Name: _____ **KEY** _____

Date: _____ Period: ____

Section 10.1

1. Use your calculator to find each trigonometric ratio. <u>Round to the nearest hundredth.</u>

   two decimal places.

   a. $\tan 84° = 9.51$
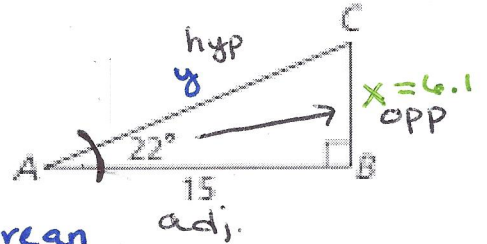
   b. $\cos 13° = 0.97$

2. Find each length. <u>Round to the nearest tenth.</u>

   one decimal place.

   a. CB

   $15 \cdot \tan 22 = \dfrac{CB}{15} \cdot 15$

   $\boxed{6.1 = CB}$

   b. AC → could do sin, cos, or pythagorean thm.

   $\sin 22 = \dfrac{6.1}{AC} \rightarrow \boxed{AC = 16.3}$ (if you did something different you might get about 16.2 and thats ok!)

   hyp — y, x=6.1 opp, 22°, 15 adj.

3. Use your answers from #2 to write each trigonometric ratio as a fraction and as a decimal rounded to the nearest hundredth.

   a. $\sin A = \dfrac{o}{h}$

   $= \dfrac{6.1}{16.3} = .374$

   b. $\cos A = \dfrac{a}{h}$

   $= \dfrac{15}{16.3} = 0.920$

   c. $\tan C = \dfrac{o}{a}$ *going from c!*

   $= \dfrac{15}{6.1} = 2.459$

Section 10.2

1. Use your calculator to find each angle measure to the <u>nearest degree.</u> *whole #.*
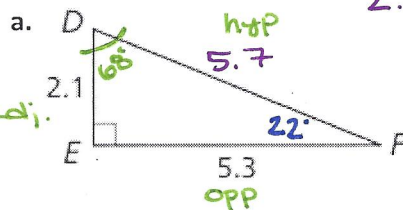
   a. $\cos^{-1}(0.97)$

   $14°$

   b. $\tan^{-1}(2)$

   $63°$

   c. $\sin^{-1}(0.59)$

   $36°$

*Remember there are many different ways to solve a triangle.

2. Solve the right triangles.

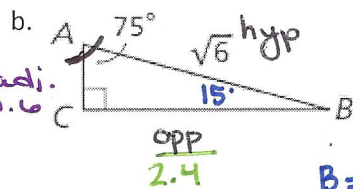   a. *D, hyp 5.7, 2.1 adj., E, 5.3 opp, 22°, F, 68°*

   $2.1^2 + 5.3^2 = DF^2$

   $32.5 = DF^2$

   $\boxed{5.7 = DF}$

   $\cos^{-1} \cos D = \dfrac{2.1}{5.7} \cos^{-1}$

   $D = \cos^{-1}\left(\dfrac{2.1}{5.7}\right) = \boxed{68°}$

   $F = 180 - 90 - 68 = \boxed{22°}$

   b. *A, 75°, $\sqrt{6}$ hyp, adj. 0.6 C, 15°, opp 2.4, B*

   $\sin 75 = \dfrac{CB}{\sqrt{6}}$

   $\boxed{2.4 = CB}$

   $\cos 75 = \dfrac{AC}{\sqrt{6}}$

   $\boxed{0.6 = AC}$

   $B = 90 - 75 = \boxed{15°}$

3. The coordinates of the vertices of $\triangle MNP$ are M(-3, -2), N(-3, 5), and P(6, 5). Find the side lengths to the nearest hundredth and the angle measures to the nearest degree.

9 adi.

38°

11.4 hyp

7 opp

5°

$7^2 + 9^2 = MP^2$

$130 = MP^2$

$11.4 = MP$

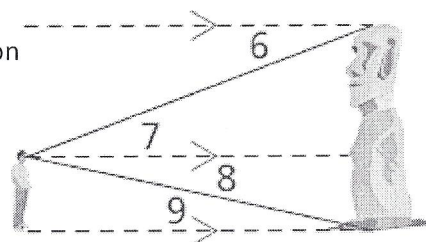$\tan^{-1} \tan P = \frac{7}{9} \tan^{-1}$

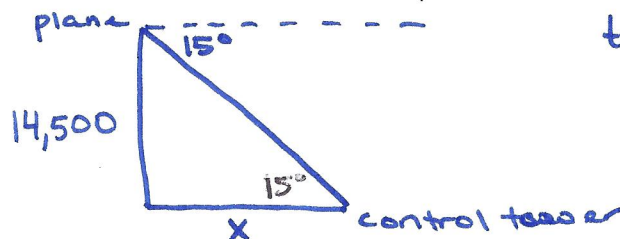$P = \tan^{-1}\left(\frac{7}{9}\right)$

$P = 38°$

$M = 90 - 38$

$M = 52°$

Section 10.3

1. Classify each angle as an angle of elevation or angle of depression
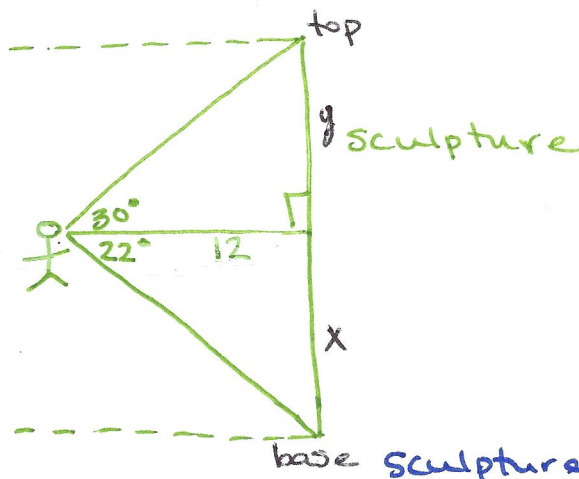
   a. ∠6 depression

   b. ∠9 elevation

2. A plane is flying at an altitude of 14,500 ft. The angle of depression from the plane to a control tower is 15°. What is the horizontal distance from the plane to the tower? Round to the nearest foot.

   plane

   15°

   14,500

   15°

   X

   control tower

   $\tan 15 = \dfrac{14500}{x}$

   $x = 54,115 \text{ ft.}$

3. A woman is standing 12 feet from a sculpture. The angle of elevation from her eye to the top of the sculpture is 30°, and the angle of depression to its base is 22°. How tall is the sculpture to the nearest foot?

   top

   y sculpture

   30°

   22°

   12

   X

   base

   $\tan 30 = \dfrac{y}{12}$

   $6.9 = y$

   $\tan 22 = \dfrac{x}{12}$

   $4.8 = x$

   sculpture $= x + y = 6.9 + 4.8$

   $= 11.7$ or 12 ft.