Pythagorean Theorem

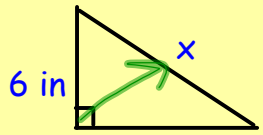
$a^2 + b^2 = c^2$

a and b represent the legs of a right triangle

and c represent the hypotenuse

↳ always largest side
" across from rt. ∠

Find the length of the missing side:



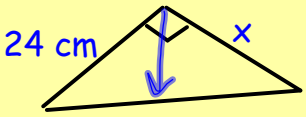
$a^2+b^2=c^2$

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

$36+64=c^2$

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

$10 in = c$



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

$24^2+b^2=25^2$

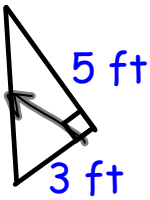
$576+b^2=625$

$-576 \quad -576$

$\sqrt{b^2}=\sqrt{49}$

$b=7cm$

Find the length of the missing sides:



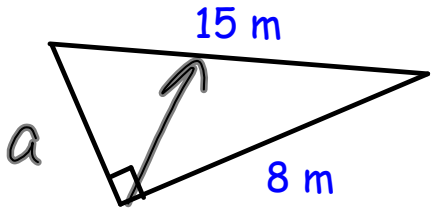
$a^2+b^2=c^2$

$3^2+5^2=c^2$

$9+25=c^2$

$\sqrt{34}=\sqrt{c^2}$

$c=\sqrt{34}$ ft



$a^2+5^2=c^2$

$a^2+8^2=15^2$

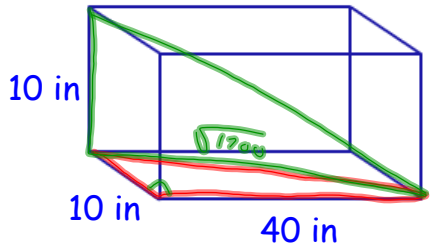
$a^2+64=225$

$a^2-64 \quad -64$

$\sqrt{a^2}=\sqrt{161}$

$a=\sqrt{161}$ m

Chris wants to ship a fishing rod to his friend that is 42 inches long. He has a box that measures 10 inches by 10 inches by 40 inches. Will the fishing rod fit in the box?



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

$10^2+40^2=c^2$

$100+1600=c^2$

$\sqrt{1700}=\sqrt{c^2}$

$\sqrt{1700}=c$

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

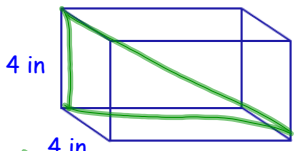
$10^2+(\sqrt{1700})^2=c^2$

$100+1700=c^2$

$\sqrt{1800}=\sqrt{c^2}$

$c=\sqrt{1800}\approx 42.4$

Tina ordered a replacement part for her desk. It was shipped in a box that measures 4 inches by 4 inches by 14 inches. What is the greatest length in whole inches the part could have been?



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

$4^2+14^2=c^2$

$16+196=c^2$

$\sqrt{212}=\sqrt{c^2}$

$c=\sqrt{212}$

15 in

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

$4^2+(\sqrt{212})^2=c^2$

$16+212=c^2$

$\sqrt{228}=\sqrt{c^2}$

$c=\sqrt{228}$ in

HW: WB p. 124 (leave answers in radical form)