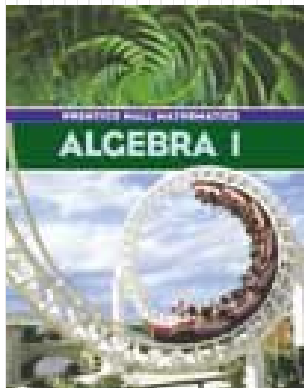
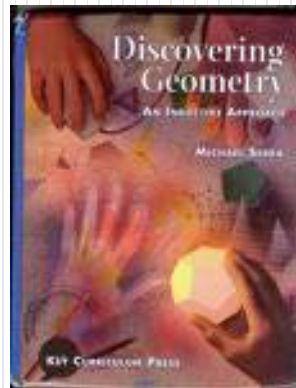


Mr. Northcutt's Math Classes Class Presentation

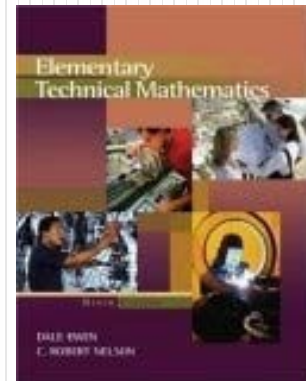
February 23, 2009 (106)



Math 1



Math 2



Applied Math



Math 1 – Daily Summary

- **Announcements**

- I have **Bus Duty** this week - will return to room at ~3:45
- **QUIZ: Sections 6.1 thru 6.4 on Friday**

- **Class Objectives – *What you should learn today!***

- QUIZ Review
- More work with Slope-Intercept Form of a Line
 - Finding Slope and y-intercept...from an equation, or a graph
 - Writing an Equation...given slope and y-intercept, or a graph
 - Graphing a Linear Equation
 - Word Problems using Linear Equations

- **Assignment**

- **Section 6-2: 2-56 EVEN, 59-64, 69-74**



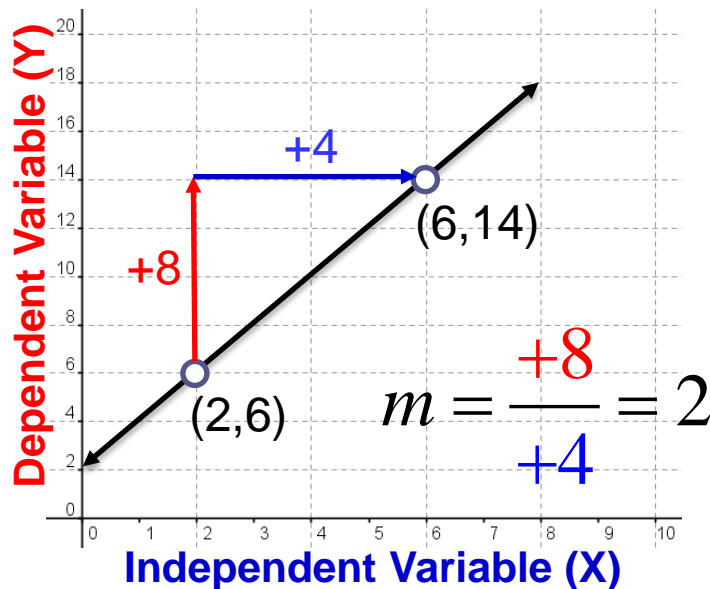
**Hand In HW
Tuesday in Class.
NO LATE HW!**



Slope (or Rate of Change)

- **Slope (or Rate of Change)** is a Ratio that compares the change in Two Variables:

$$\text{Rate of Change (Slope)} = \frac{\text{Change } \textcolor{red}{\text{Dependent}} \text{ Variable}}{\text{Change } \textcolor{blue}{\text{Independent}} \text{ Variable}}$$



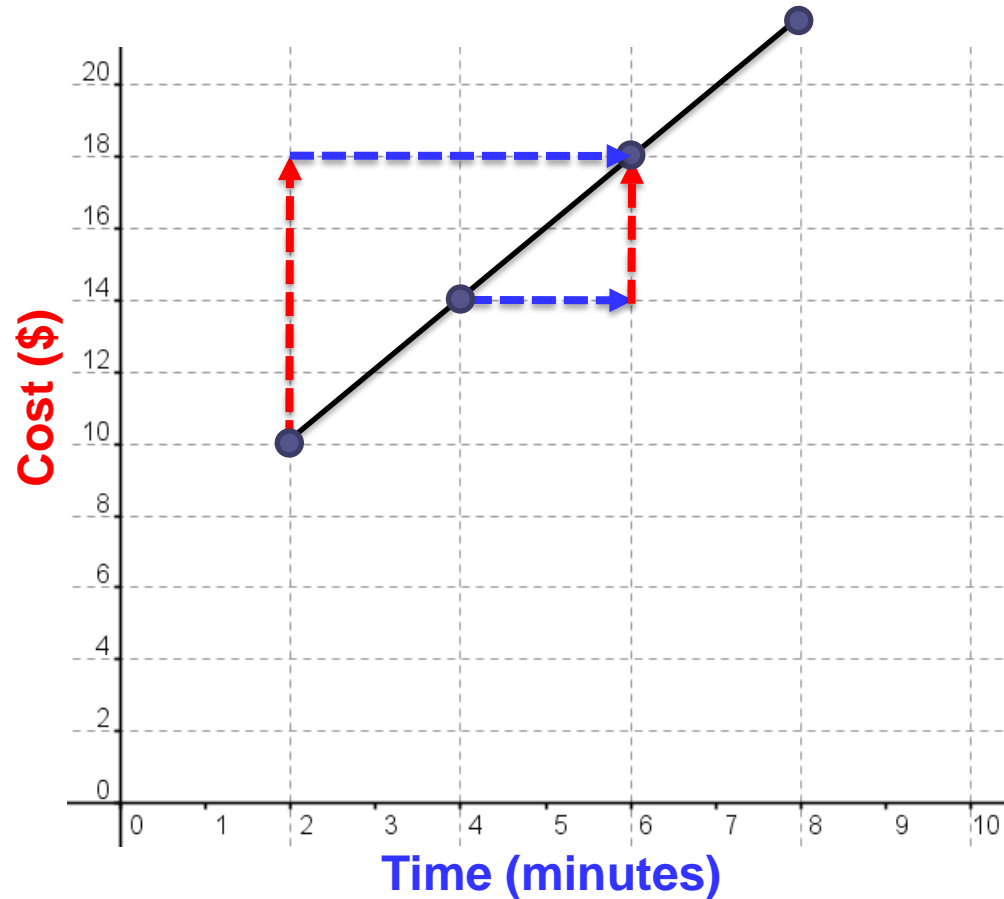
$$m = \frac{\text{rise} \updownarrow}{\text{run} \leftrightarrow} = \frac{\Delta y}{\Delta x} = \frac{y_2 - y_1}{x_2 - x_1}$$



Rate of Change (from Data)

- Find the Rate of Change (or Slope) of the data.

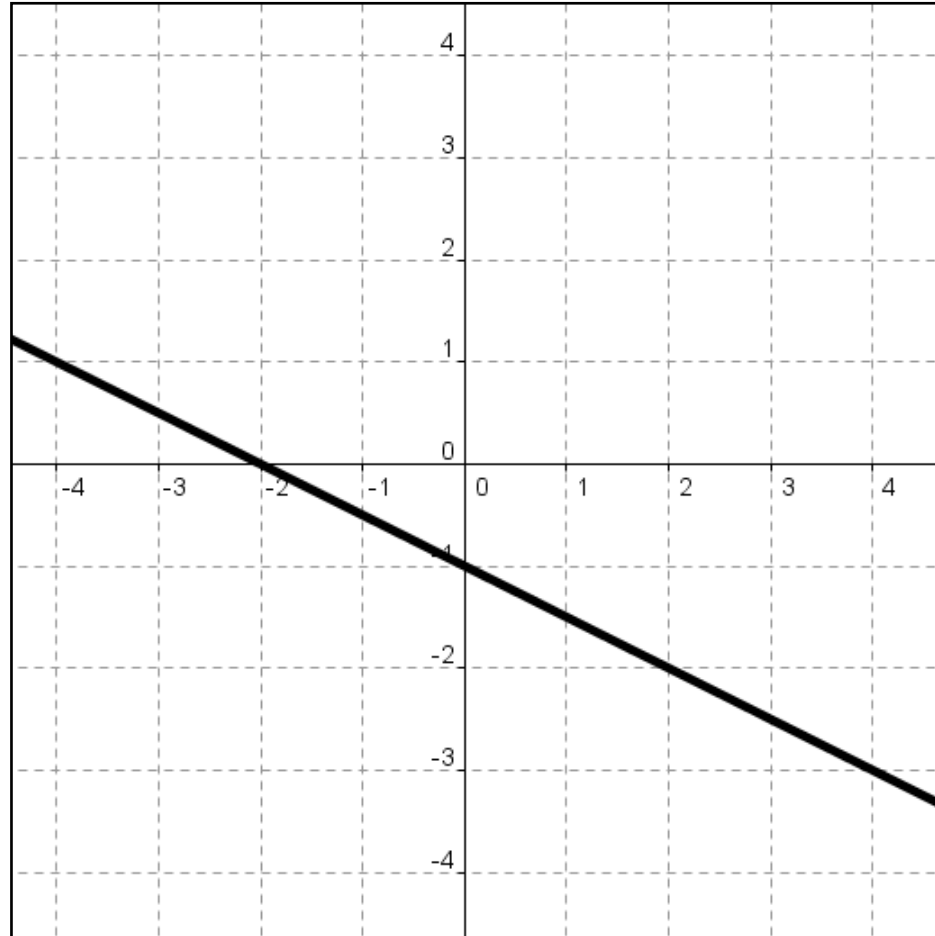
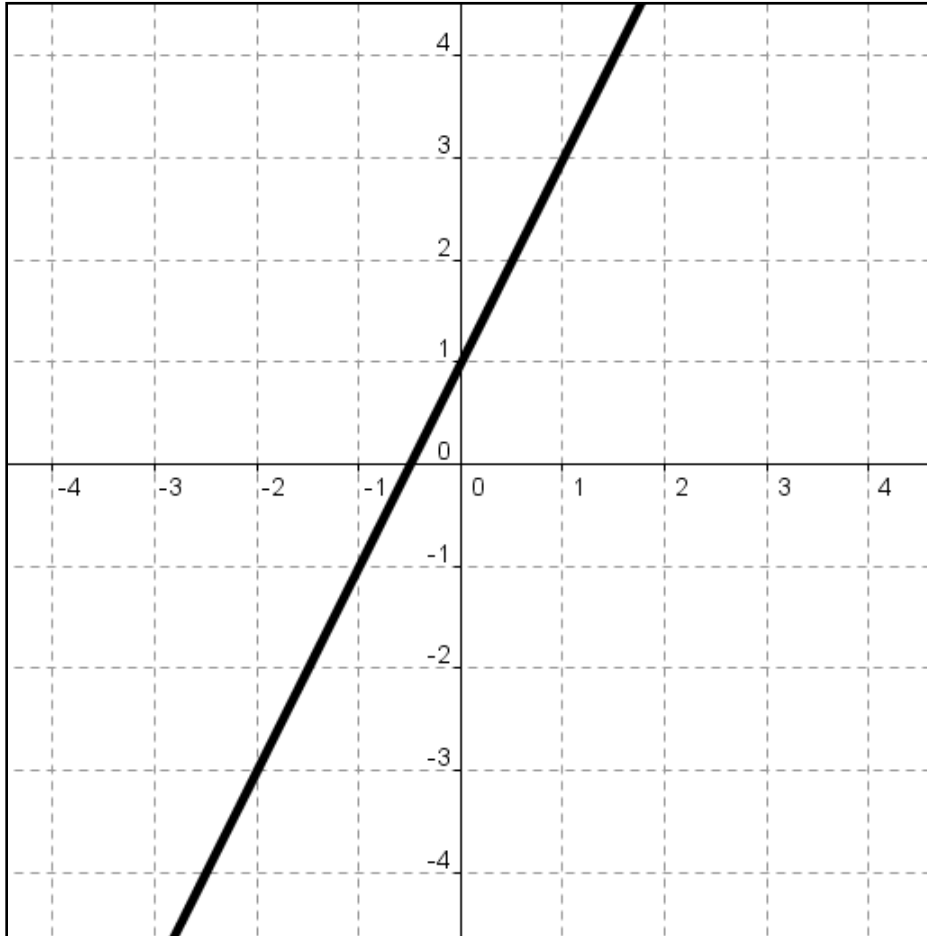
Time (min)	Cost (\$)
2 min.	\$10
4 min.	\$14
6 min.	\$18
8 min.	\$22



$$\text{Slope} = \frac{\$}{\text{min}}$$

Specify UNITS with Slope.

Find Slope from the Graph



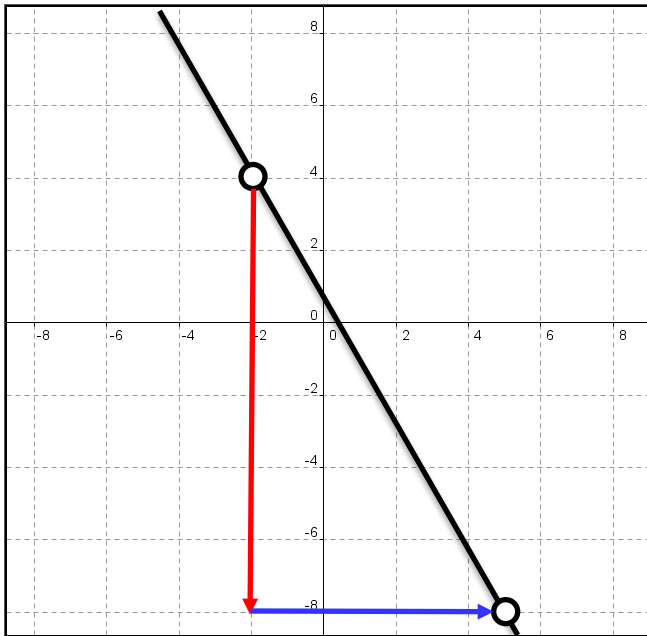
Find Slope Given Points

$$m = \frac{\text{rise}}{\text{run}} = \frac{\Delta y}{\Delta x} = \frac{y_2 - y_1}{x_2 - x_1}$$



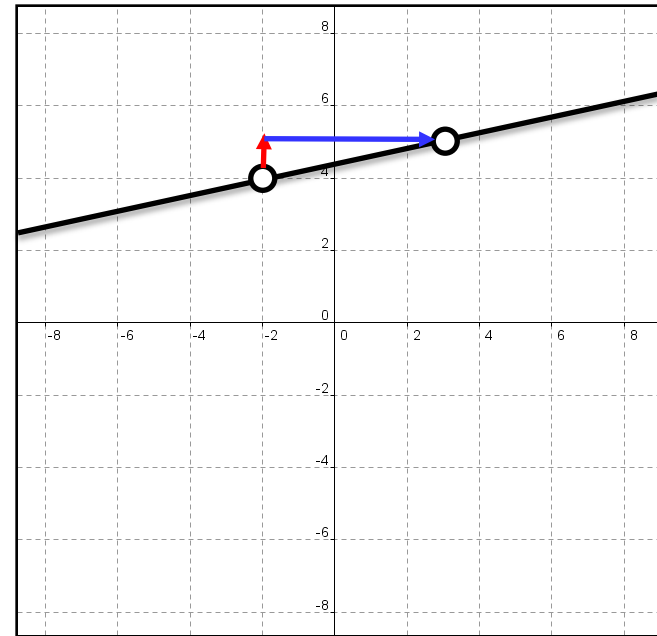
- $(-2, 4)$ & $(5, -8)$

$$m = \frac{-8 - 4}{5 - (-2)} = \frac{-12}{7} = -\frac{12}{7}$$



- $(-2, 4)$ & $(3, 5)$

$$m = \frac{5 - 4}{3 - (-2)} = \frac{1}{5}$$





Slope-Intercept Form of a Line

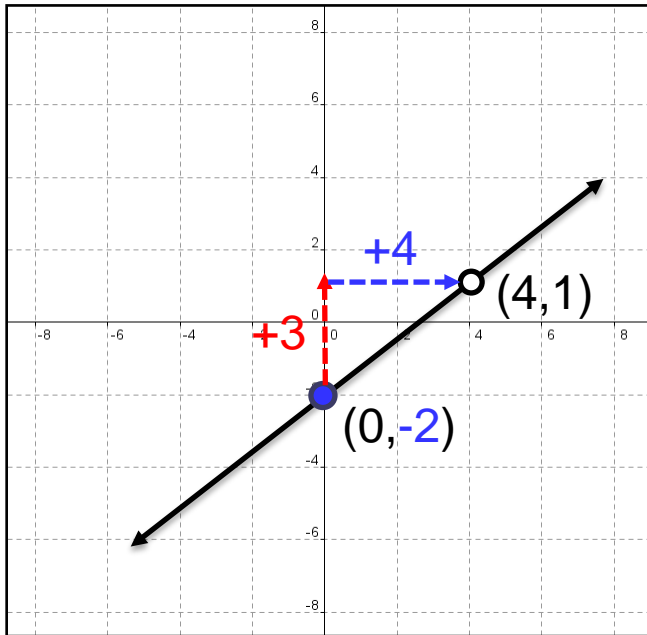
- Slope-Intercept Form (Equation) of a Line

$$y = \frac{3}{4}x - 2$$

$$y = mx + b$$

Slope

y-intercept





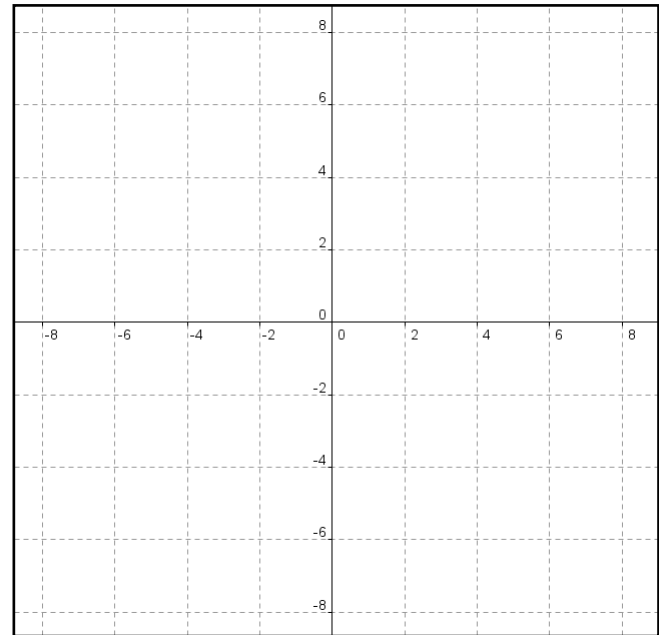
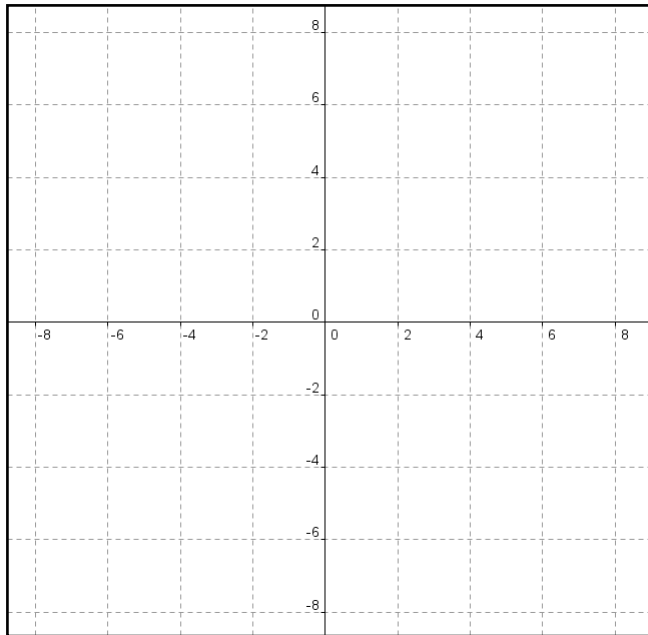
Slope & y-intercept from Equation

$$y = \frac{1}{2}x - 1$$

$$y + x = -1$$

$m =$ _____ ; $b =$ _____

$m =$ _____ ; $b =$ _____



$$y = mx + b$$



Math 2 – Daily Summary

- **Announcements**

- **Great Job on Quiz last week - You get a Reward!**
- I have **Bus Duty** this week - will return to room at ~3:45
- **QUIZ: Lessons 10.1 thru 10.6 on Friday**

- **Class Objectives – *What you should learn today!***

- QUIZ Review (very little!)
- Ability to Multiply & Simplify Square Roots
- Understand and Apply Properties of $(45^\circ-45^\circ)$ Right Triangle

- **Assignment**

- **Lesson 10.4: 1-21, 28**

Square Root Definition & Properties



- **DEFINITION: Square Root (r) of a Number (x)**

- A number r whose square is x .

$$r = \sqrt{x}$$

$$r^2 = (\sqrt{x})^2 = x$$

- **Multiplication Property of Square Roots**

$$\sqrt{xy} = \sqrt{x}\sqrt{y}$$

$$\sqrt{72} = \sqrt{36}\sqrt{2} = 6\sqrt{2}$$

- **Exponential Form of Square Roots**

$$\sqrt{x} = x^{1/2}$$

$$\sqrt{36} = 36^{1/2} = 6$$



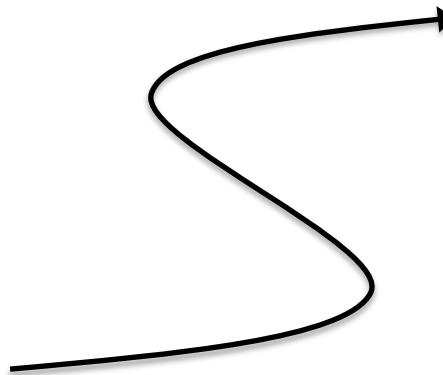
Example: Simplifying Square Roots

- Simplify. $\sqrt{722}$

1. Prime Factors

$$722$$
$$2 \cdot 361$$
$$2 \cdot 19 \cdot 19$$

2. Simplify Perfect Squares


$$\sqrt{2 \cdot 19 \cdot 19}$$
$$\sqrt{2} \cdot \sqrt{19^2}$$
$$19\sqrt{2}$$

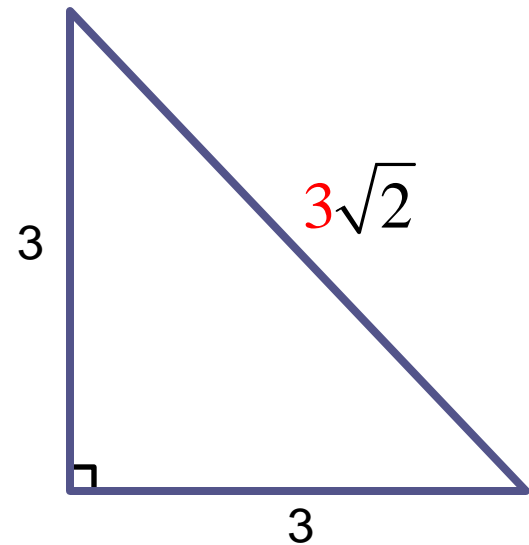
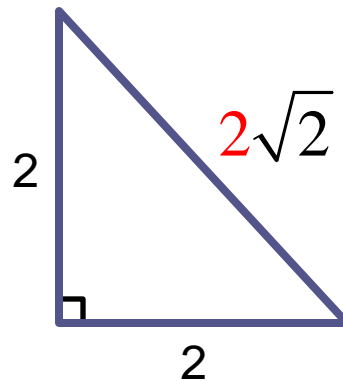
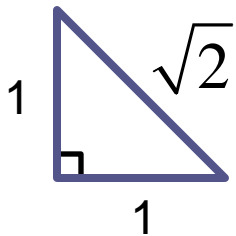
$$\sqrt{722} = 19\sqrt{2}$$



Isosceles Right Triangle Conjecture

- **Isosceles Right Triangle Conjecture**

- Given an isosceles right triangle with legs of length x , then the hypotenuse has length $x\sqrt{2}$.



How could you prove this?

Applied Math – Daily Summary



- **Announcements**

- I have **Bus Duty** this week - will return to room at ~3:45
- **QUIZ: Sections 13.1 thru 13.3 on Friday**

- **Class Objectives – *What you should learn today!***

- Review of Trigonometric Ratios (for Right Triangles)
 - Understand and apply the Pythagorean Theorem
 - Understand and apply Trigonometric Ratios to Right Triangles

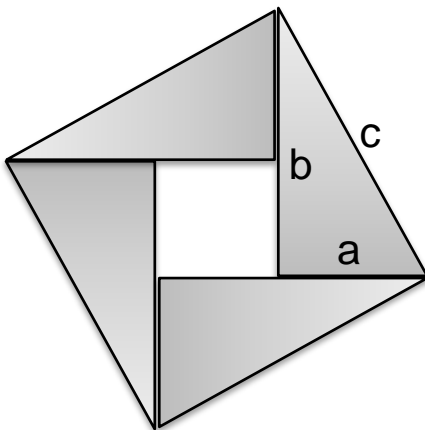
- **Assignment**

- Finish Math Caching Project - **Due TODAY!**
 - ***Send the Word file to me as an e-mail attachment***
- **Exercises 13.1:** 1-10, 12-24 by 3, 25-30, 33-48 by 3



Investigation

1. **FOLD** a sheet of paper in $\frac{1}{2}$ twice (two folds).
2. **CUT** the folded sheet straight across to create 4 congruent **RIGHT** triangles then cut to separate the 4 triangles.
3. **LABEL** the sides of each triangle (a, b and c - letting c be the longest side). Label each the same!
4. **ARRANGE** the triangle as shown below...



$$Area_{\text{Large Square}} = Area_{\text{Small Square}} + Area_{\text{Triangles}}$$

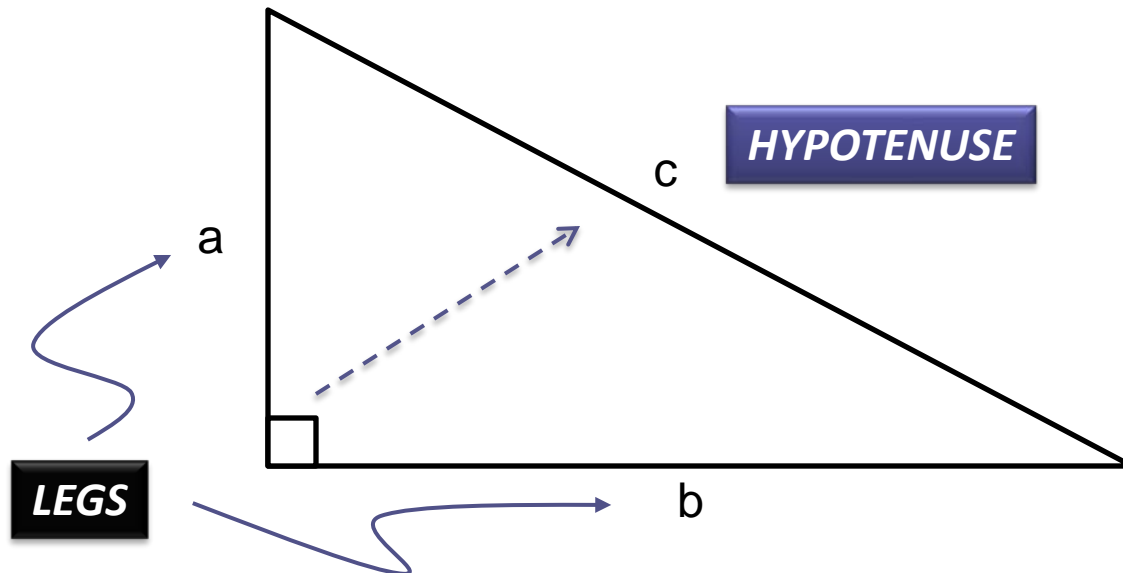


Pythagorean Theorem

- For **ANY RIGHT TRIANGLE:**

- If a and b are the lengths of the legs and c is the length of the hypotenuse, then:

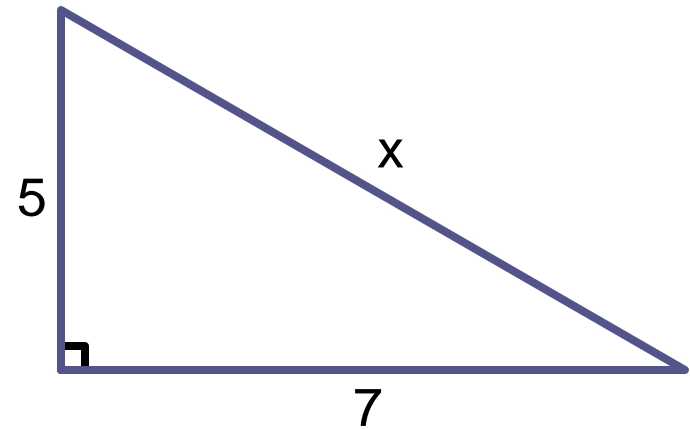
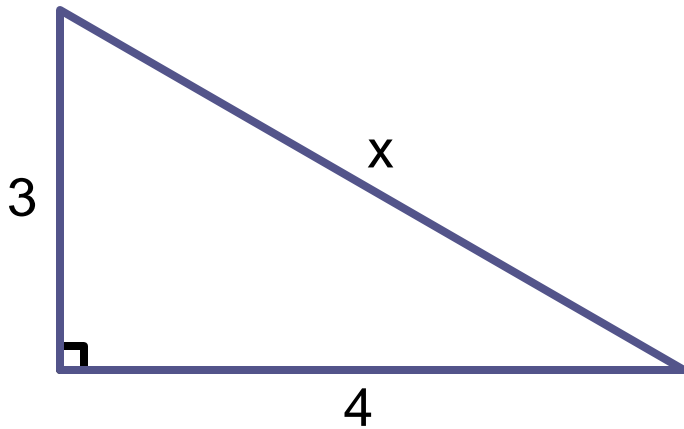
$$a^2 + b^2 = c^2$$





Examples:

- Find missing side length...



Trigonometric Ratios (Right Triangles)



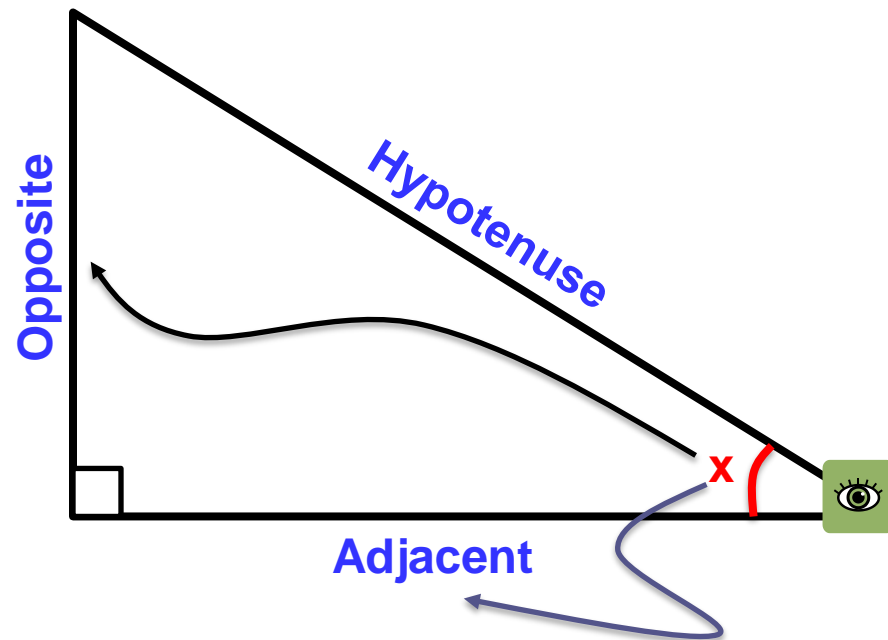
- Sine, Cosine & Tangent of an angle.

$$\sin \angle x = \frac{\textit{Opposite}}{\textit{Hypotenuse}}$$

$$\cos \angle x = \frac{\textit{Adjacent}}{\textit{Hypotenuse}}$$

$$\tan \angle x = \frac{\textit{Opposite}}{\textit{Adjacent}}$$

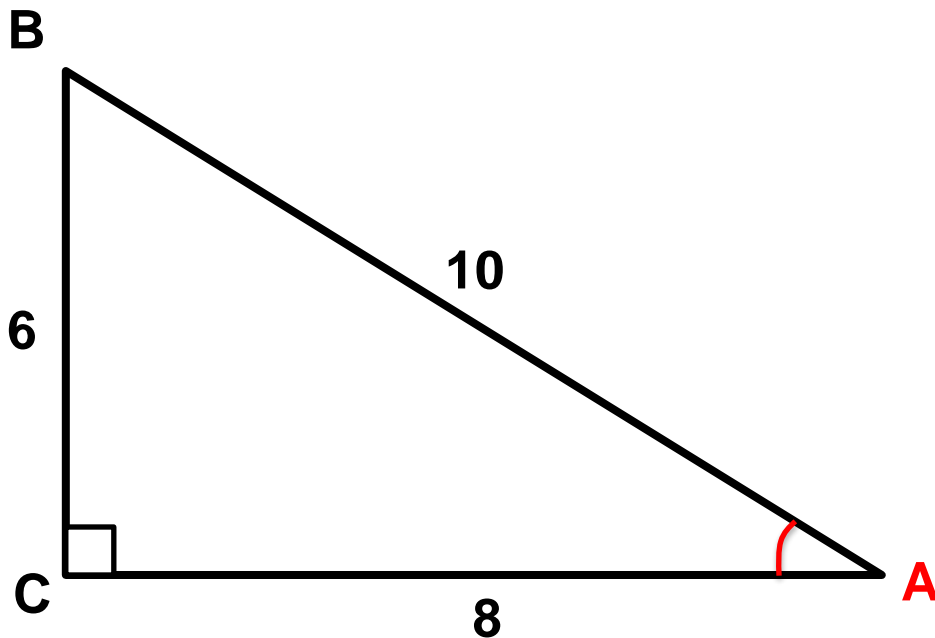
S
O
H
-
C
A
H
-
T
O
A



Examples



- Find $\sin \angle A$, $\cos \angle A$, $\tan \angle A$



$$\sin A = \underline{\hspace{2cm}}$$

$$\cos A = \underline{\hspace{2cm}}$$

$$\tan A = \underline{\hspace{2cm}}$$

S
O
H
-
C
A
H
-
T
O
A



Using Calculator for Trig. Functions

- Verify in **DEGREES** mode!
- Find the following:

$$\sin 60^\circ = \underline{\hspace{2cm}}$$

$$\cos 45^\circ = \underline{\hspace{2cm}}$$

$$\tan 30^\circ = \underline{\hspace{2cm}}$$