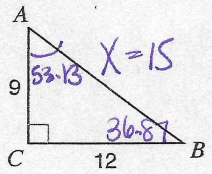
AAT - Right Triangle Trigonometry (13.1) Name I am a key!

Worksheet #2 - Solving Right Triangles

Date_____ Period____

Solve each triangle. Round answers to the nearest tenth.

1)



$9^2+12^2=X^2$

$81+144=X^2$

$\sqrt{225}=\sqrt{X^2}$

$X=15$

$\tan A=\frac{12}{9}$

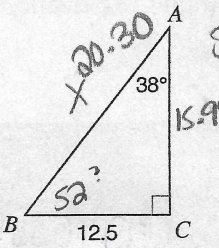
$A=\tan^{-1}\left(\frac{12}{9}\right)$

$A=53.13°$

$90+53.13=143.13$

$180-143.13=36.87$

2)



$\sin 38=\frac{12.5}{x}$

$x=\frac{12.5}{\sin 38}$

$x=20.30$

$(12.5)^2+y^2=(20.30)^2$

$y^2=412.09-156.35$

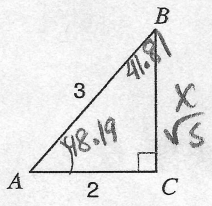
$\sqrt{y^2}=\sqrt{255.74}$

$y=15.99$

$90+38=128$

$180-128=52°$

3)



$3^2=2^2+x^2$

$9-4=x^2$

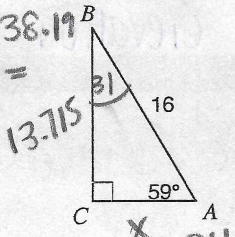
$x=\sqrt{5}$

$\cos A=\frac{2}{3}$

$A=\cos^{-1}\left(\frac{2}{3}\right)$

$A=48.19$

4)



$90+48.19=138.19$

$180-138.19=41.81$

$\cos 59=\frac{x}{16}$

$16\cos 59=x$

$x=8.24$

$90+59=149$

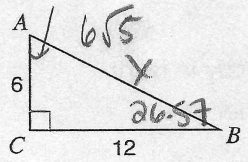
$180-149=31°$

$y^2+(8.24)^2=16^2$

$y^2=\sqrt{256-67.8976}$

$y=13.715$

5) 63.43



$6^2+12^2=x^2$

$36+144=x^2$

$\sqrt{x^2}=\sqrt{180}$

$\sqrt{10}\cdot\sqrt{18}$

$\sqrt{5}\cdot\sqrt{2}\quad\sqrt{9}\cdot\sqrt{2}$

$x=2\cdot 3\cdot\sqrt{5}$

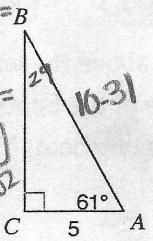
$x=6\sqrt{5}$

$\tan B=\frac{6}{12}$

$B=\tan^{-1}\left(\frac{6}{12}\right)$

$B=26.57$

6)



$90+26.57=116.57$

$180-116.57=63.43$

$61+90=151$

$180-151=29°$

$\tan 61=\frac{x}{5}$

$5\tan 61=x$

$x=9.02$

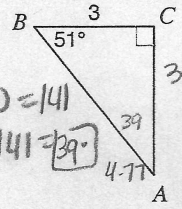
$5^2+(9.02)^2=y^2$

$25+81.36=y^2$

$\sqrt{106.36}=\sqrt{y^2}$

$y=10.31$

7)



$51+90=141$

$180-141=39°$

$\cos 51=\frac{3}{x}$

$x=\frac{3}{\cos 51}$

$x=4.77$

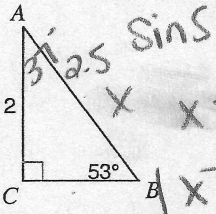
$3^2+y^2=(4.77)^2$

$y^2=22.75-9$

$y=\sqrt{13.75}$

$y=3.71$

8)



$\sin 53=\frac{2}{x}$

$x=\frac{2}{\sin 53}$

$x=2.5$

$2^2+y^2=2.5^2$

$y^2=6.25-4$

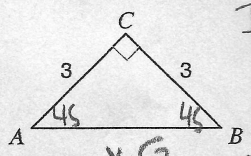
$\sqrt{y^2}=\sqrt{2.25}$

$y=1.5$

$90+53=143$

$180-143=37°$

9)



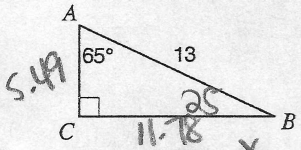
Isoceles Δ

45-45-90

$x\sqrt{2}$

$3\sqrt{2}$

10)



$65+90=155$

$180-155=25°$

$\sin 65=\frac{x}{13}$

$13\sin 65=x$

$x=11.78$

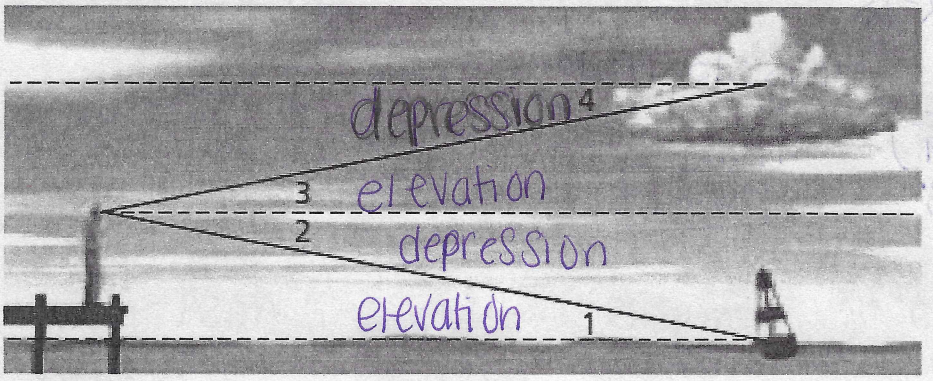
$y^2+11.78^2=13^2$

$y^2=\sqrt{169-138.77}$

$y=5.49$

Name: _____

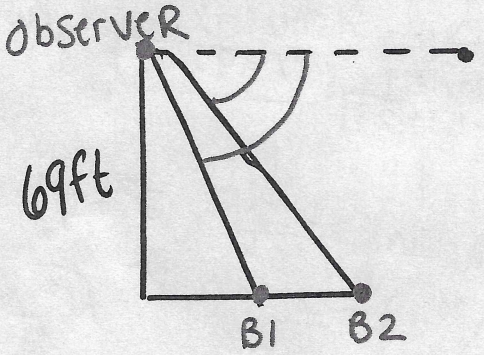
8.4 Angles of Elevation and Angles of Depression



Angle of Elevation: The angle formed by a horizontal line & a point above the line

Angle of Depression: The angle formed by " " and a point below the line.

1. An observer in a lighthouse is 69 ft above the water. He cites two points in the water exactly in front of him. The angle of depression to one of the boats is 48°.The angle of depression to the other boat is 22°. What is the distance between the two boats? Round to the nearest foot.



2. The Seattle Space Needle casts a 67m shadow. If the angle of elevation from the tip of the shadow to the top of the Space Needle is 70°, how tall is the space needle? Round to the nearest meter.

$\tan 70 = \frac{x}{67}$

$67 \tan 70 = x$

$x = 184.08$

$\approx 184m$