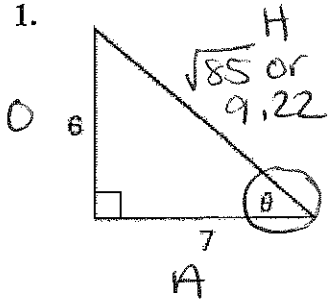
TRIG PRACTICE

Name: Key

Date: _____ Period: _____

Evaluate the six trigonometric function of the angle Θ.

1.



$6^2+7^2=c^2$

$36+49=c^2$

$85=c^2$

$\sqrt{85}=c$

$9.22=c$

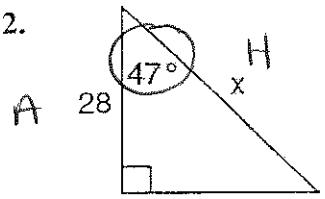
$\sin\Theta = \frac{6}{\sqrt{85}} = \frac{6\sqrt{85}}{85} = 0.651$

$\cos\Theta = \frac{7}{\sqrt{85}} = \frac{7\sqrt{85}}{85} = 0.759$

$\tan\Theta = \frac{6}{7} = 0.857$

Find the missing side:

2.



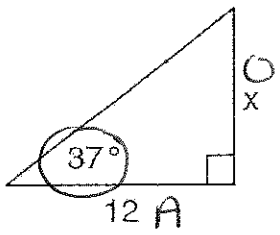
$\cos\theta = \frac{A}{H}$

$\cos 47 = \frac{28}{x}$

$x = \frac{28}{\cos 47}$

$x = 41.056$

3.

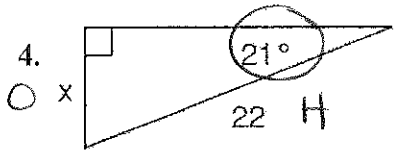


$\tan\theta = \frac{O}{A}$

$(12)\tan 37 = \frac{x}{12}(12)$

$x = 9.043$

4.

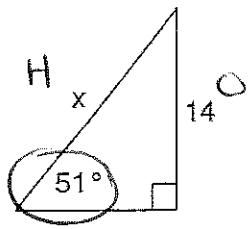


$\sin\theta = \frac{O}{H}$

$(22)\sin 21 = \frac{x}{22}(22)$

$x = 7.884$

5.



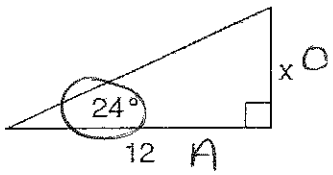
$\sin\theta = \frac{O}{H}$

$\sin 51 = \frac{14}{x}$

$x = \frac{14}{\sin 51}$

$x = 18.015$

6.

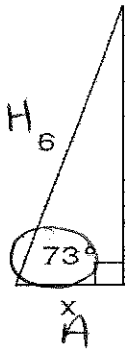


$\tan\theta = \frac{O}{A}$

$(12)\tan 24 = \frac{x}{12}(12)$

$x = 5.343$

7.



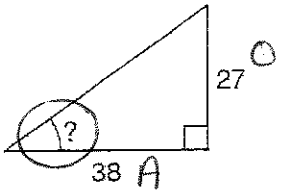
$\cos\theta = \frac{A}{H}$

$(6)\cos 73 = \frac{x}{6}(6)$

$x = 1.754$

Find the missing Angle:

8.



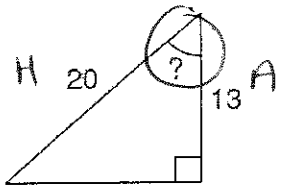
$\tan\theta = \frac{O}{A}$

$\tan\theta = \frac{27}{38}$

$\theta = \tan^{-1}\left(\frac{27}{38}\right)$

$\theta = 35.395°$

9.



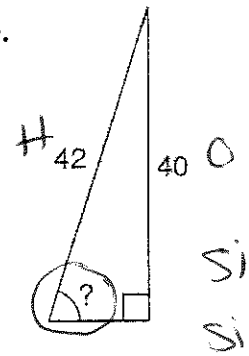
$\cos\theta = \frac{A}{H}$

$\cos\theta = \frac{13}{20}$

$\theta = \cos^{-1}\left(\frac{13}{20}\right)$

$\theta = 49.458°$

10.



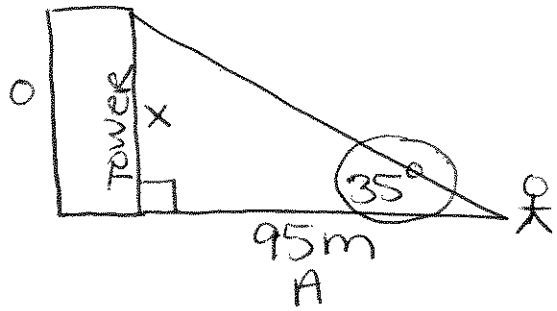
$\sin\theta = \frac{O}{H}$

$\sin\theta = \frac{40}{42}$

$\theta = \sin^{-1}\left(\frac{40}{42}\right)$

$\theta = 72.247°$

11. Sam is trying to calculate the height of a tower. He is standing 95 meters from the base of a tower. The angle of elevation from Sam's position on the ground to the top of the tower is 35°. Calculate the height of the tower to the nearest tenth of a meter.



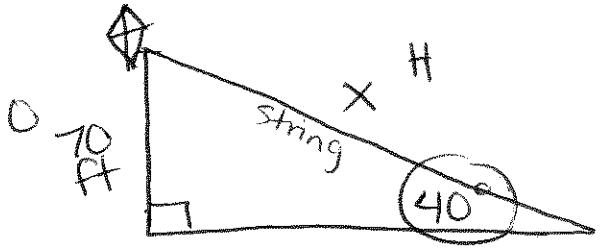
$\tan\theta = \frac{O}{A}$

$(95)\tan 35 = \frac{X}{95}(95)$

$66.5197 = X$

$66.5m = X$ ← nearest 10th of a meter

12. A kite is flying 70 feet above the ground and is attached to a string tied to a stake on the ground. The angle of elevation formed by the string and the ground is 40°. Find the length of the string to the nearest foot.



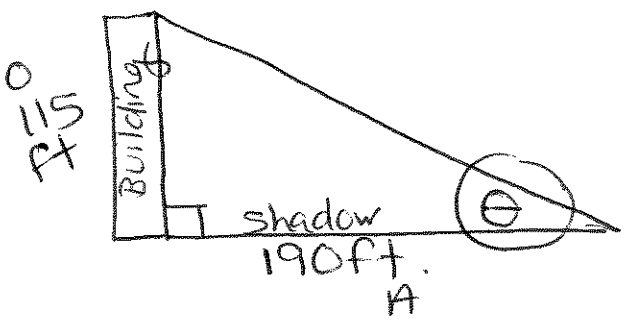
$\sin\theta = \frac{O}{H}$

$\sin 40 = \frac{70}{X}$

$X = \frac{70}{\sin 40}$

$X = 108.901\text{ft}$ or 109ft ← nearest foot

13. A building that is 115 feet tall casts a shadow that is 190 feet long. Determine the angle at which the rays of the sun hit the ground to the nearest degree. (Find the angle of elevation).



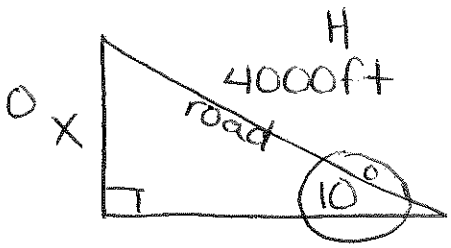
$\tan\theta = \frac{O}{A}$

$\tan\theta = \frac{115}{190}$

$\theta = \tan^{-1}\left(\frac{115}{190}\right)$

$\theta = 31.185°$ or $31°$ ← nearest degree

14. A road has an incline of 10°. To the nearest foot, find the increase in altitude of a car after driving 4,000 feet along the road.



find altitude (height)

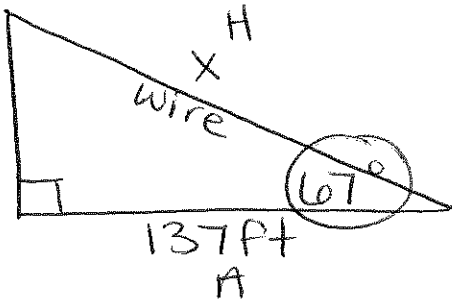
$\sin\theta = \frac{O}{H}$

$(4000)\sin 10 = \frac{x}{4000}(4000)$

$694.593\text{ ft} = x$

695ft ← nearest foot

15. A guy wire is attached to a pole for support. If the angle of elevation to the pole is 67° and the wire is attached to the ground at a point 137 feet from the base of the pole, what is the length of the guy wire (round to 2 decimal places)?



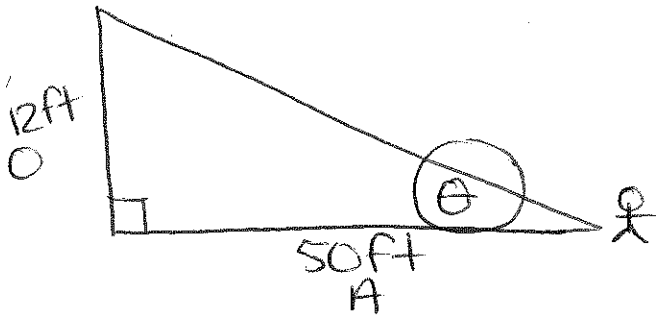
$\cos\theta = \frac{A}{H}$

$\cos 67 = \frac{137}{x}$

$x = \frac{137}{\cos 67}$

$x = 350.6247$ or 350.62ft ← round to 2 dec.

16. A diver stands on level ground 50 feet from the base of the 12 foot high dive. What is the approximate measure of the angle of elevation between the diver and the diving board (round to the nearest whole number)?



$\tan\theta = \frac{O}{A}$

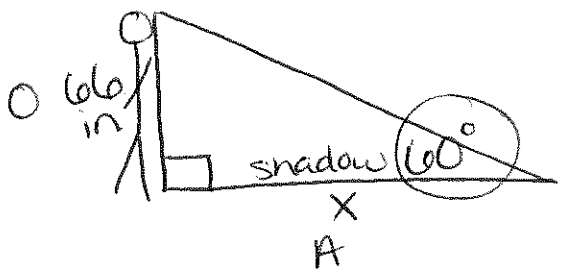
$\tan\theta = \frac{12}{50}$

$\theta = \tan^{-1}\left(\frac{12}{50}\right)$

$\theta = 13.496°$

13° ← nearest whole #

17. A 66 inch tall person walking down the street notices his shadow. If the angle of elevation from the tip of the shadow to the sun is 60°, what is the length of the shadow (round to 2 decimal places)?



$\tan\theta = \frac{O}{A}$

$\tan 60 = \frac{66}{x}$

$x = \frac{66}{\tan 60}$

$x = 22\sqrt{3}$

$x = 38.105\text{ in}$

38.11in ← nearest 2 dec.