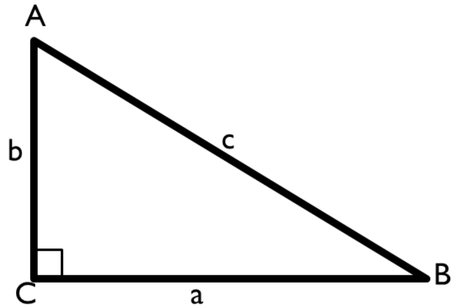
Pythagorean Theorem
For any right triangle, the square of the hypotenuse is equal to the sum of the squares of the other two sides.

$$c^2 = a^2 + b^2$$



Example Problem:
Find x.

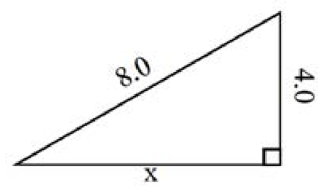
$$a^2 + b^2 = c^2$$

$$4.0^2 + x^2 = 5.0^2$$

$$16 + x^2 = 25$$

$$x^2 = 9$$

$$x = 3$$



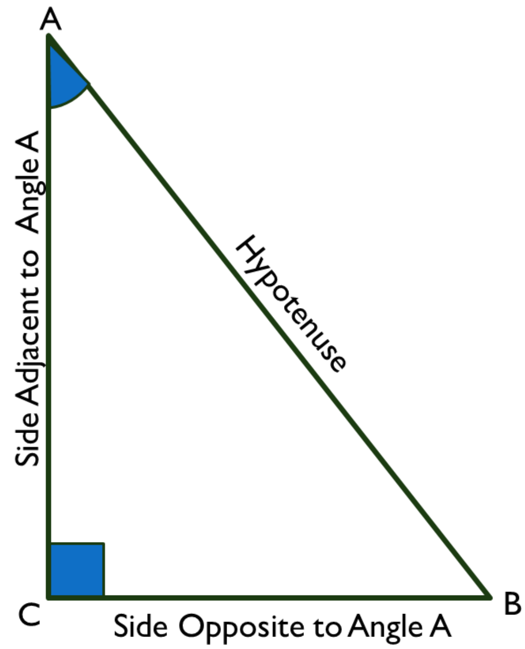
Terms - Right triangles

- Hypotenuse
  - The side opposite the right angle of the triangle
- Adjacent
  - The side that does form the given angle
- Opposite
  - The side that does not form the given angle

$$\sin A = \frac{\text{side opposite } < A}{\text{hypotenuse}} = \frac{a}{c}$$

$$\cos A = \frac{\text{side adjacent } < A}{\text{hypotenuse}} = \frac{b}{c}$$

$$\tan A = \frac{\text{side opposite } < A}{\text{side adjacent } < A} = \frac{a}{b}$$



Calculator Use:

To find the trigonometric values

1. Set your calculator to the desired mode of angle measure. Calculators generally have at least two angle modes:
2. Degrees (DEG) or Radians (RAD)
3. Press the appropriate function key (sin, cos, tan) and then enter the angle measure
4. Display the result by pressing the = or EN-TER key.

You Try:

A. sin 37°

B. cos 45 °

Calculator Use:
To find the trigonometric values

1. Set your calculator to the desired mode of angle measure (degrees or radians)
2. Select the appropriate inverse trigonometric function key or menu option (SIN^{-1}, COS^{-1}, or TAN^{-1}). Enter the trigonometric value and = or ENTER.

You Try:

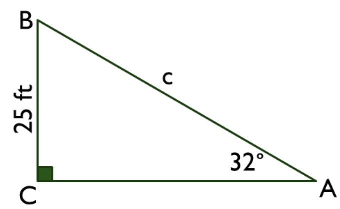
A. $\sin \theta = 0.8764$

B. $\cos \theta = 0.2345$

To Solve a Triangle:

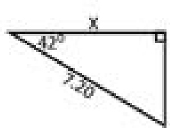
1. Identify the acute angle that is being used
2. Identify the hypotenuse, opposite side, and adjacent side in relation to the acute angle selected in Step 1
3. Write the appropriate trigonometric ratio
4. Solve for the unknown part.

You Try - Solve the for c.

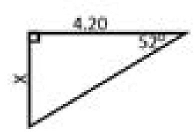


Practical Problems - Solve for x or θ.

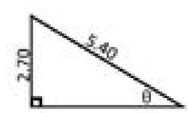
1.



2.



3.



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