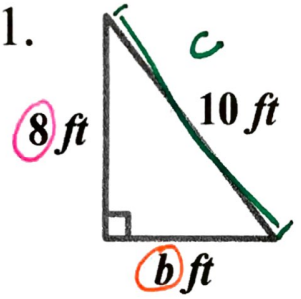
Warm up

Find the length of the missing side of the triangle.

1.



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

$(8)^2+(6)^2=(10)^2$

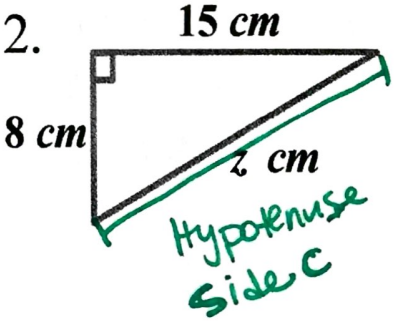
$64+b^2=100$

$-64 \quad -64$

$\sqrt{b^2}=\sqrt{36}$

$b=4$ ft

2.



$8^2+15^2=z^2$

$64+225=z^2$

$\sqrt{289}=\sqrt{z^2}$

$17\text{cm}=z$

3. $a=11$ yd and $b=60$ yd

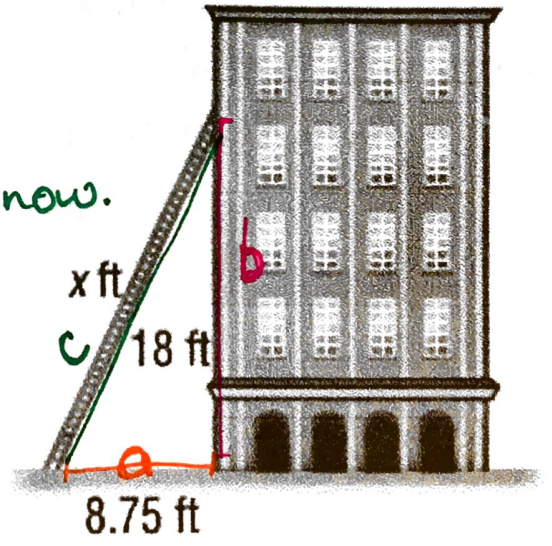
$(11)^2+(60)^2=c^2$

$121+3600=c^2$

$\sqrt{3721}=\sqrt{c^2}$

61yd = c use calc to find

Ex. 1: Write an equation that can be used to find the length of the ladder. Then solve. Round to the nearest tenth. Don't need to simplify root right now.



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

$8.75^2+18^2=c^2$

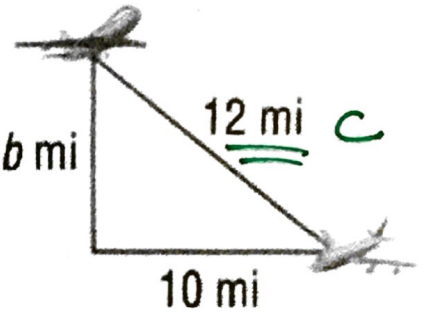
$76.5625+324=c^2$

$\sqrt{400.5625}=\sqrt{c^2}$

$c=\sqrt{400.5625}\approx 20.0$ ft

Ex. 2: Write an equation that can be used to find the height of the plane. Then solve. Round to the nearest tenth.

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



$10^2 + b^2 = 12^2$

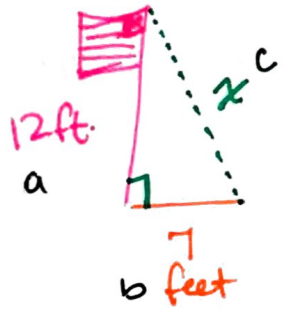
$100 + b^2 = 144$

$-100 \quad -100$

$\sqrt{b^2} = \sqrt{44}$

$b = \sqrt{44} \approx 6.6 \text{ mi}$

Ex. 3: A 12-foot flagpole is placed in the courtyard of a new hotel. To stabilize the pole, a wire is anchored 7 feet away from the base and stretches to the top of the pole. What is the length of the wire? Round to the nearest tenth.



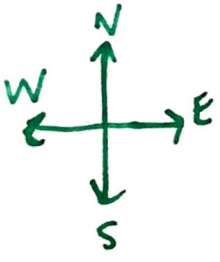
$12^2 + 7^2 = x^2$

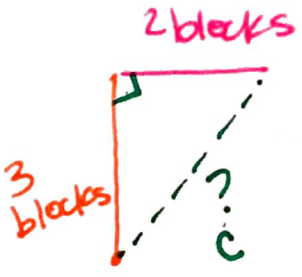
$144 + 49 = x^2$

$\sqrt{193} = \sqrt{x^2}$

$x = \sqrt{193} \approx 13.9 \text{ feet}$

Ex. 4: You are going to your friend's house after school. You walk 3 blocks north and then east for 2 blocks. What is the straight line distance from the school to your friend's house?





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

$9 + 4 = c^2$

$13 = c^2$

$c = \sqrt{13} \approx 3.6 \text{ blocks}$

Ex. 5: Suppose Salt Lake City, Heber, and Orem form a right triangle. What is the distance from Orem to Heber?

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

$32^2+b^2=41^2$

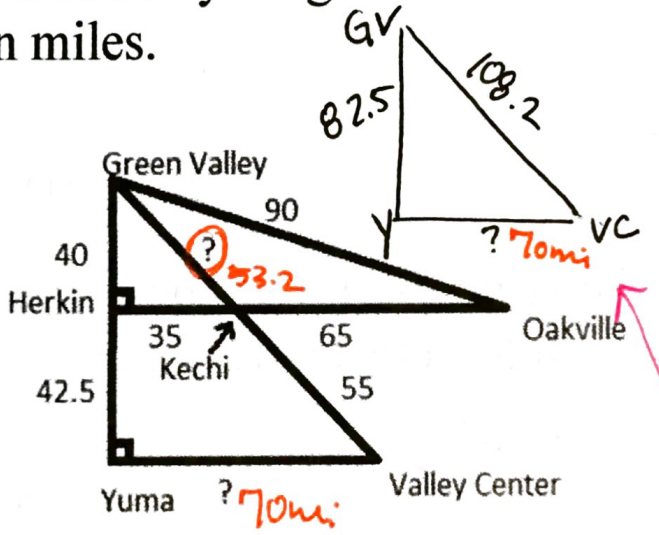
$1024+b^2=1681$

$-1024 \quad -1024$

$b^2=657$

$b=\sqrt{657} \approx 25.6$ mi

Ex. 6: Use the map at the right. Round everything to the nearest tenth. All distances are measured in miles.



a. How far is it from Green Valley to Kechi?

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

$40^2+35^2=c^2$

$1600+1225=c^2$

$\sqrt{2825}=\sqrt{c^2}$

$c=\sqrt{2825} \approx 53.2$ mi

b. How much farther is it to go from Green Valley to Yuma to Valley Center than it is to just go straight from Green Valley to Valley Center?

$GV \rightarrow Y \rightarrow VC = 40 + 42.5 + 70$

$= 152.5$

$GV \rightarrow VC = 53.2 + 55 = 108.2$

$152.5 - 108.2 =$ 44 miles longer / shorter

$Y \rightarrow VC$

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

$82.5^2+b^2=108.2^2$

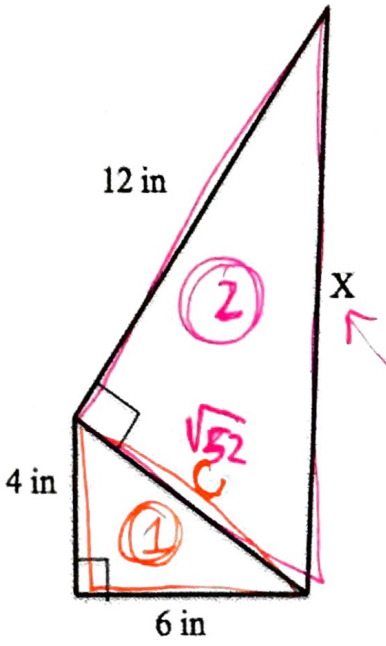
$\sqrt{b^2}=\sqrt{4900.99}$

$b \approx 70$ miles

Notes 7-6

Int 2 **Pythagorean Theorem with Context** **Unit 7**

Ex. 7: The right triangles are connected where the hypotenuse of one triangle is a leg of a different triangle. Find the length of the side X



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

$4^2 + 6^2 = c^2$

$16 + 36 = c^2$

$\sqrt{52} = \sqrt{c^2}$

$c = \sqrt{52}$ keep this!!

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

$12^2 + (\sqrt{52})^2 = c^2$

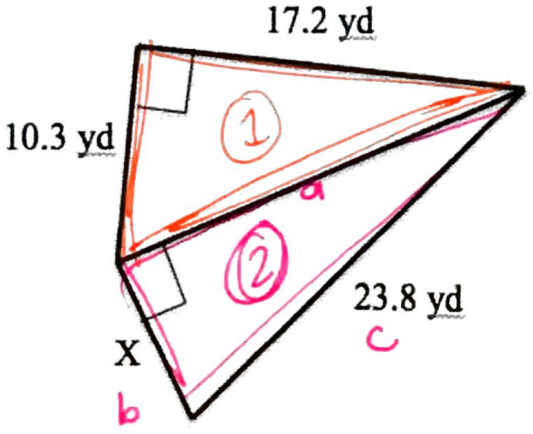
$144 + 52 = c^2$

$\sqrt{196} = \sqrt{c^2}$

$c = 14$ in

$(\sqrt{52})^2 = 52$:)

Ex. 8: The right triangles are connected where the hypotenuse of one triangle is a leg of a different triangle. Find the length of the side X, round to the nearest tenth



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

$10.3^2 + 17.2^2 = c^2$

$106.09 + 295.84 = c^2$

$\sqrt{401.93} = \sqrt{c^2}$

keep!

$c = \sqrt{401.93}$

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

$(\sqrt{401.93})^2 + b^2 = 23.8^2$

$401.93 + b^2 = 566.44$

$-401.93 \quad -401.93$

$\sqrt{b^2} = \sqrt{164.51}$

$b \approx 12.8$ yd