<u>Labeling Δ's - Opp., Adj., Hyp.</u>
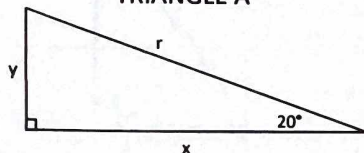
opp

Hyp

adj

right angle

"perspective" or "selected angle"

adj

Hyp
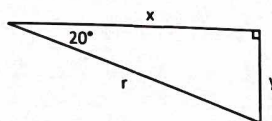
opp.
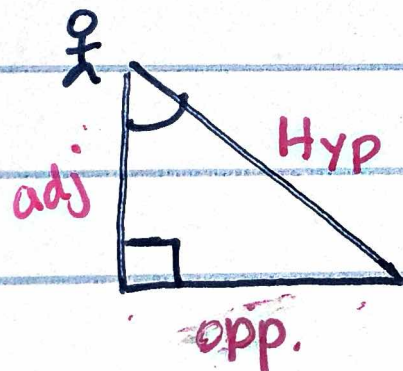
TRIG RATIOS INVESTIGATION

1. For each of the triangles below, measure the 3 sides to the nearest centimeter and record your measurements of the lines provided.
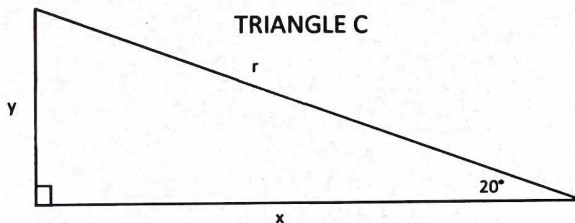
TRIANGLE A

TRIANGLE A
x = 4.3
y = 1.6
r = 4.6

TRIANGLE B

TRIANGLE B
x = 3.3
y = 1.2
r = 3.5

TRIANGLE C

TRIANGLE C
x = 6.9
y = 2.5
r = 7.3

2. For each triangle, find the indicated values. Round your answers to four decimal points.

TRIANGLE A	TRIANGLE B	TRIANGLE C
$\frac{x}{r}$ = .9348	$\frac{x}{r}$ = .9429	$\frac{x}{r}$ = .9452
$\frac{y}{r}$ = .3478	$\frac{y}{r}$ = .3429	$\frac{y}{r}$ = .3425
$\frac{y}{x}$ = ~~.3721~~ .3721	$\frac{y}{x}$ = .3636	$\frac{y}{x}$ = .3623

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

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

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

$\sin M = \frac{3}{5}$

$\cos M = \frac{4}{5}$

$\tan M = \frac{3}{4}$

3. What do you notice about the answers for question 2 from Triangle A, Triangle B, and Triangle C?

$\frac{x}{r}$ is about the same for all.

$\frac{y}{r}$ " " " " " "

$\frac{y}{x}$ " " " " " ".

In each of the three right triangles the there is a 20°angle, which we will consider to be the "selected" angle.

4. For each of the three right triangles, which of the labeled sides would be the hypotenuse? ___r___

5. In relation to the 20°, where are you able to find the following sides:

x: __adjacent__   y: __opposite__

For the following questions you will need your graphing calculator. The calculator must be IN DEGREE MODE before you complete the following problems.

THERE ARE THREE TRIGONOMETRIC FUNCTIONS THAT ARE STUDIED IN MATH 2. THEY ARE SINE (ABBREVIATED SIN), COSINE (ABBREVIATED COS), AND TANGENT (ABBREVIATED TAN).

6. Find the values of the following expressions. Round each of the answers to four decimal places.

   a. Sin (20°) = .3420   b. Cos (20°) = .9397   c. Tan (20°) = .3640

   matches $\frac{y}{r}$ matches $\frac{x}{r}$ matches $\frac{y}{x}$

7. How do the answers for question 6 compare to the answers you found in question 2?

$$\text{sine} = \frac{\text{opposite}}{\text{hypotenuse}} \qquad \text{cosine} = \frac{\text{adjacent}}{\text{hypotenuse}}$$

$$\text{tangent} = \frac{\text{opposite}}{\text{adjacent}}$$

SOH CAH TOA

"Some old Horse caught another horse taking oats away."