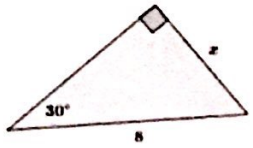
Friday Homework -7.5 & 7.6 **Name:** Key

How do you fire a math teacher?

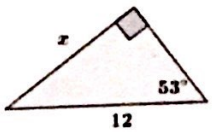
Instructions: Use SOHCAHTOA to solve for the unknown side and match your answer to the answer bank below

1.)



$x = 4$

2.)

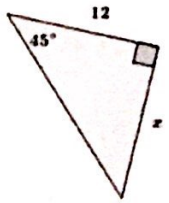


$\sin 53° = \frac{x}{12}$

$x = 12 \cdot \sin 53°$

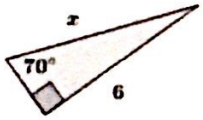
$x \approx 9.58$

3.)



$x = 12$

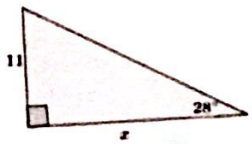
4.)



$\sin 70° = \frac{6}{x}$

$x = \frac{6}{\sin 70} \approx 6.39$

5.)

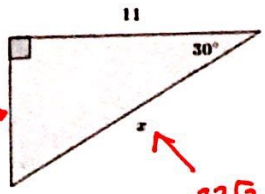


$\tan 28° = \frac{11}{x}$

$x = \frac{11}{\tan 28°}$

$x \approx 20.769$

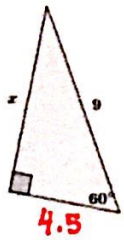
6.)



$\frac{11}{\sqrt{3}} \cdot \frac{\sqrt{3}}{\sqrt{3}} = \frac{11\sqrt{3}}{3}$

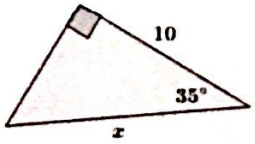
$\frac{22\sqrt{3}}{3} \approx 12.70$

7.)



$x = 4.5\sqrt{3} \approx 7.79$

8.)

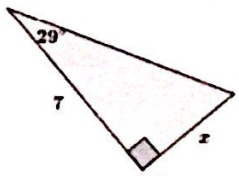


$\cos 35° = \frac{10}{x}$

$x = \frac{10}{\cos 35°}$

$x = 12.21$

9.)



$\tan 29° = \frac{x}{7}$

$x = 7 \cdot \tan 29$

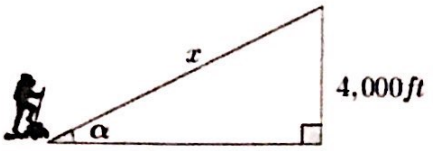
$x \approx 3.88$

$x = 6.39$ 4 = L	$x = 10.39$ D	$x = 9.53$ W
$x = 12.21$ 8 = S	$x = 4$ 1 = Y	$x = 3.88$ 9 = H
$x = 20.69$ 5 = R	$x = 12.70$ 6 = T	$x = 5.64$ P
$x = 9.58$ 2 = E	$x = 7.8$ 7 = O	$x = 12$ 3 = I

T E L L H E R S H E ' S H I S T O R Y

6 2 4 4 9 2 5 8 9 2 8 9 3 8 6 7 5 1

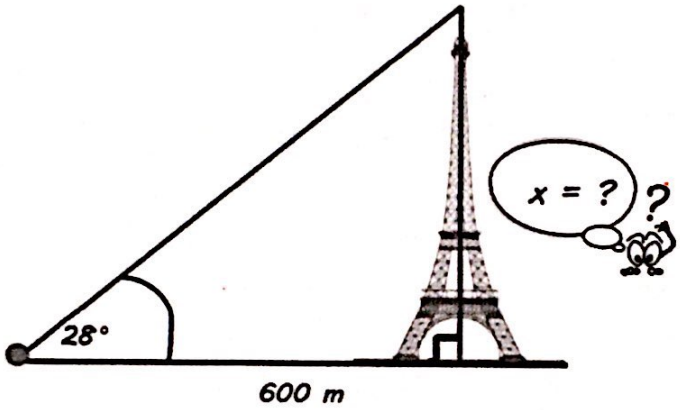
1.) A hiker sets out to climb a mountain with a 4,000 ft vertical ascent as shown in the diagram below. If the angle of incline, $\alpha = 12°$ what is to total distance he has to travel to reach the summit, to the nearest whole foot?



$\sin 12° = \frac{4000}{x}$

$x = \frac{4000}{\sin 12°} \approx 19{,}239\ ft$

2. Determine the height of the Eiffel Tower, knowing that at 600m away and you can see the top at an angle of 28°.

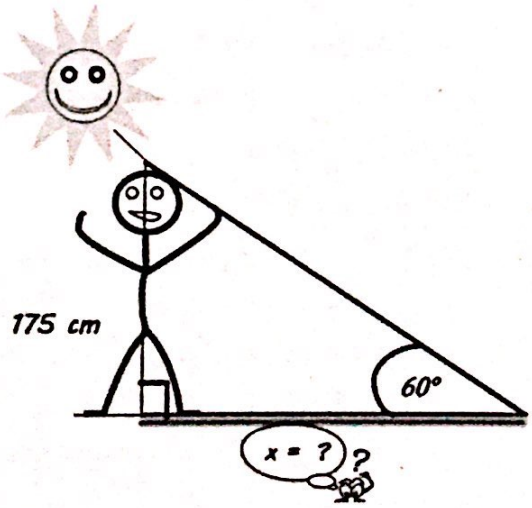


$\tan 28° = \frac{x}{600}$

$x = 600 \cdot \tan 28°$

$x = 319\ m$

3. How long of a shadow does a 175cm tall person cast with the sun 60° in the sky?



$\tan 60° = \frac{175}{x}$

$x = \frac{175}{\tan 60°} \approx 101\ cm$

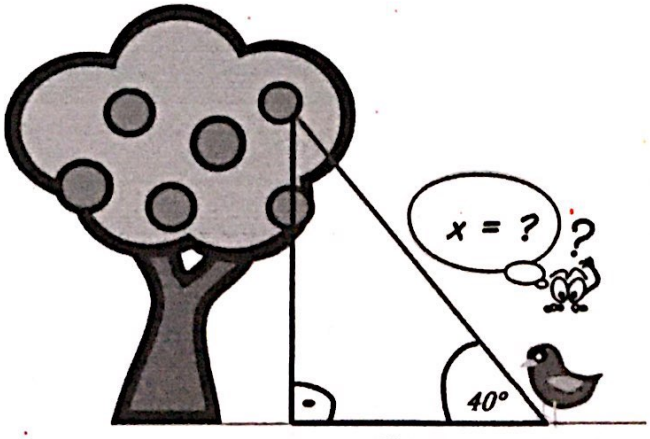
OR

$\approx$

$x = \frac{175}{\sqrt{3}} \approx 101\ cm$

Task 4

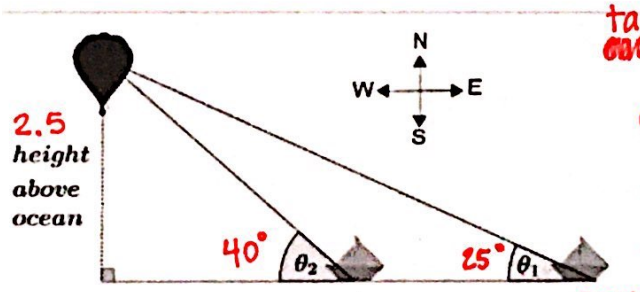
How far does the bird have to fly to reach the apple in the tree?



$\cos 40° = \frac{6}{x}$

$x = \frac{6}{\cos 40°} = 7.8$ m

5.) A hot air balloon sits in a fixed position as a boat travels due westward towards the balloon, as in the diagram below. A sailor notices that the balloon *appears* higher in the sky as the boat travels west. If the balloon is 2.5 kilometers above the ocean, and $\theta_1 = 25°$ at 3 PM and $\theta_2 = 40°$ at 5 PM how fast is the boat traveling?



$\tan 25° = \frac{2.5}{d_3}$

$d_3 = \frac{2.5}{\tan 25°}$

$d_3 = 5.36$ km

$\tan 40° = \frac{2.5}{d_5}$

$d_5 = 2.98$ km

$\frac{5.36 - 2.98}{2}$

1.2 km/hr

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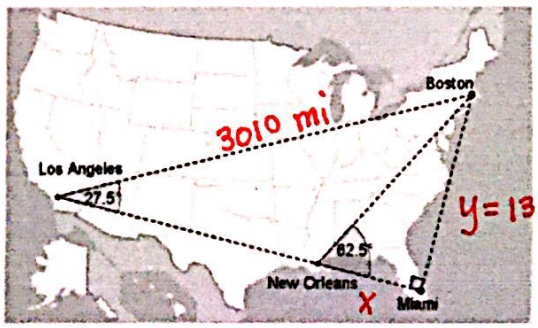
6) Four major US cities are shown on a map that is approximately drawn to scale below. If the distance between Boston and Los Angeles is approximately 3010 miles, what is the best approximation to the distance between New Orleans and Miami?



$\sin 27.5° = \frac{y}{3010}$

$y = 3010 \cdot \sin 27.5$

$y = 1389.9$

$\tan 62.5° = \frac{1389.9}{x}$

$x = \frac{1389.9}{\tan 62.5°}$

$x = 724$ miles