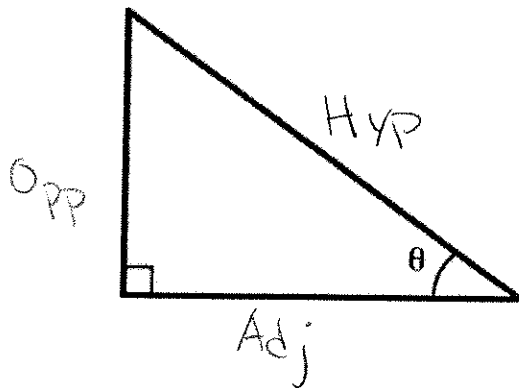


LT 1: Communication	LT 1	LT 2	LT 4	LT 5
LT 2: Patterns/Modeling				
LT 4: Solving				
LT 5: Geometry				

Using the words Hypotenuse, Adjacent, and Opposite, fill in the ratios and the sides of the triangle below:

Sine = $\frac{\text{Opposite}}{\text{Hypotenuse}}$ Cosine = $\frac{\text{Adjacent}}{\text{Hypotenuse}}$ Tangent = $\frac{\text{Opposite}}{\text{Adjacent}}$



1. A right triangle is shown below. Match each trigonometric function on the left with its equivalent ratio on the right. It is possible to choose a ratio more than once. It is possible that some ratios will not be used at all.

e 1. $\sin(A) = \frac{6}{\sqrt{52}}$

a. $\frac{2}{3} = \frac{4}{6}$

c 2. $\cos(A) = \frac{4}{\sqrt{52}}$

b. $\frac{3}{2} = \frac{9}{6}$

b 3. $\tan(A) = \frac{6}{4} = \frac{3}{2}$

c. $\frac{4}{\sqrt{52}}$

c 4. $\sin(B) = \frac{4}{\sqrt{52}}$

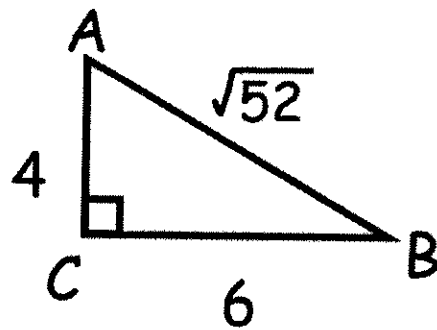
d. $\frac{\sqrt{52}}{4}$

e 5. $\cos(B) = \frac{6}{\sqrt{52}}$

e. $\frac{6}{\sqrt{52}}$

a 6. $\tan(B) = \frac{4}{6} = \frac{2}{3}$

f. $\frac{\sqrt{52}}{6}$



2. If you know that $\sin(A) = \frac{13}{16}$, match each of the sides and angles with their correct measurements below. All measurements have been rounded to the nearest tenth. Make sure to label your triangle.

14 1. AB =

$a^2 + 13^2 = 16^2$

13 2. BC =

$a^2 + 169 = 256$
 $-169 \quad -169$

9.3 3. AC =

$\sqrt{a^2} = \sqrt{87}$

54.3 4. $m\angle A =$

$a = \sqrt{87} = 9.3$

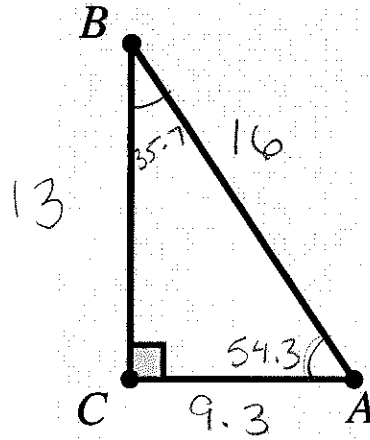
35.7 5. $m\angle B =$

90 6. $m\angle C =$

$\sin(A) = \frac{13}{16}$

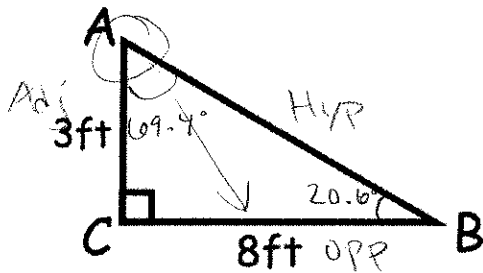
$A = \sin^{-1}\left(\frac{13}{16}\right)$

$A = 54.3^\circ$



$m\angle B = 180 - 90 - 54.3 = 35.7$

3. Find all missing sides and angles from the following triangles. Show all of your work:



AB = 8.5

$m\angle A =$ 69.4

$m\angle B =$ 20.6

$3^2 + 8^2 = x^2$

$9 + 64 = x^2$

$\sqrt{73} = x$

$8.5 = x$

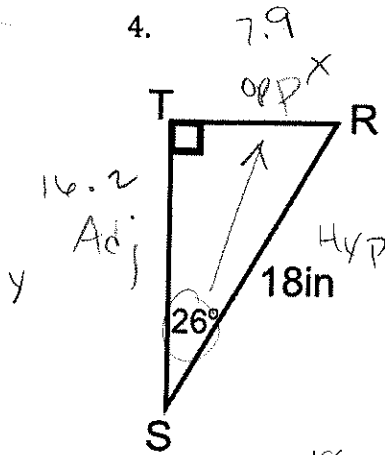
$\tan(A) = \frac{8}{3}$

$A = \tan^{-1}\left(\frac{8}{3}\right)$

$A = 69.4^\circ$

$m\angle B = 180 - 90 - 69.4 = 20.6$

4.



$$m\angle R = 180 - 90 - 26 = 64$$

$$18 \cdot \sin(26) = \frac{x}{18} \cdot 18$$

$$18 \sin(26) = x$$

$$7.9 = x$$

$$TS = \frac{16.2}{\quad}$$

$$TR = \frac{7.9}{\quad}$$

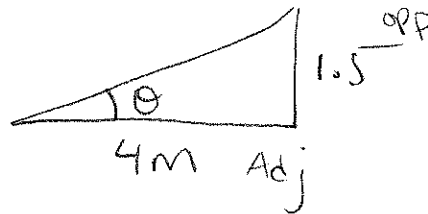
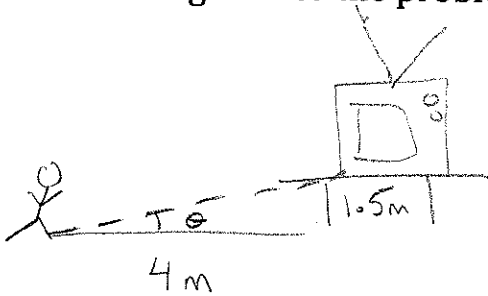
$$m\angle R = \underline{64^\circ}$$

$$18 \cdot \cos(26) = \frac{y}{18} \cdot 18$$

$$18 \cos(26) = y$$

$$16.2 = y$$

5. Barry Allen is getting ready for the premier of the Flash on TV. He is sitting 4 meters from the TV, and his TV is 1.5 meters off the ground. What is the angle of elevation from the ground to the TV? Round to the nearest tenths and draw a diagram for the problem.

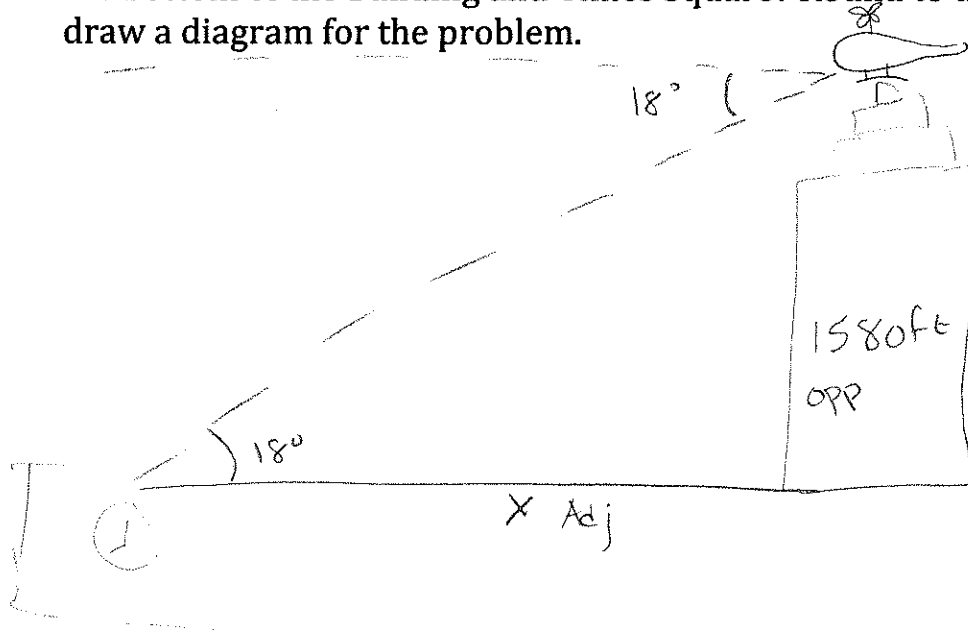


$$\tan(\theta) = \frac{1.5}{4}$$

$$\theta = \tan^{-1}\left(\frac{1.5}{4}\right)$$

$$\theta = \underline{20.6^\circ}$$

6. Tori the helicopter pilot is flying from a helipad on the top of the Empire State Building, to the middle of Times Square. Her angle of depression is 18 degrees and the Empire State Building is 1580ft. What is the distance between the bottom of the building and Times Square? Round to the nearest tenths and draw a diagram for the problem.



↑
"Time Square"
I'm funny

$$X \cdot \tan(18) = \frac{1580}{X} \cdot X$$

$$\frac{X \cdot \tan(18)}{\tan(18)} = \frac{1580}{\tan(18)}$$

$$X = \frac{1580}{\tan(18)}$$

$$X = 4862.7 \text{ ft}$$