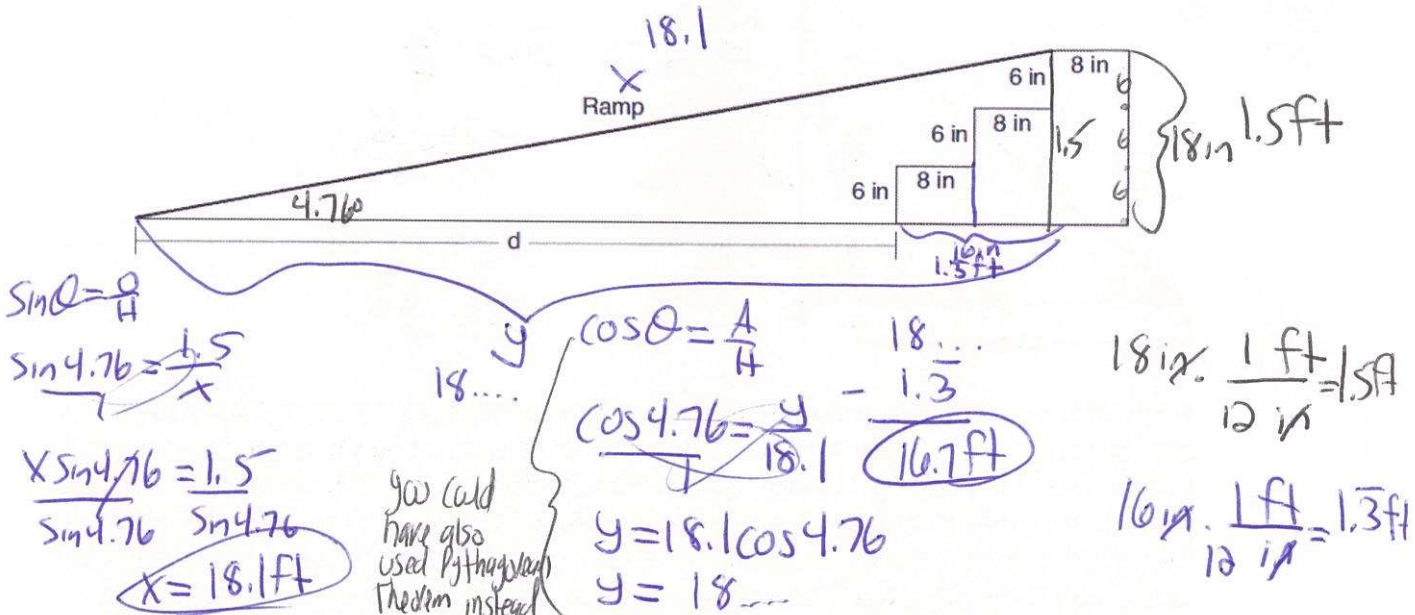


Compound Right Triangle Problems: Other

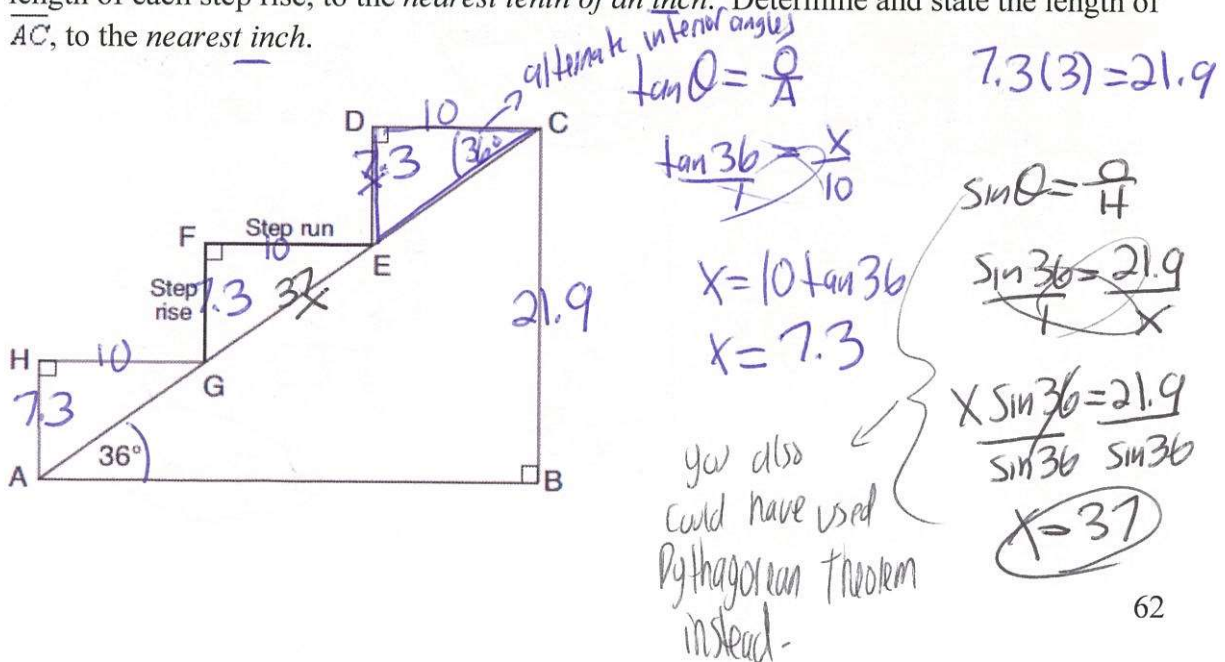
Problem Solve using SOHCAHTOA and/or Pythagorean Theorem

1. As modeled in the diagram below, an access ramp starts on flat ground and ends at the beginning of the top step. Each step is 6 inches tall and 8 inches deep. If the angle of elevation of the ramp is 4.76° , determine and state the length of the ramp, to the nearest tenth of a foot. Determine and state, to the nearest tenth of a foot, the horizontal distance, d , from the bottom of the stairs to the bottom of the ramp.



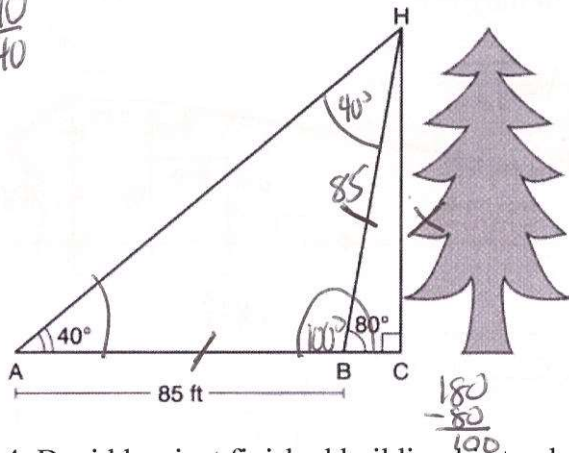
2. A homeowner is building three steps leading to a deck, as modeled by the diagram below. All three step rises, \overline{HA} , \overline{FG} , and \overline{DE} , are congruent, and all three step runs, \overline{HG} , \overline{FE} , and \overline{DC} , are congruent. Each step rise is perpendicular to the step run it joins. The measure of $\angle CAB = 36^\circ$ and $\angle CBA = 90^\circ$.

If each step run is parallel to \overline{AB} and has a length of 10 inches, determine and state the length of each step rise, to the nearest tenth of an inch. Determine and state the length of \overline{AC} , to the nearest inch.



3. Barry wants to find the height of a tree that is modeled in the diagram below, where $\angle C$ is a right angle. The angle of elevation from point A on the ground to the top of the tree, H , is 40° . The angle of elevation from point B on the ground to the top of the tree, H , is 80° . The distance between points A and B is 85 feet. Barry claims that $\triangle ABH$ is isosceles. Explain why Barry is correct. Determine and state, to the nearest foot, the height of the tree.

$$\frac{40}{140} = \frac{180}{140}$$



$\triangle ABH$ is isosceles because it has 2 \cong angles.

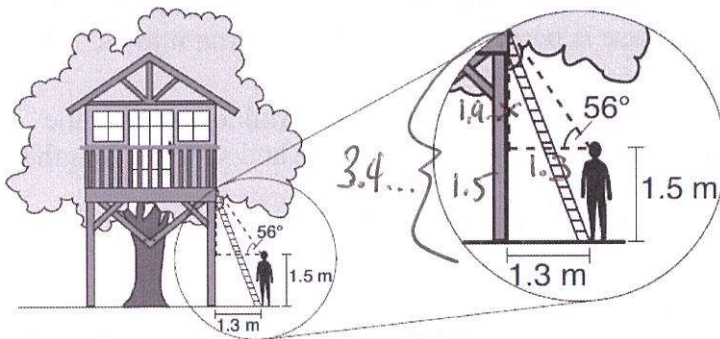
$$\sin \theta = \frac{o}{h}$$

~~$$\sin 80 = \frac{x}{85}$$~~

$$x = 85 \sin 80$$

$$x = 84$$

4. David has just finished building his treehouse and still needs to buy a ladder to be attached to the ledge of the treehouse and anchored at a point on the ground, as modeled below. David is standing 1.3 meters from the stilt supporting the treehouse. This is the point on the ground where he has decided to anchor the ladder. The angle of elevation from his eye level to the bottom of the treehouse is 56 degrees. David's eye level is 1.5 meters above the ground. Determine and state the minimum length of a ladder, to the nearest tenth of a meter, that David will need to buy for his treehouse.

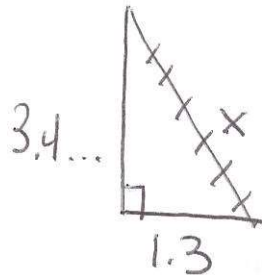


$$\tan \theta = \frac{o}{a}$$

~~$$\tan 56 = \frac{x}{1.3}$$~~

$$x = 1.3 \tan 56$$

$$x = 1.9..$$



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

$$1.3^2 + 3.4^2 = x^2$$

$$\sqrt{13.4} = \sqrt{x^2}$$

$$3.7 = x$$