A. To set up a trigonometric function, you have to do or know the following things:
1. You must have a right angle triangle.
2. You must have at least two other pieces of information about that triangle:
   a) You have to know at least one side.
   b) If you know only one side, you must know one angle (90˚ doesn’t count).
3. You must choose one of the two other (not the 90˚) angles.
4. You need then to identify the three lines as being opposite, adjacent, or the hypotenuse relative to that specific angle.
5. Then you decide what piece of information on the triangle you want (what unknown angle or side are you looking for?).
6. Choose the proper trig function and set up the equation.
7. Solve for the unknown.

B. **Activity 1:** Each right triangle has a known angle and side, and a missing side. Determine the trig function required in order to determine the value of the missing side. The first one is done for you.

C. **Activity 2:** Go over how the missing side (hypotenuse) was determined.

1. We have a right angle triangle (see image to the right).
2. We know two pieces of information about it; one side is 12 cm and one angle is 65˚.
3. We will choose the 65˚ angle.
4. Relative to the 65˚ angle, the 12 cm line is the opposite, the bottom is the adjacent, and the longest side, across from the right angle, is of course the hypotenuse.
5. We want to know the length of the hypotenuse.
6. We will use the opposite (because we know it) and the hypotenuse (because that is the one we are looking for) – we won’t need the adjacent this time.
   a. Which trig function uses opposite and hypotenuse? Answer \( \sin \) (sin)
   b. What is the format for using \( \sin \)? Answer \( \sin \theta = \frac{\text{opposite}}{\text{hypotenuse}} \)
   c. Plug in the values. **IMPORTANT** – you will need access to a trig table
7. Solve the problem

The hypotenuse is 13.24 cm in length.
Homework:
1. In the space to the right copy out the word SohCahToa and the three associated formulas.
   Use Opp, Adj, and Hyp symbols.
2. Use a calculator or a set of trig tables and determine the values for the following values:
   a) \( \sin 10^\circ = \) ________
   b) \( \cos 10^\circ = \) ________
   c) \( \tan 10^\circ = \) ________
   d) \( \sin 25^\circ = \) ________
   e) \( \cos 65^\circ = \) ________
   f) \( \tan 45^\circ = \) ________
   g) \( \sin 85^\circ = \) ________
   h) \( \cos 90^\circ = \) ________
   i) \( \tan 87^\circ = \) ________
3. Part of the work is done for you. Rearrange the formula and solve for \( x \).
   a) \( \sin \theta = \frac{\text{opposite}}{\text{hypotenuse}} \)
   \( \sin 26^\circ = \frac{9 \text{ cm}}{x} \)
   b) \( \cos \theta = \frac{\text{adjacent}}{\text{hypotenuse}} \)
   \( \cos 51^\circ = \frac{x}{34 \text{ in}} \)
   c) \( \tan \theta = \frac{\text{opposite}}{\text{adjacent}} \)
   \( \tan 19^\circ = \frac{16 \text{ cm}}{x} \)
   d) \( \sin \theta = \frac{\text{opposite}}{\text{hypotenuse}} \)
   \( \sin 45^\circ = \frac{x}{21 \text{ in}} \)
   e) \( \cos \theta = \frac{\text{adjacent}}{\text{hypotenuse}} \)
   \( \cos 20^\circ = \frac{6.2 \text{ m}}{x} \)
   f) \( \tan \theta = \frac{\text{opposite}}{\text{adjacent}} \)
   \( \tan 30^\circ = \frac{x}{42 \text{ km}} \)
4. A triangle is given with two pieces of information. Determine opposite, adjacent, and hypotenuse. Choose the proper trig function, and set up the equation. Solve for the unknown. If you have trouble, refer to the front sheet on how to do this.