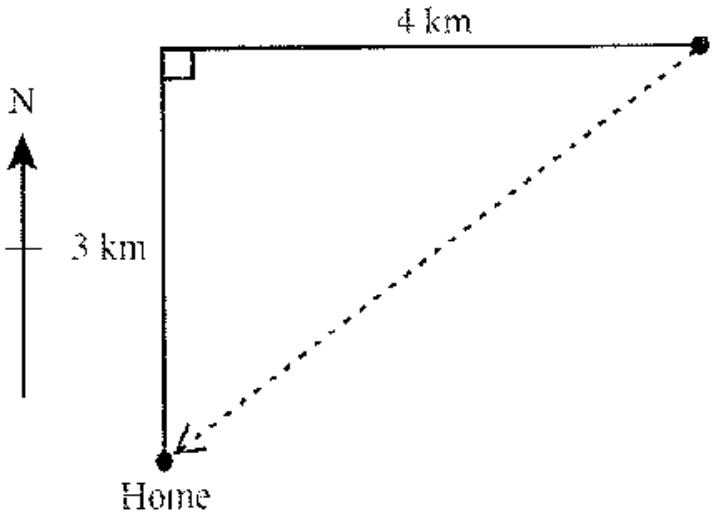
A man hiked 3 kilometers north and 4 kilometers east, but then went directly home as shown by the dotted line. How far did he travel to get home?

A 4 km

B 5 km

C 6 km

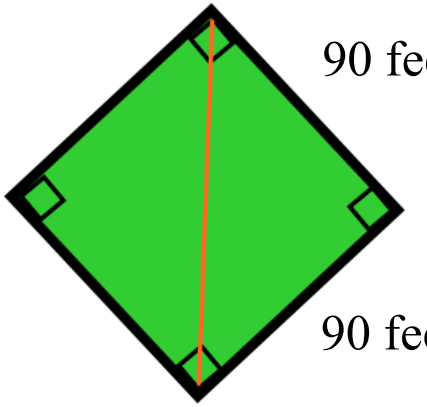
D 7 km



How Much did he save by taking the Shortcut

Why is this important? O.T.L.

You can solve real world problems like this...

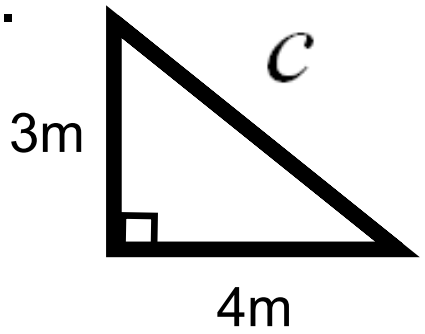


On a baseball diamond the distance from one base to the next is 90 feet.

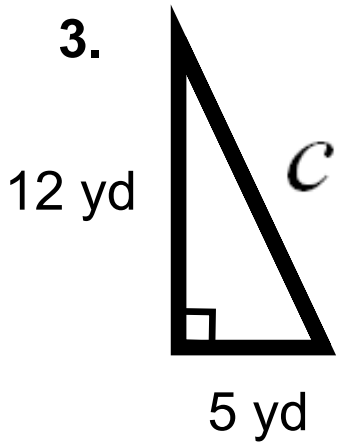
① How far is it from home base to second?

② Pitcher mound is 60 ft from H.B. is that half the Distance from ◇ to 2nd

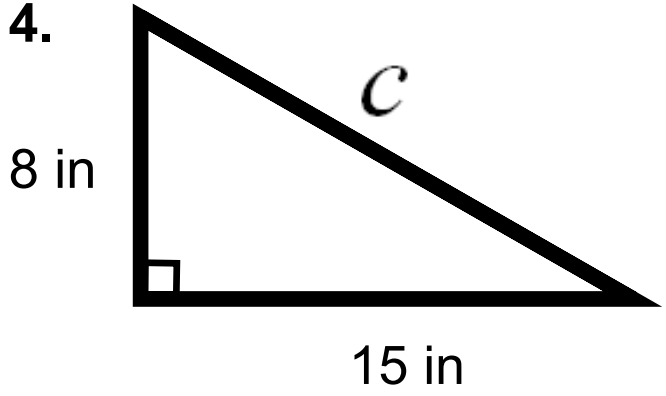
1.



3.



4.



5.