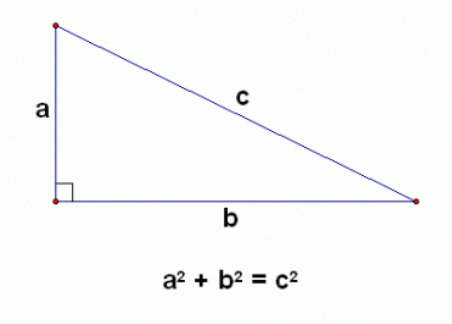
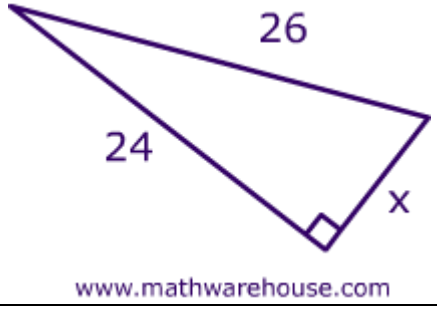
UNIT 6 STUDY SHEET - TRIGONOMETRY

TOPIC #1: PYTHAGOREAN THEOREM



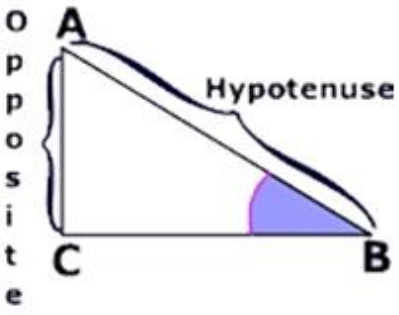
Where the 'c' value is *ALWAYS* the *HYPOTENUSE* (across from the right angle)!

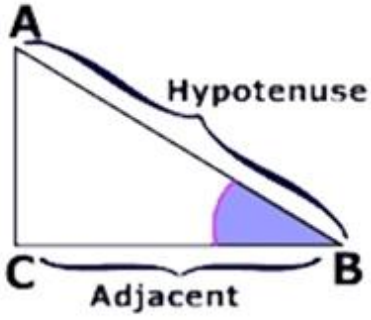
HOW DO I KNOW WHEN TO USE IT?	EXAMPLE
• We use Pythagorean Theorem when we have 2 sides of a right triangle and are looking for the 3rd side! • You can ***NOT*** use Pythagorean Theorem to find angles! • Pythagorean Theorem can ***ONLY*** be used in right triangles.	

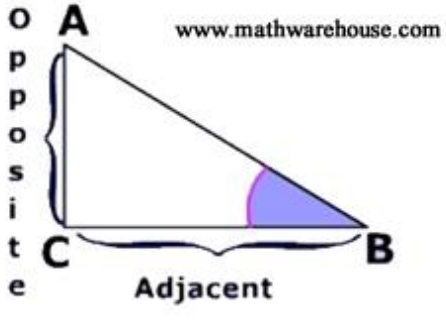
TOPIC #3: SOHCAHTOA/ANGLE OF ELEVATION AND DEPRESSION

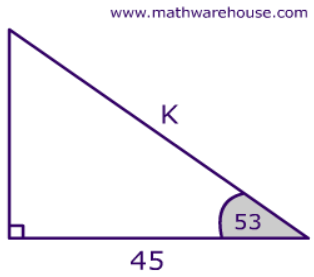
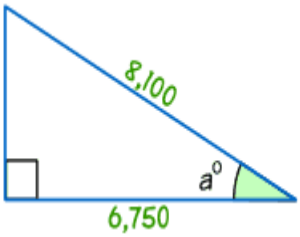
We use SOHCAH TOA to find missing sides and angles of **RIGHT TRIANGLES**.

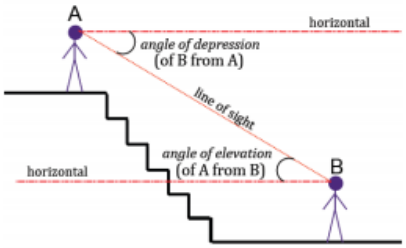
$$\sin(B) = \frac{opposite}{hypotenuse} \qquad \cos(B) = \frac{adjacent}{hypotenuse} \qquad \tan(B) = \frac{opposite}{adjacent}$$







HOW DO I KNOW WHEN TO USE IT?	EXAMPLE
TO FIND A MISSING SIDE: • If you are given one side and one angle and you are looking for another side of a right triangle, use SOHCAHTOA. • When you are finding a side, you cross multiply and solve for x.	
TO FIND A MISSING ANGLE: • If you are given two sides of a right triangle and you are looking for an angle, use SOHCAHTOA. • WHEN YOU ARE FINDING AN ***ANGLE*** YOU HAVE TO US E ***2ND*** IN YOUR CALCULATOR! ***DO NOT CROSS MULTIPLY!***	



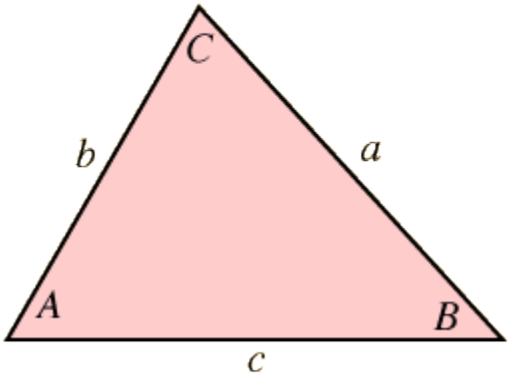
Angle of Elevation	Angle of Depression
The **angle of elevation** always located **INSIDE** & is measured from the **BOTTOM** of the triangle.	The **angle of depression** is always located **OUTSIDE** the triangle & is measured from **TOP** of the triangle.

THE ANGLE OF ELEVATION IS ALWAYS *EQUAL* TO THE ANGLE OF DEPRESSION BECAUSE ALTERNATE INTERIOR ANGLES ARE CONGRUENT!

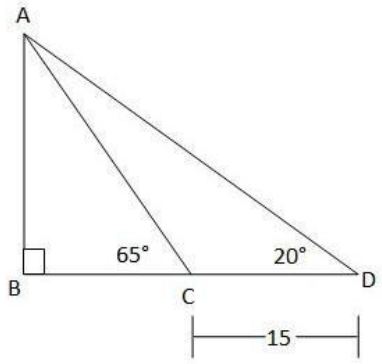
TOPIC#5: LAW OF SINES

- Law of Sines is an *alternative* to SOHCAHTOA when you have a right triangle.
- Law of Sines can also be used in ***ANY*** triangle.
- The **uppercase** letters always represent **ANGLES**.
- The **lowercase** letters always represent **SIDES**.
- The uppercase letter will always correspond with the same lowercase letter directly across from it.

$$\frac{a}{\sin A} = \frac{b}{\sin B} = \frac{c}{\sin C}$$



Law of Sines examples will typically look like this:



- Find all missing angles using **linear pairs** and **angles in a triangle** sum to 180°
- Find the **REFLEXIVE** side by using **law of sines** with the **obtuse triangle** first.
- Find the desired side (typically AB) using **law of sines or SOHCAHTOA** in the **right triangle** second.

TOPIC #6: COFUNCTIONS

If A and B are complementary angles (angles that sum to 90 degrees),

$$\boldsymbol{sinA = cosB}$$
$$\boldsymbol{cosA = sinB}$$

When $0° < \theta < 90°$, $sin(90° - \theta) = cos\theta$ and $sin\theta = cos(90° - \theta)$

Therefore, sine and *CO*sine are called *COFUNCTIONS*!