Integrated Mathematics 2 – Key Objectives | **Right Triangle TRIG Unit**

This Right Triangle Trigonometry Unit will encompass 2 MAJOR concepts. These MAJOR concepts are: (1) The Basics of Right Triangle Trigonometry (2) Applications of Right Triangle Trigonometry. These major concepts will be continually revisited in other courses (IM3 and IB Maths, so it is important to understand these concepts and master the required skills.

(1) <u>**Basics of Right Triangle Trigonometry:**</u>

- o Know how to work with the Pythagorean Theorem to solve for any side in a right triangle, given the measures of any 2 sides in the right triangle. **(R)**
- o Use the Pythagorean Theorem to prove whether or not a triangle is a right triangle. **(N)**
- o Calculate the area of a right triangle. **(R)**
- o Determine, through investigation (e.g., using dynamic geometry software, concrete materials), the relationship between the ratio of two sides in a right triangle and the ratio of the two corresponding sides in a similar right triangle, and define the sine, cosine, and tangent ratios (e.g., sin A = opposite/hypotenuse). **(N)**
- o Be able to find the sine, cosine & tangent ratios for an angle using the ratio of appropriate sides lengths in a right triangle. **(N)**
- o Given an angle measure, be able to use your calculator to find a decimal value for the sine, cosine & tangent ratios. **(N)**
- o Given a sine, cosine & tangent ratio, be able to use your calculator to find a value of the angle. **(N)**
- o Be able to solve for sides & angles in single right triangles:
  - o Given an angle and the length of a side in a right triangle, be able to find the length of a second side using the appropriate trig ratio (sine, cosine or tangent.) **(N)**
  - o Given the lengths of any 2 sides in a right triangle, be able to find the measure of angles using the appropriate trig ratio (sine, cosine or tangent.) **(N)**

(2) <u>**Applications of Right Triangle Trigonometry:**</u>

- o Be able to solve for sides & angles in diagrams involving multiple right triangles (usually 2)
  - • Given an angle and the length of a side in a right triangle, be able to find the length of a second side using the appropriate trig ratio (sine, cosine or tangent.) **(N)**
  - • Given the lengths of any 2 sides in a right triangle, be able to find the measure of angles using the appropriate trig ratio (sine, cosine or tangent.) **(N)**
- o Be able to calculate the height of non-right acute triangle using trigonometry & the area of non-right acute triangles. **(N)**
- o Be able to determine when to use each of the trig ratios (sin, cos, or tan). **(N)**
- o Be able to work with the terms angle of elevation and angle of depression. **(N)**
- o Apply basic trig ratios in outdoor "surveying" applications, determining heights of objects. **(N)**
- o Be able to solve word problems wherein single or multiple right triangles can be used to model the problem by drawing a well labeled diagram and using trig ratios. **(N)**