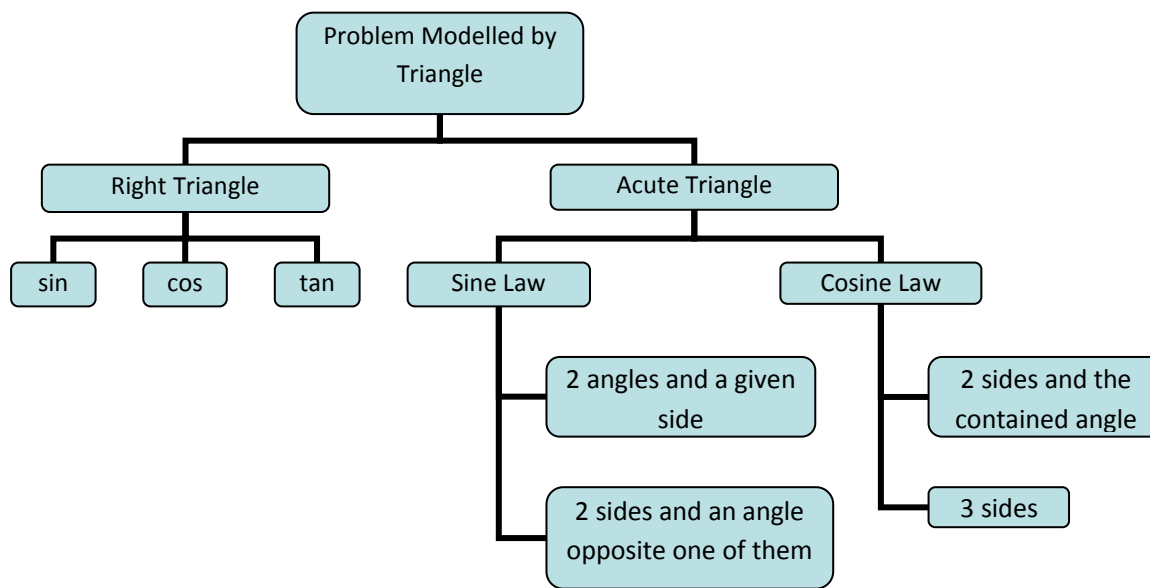


## ***Making Decisions Using Trigonometry***

Whenever you are working on problem-solving, it is very important to read through the question carefully and thoroughly understand the situation and identify the given information. It is a good idea to draw a diagram as you are reading through the problem the second time, marking in known information as you come across it. Once you have the picture, it is much easier to decide which trig strategy to employ.

If the problem is modeled by a right triangle, use the primary trig ratios.

If the problem is modeled by an acute triangle, you have to decide between the Sine Law and Cosine Law based on the given information.



Consider the above strategies.

Is it possible to use any of these strategies to solve a right triangle given the measure of just one side?

Is it possible to find an angle measure in a triangle given the measures of one angle and one side?

**Example 1**                      **Use the Sine Law**

From an airplane, a surveyor observes two points, A and B, with A being closer to the plane and 9750 m away in a direct line. If the angle of depression to point A is  $45^\circ$  and the angle of depression to point B is  $32^\circ$ , how far is it across the lake? *\*Remember the properties of parallel lines.*

**Example 2**                      **Use the Cosine Law**

A surveyor needs to estimate the length of a swampy area. She starts at one end of the swamp and walks in a straight line, 450 paces, and turns  $60^\circ$  towards the other end of the swamp. She then walks in another straight line, 380 paces, before arriving at the other end of the swamp. One paces is about 75 cm. Estimate the length of the swamp in metres.

**Example 3**      **Use Primary Trigonometric Ratios**

Josh is building a garden shed that is 4 m wide. The two sides of the roof must meet at an  $80^\circ$  angle and be equal in length. How long must each rafter be if he allows for a 0.5 m overhang?

**Homework:** Pp. 48 – 51 # 2odds, 3, 4, 6 - 11