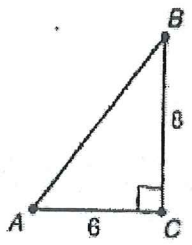
Name: Key Hour: _____

Trigonometry Homework #1

In 1 – 4, find the sine, cosine, and tangent of the acute angles of the triangle. (Hint: Use the Pythagorean Theorem to solve for the unlabeled side.)

1.



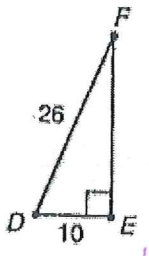
AB= 10

Sin A= $\frac{4}{5}$

Cos A= $\frac{3}{5}$

Tan A= $\frac{4}{3}$

2.



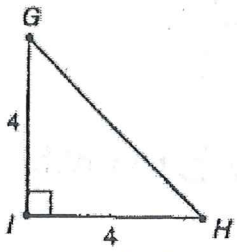
FE= 24

Sin F= $\frac{5}{13}$

Cos F= $\frac{12}{13}$

Tan F= ~~$\frac{5}{12}$~~ $\frac{5}{12}$

3.



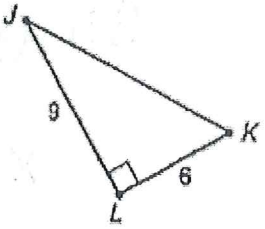
GH= $4\sqrt{2}$

Sin H= $\frac{\sqrt{2}}{2}$

Cos G= $\frac{\sqrt{2}}{2}$

Tan G= 1

4.



JK= $3\sqrt{13}$

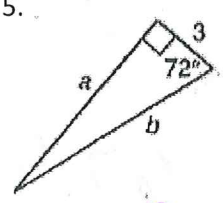
Sin J= $\frac{2\sqrt{13}}{13}$

Cos J= $\frac{3\sqrt{13}}{13}$

Tan K= $\frac{3}{2}$

In 5 – 8, find the length of the labeled sides (the missing variables).

5.



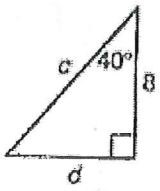
$\tan 72 = \frac{a}{3}$

$a = 9.23$

$\cos 72 = \frac{3}{b}$

$b = 9.71$

6.



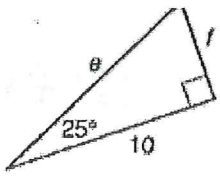
$\cos 40 = \frac{8}{c}$

$c = 10.44$

$\tan 40 = \frac{d}{8}$

$d = 6.71$

7.



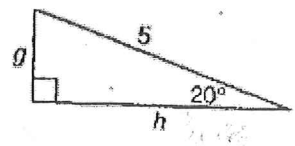
$\tan 25 = \frac{t}{10}$

$t = 4.66$

$\cos 25 = \frac{10}{e}$

$e = 11.03$

8.



$\cos 20 = \frac{h}{5}$

$h = 4.70$

$\sin 20 = \frac{g}{5}$

$g = 1.71$

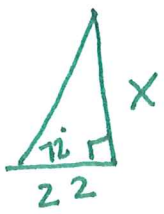
9. A train is traveling up a slight grade with an angle of inclination of only 2 . After traveling 1 mile, what is the vertical change in feet?

$\sin(2^\circ) = \frac{x}{1}$

$x = 0.03 \text{ miles} \times 5280 \text{ ft} = 158.4 \text{ ft}$

In 10 & 11, use the figure of the lighthouse.

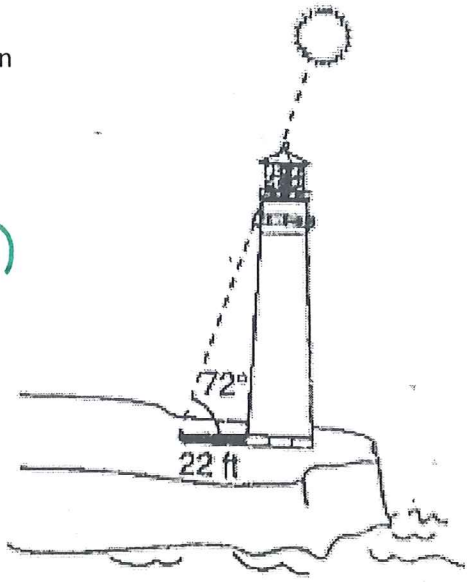
10. At 2 p.m., the shadow of a lighthouse is 22 feet long and the angle of elevation is 72 . Find the height of the lighthouse.



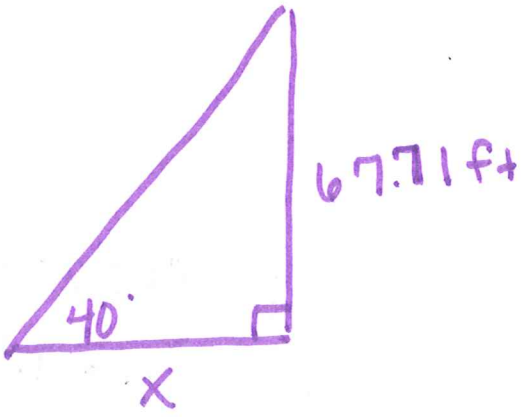
$\tan(72^\circ) = \frac{x}{22}$

$x = 22 \tan(72)$

$x = 67.71 \text{ ft}$



11. At 6 p.m., the angle of elevation (bottom angle in image) of the sun is 40 . Find the length of the shadow cast by the lighthouse.



$\tan(40) = \frac{67.71}{x}$

$x \tan(40) = 67.71$

$x = 80.695 \text{ ft}$