Department of Mathematics
# PROBLEM SOLVING CHALLENGE

March 2014

1. Using eight eights and addition only, can you make 1000?

2. A gumball machine that randomly dispenses one gumball at a time contains 13 red, 5 blue, 1 white, and 9 green gumballs. What is the least number of gumballs that a customer must buy to guarantee that they receive 3 gumballs of the same colour?

3. The sum of four numbers is x. Suppose that each of the four numbers is now increased by 1. These four new numbers are added together and then the sum is tripled. What is the value, in terms of x, of the new number formed?

4. You find yourself in a strange place guarded by two guards. The Guards are blocking two doors; one is the exit and the other is a trap. One of the guards always tells the truth while other always lies. You don't know which guard is which.
   You can ask only one question to find the exit. What question should you ask and to which guard?

5. Three roads, as shown, join three villages A, B and C.

   The road lengths in two of the cases are shown and two of the roads meet at right angles at B. A mobile phone mast is to be erected in the area between the villages as shown. It was suggested that it would be fair to erect it at a point equidistant from the three villages. Why was it not possible to do so? It was then decided to erect the mast at F, which is equidistant from the three roads

   Q. How far is F from each road?
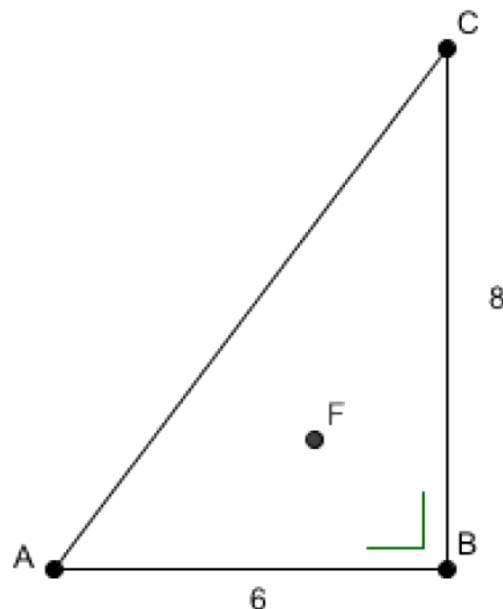
Answers on an A4 sheet with your <u>Name</u>, <u>Year</u> and <u>Class</u> should be handed into the box in the office before 4pm on Friday 28th of March

Monthly Prizes for both *Junior* and *Senior* Cycle.*

Good Luck.

Junior Cycle students only answer the circled questions; 1, 2 and 3.