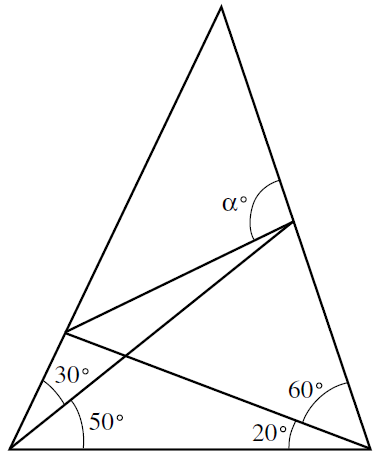
**FMA Team Mathematics Competition - Zone**

**YEAR 10 – 2017**

Y10/1 Solve for in the equation.

Y10/2 The number 64 is divided into three parts with proportionality 2:4:6. The smallest part is:

Y10/3 what is the value of the angle marked ?



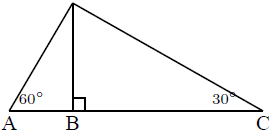
Y10/4 What is the result when subtracting 99% of 19 from 19% of 99?

Y10/5 The line that goes through (1, 3) and (k − 1, k + 4) has slope 2. Find k

Y10/6 If and what is?

Y10/7 What is the area of the triangle with vertices (1, 2), (5, 2), and (3, 6)?

Y10/8 In the triangle given in the diagram below the length of AB is one. Find the length of AC.



Y10/9 The product of three consecutive positive integers is eight times their sum. What is the sum of their squares?

Y10/10 You have 2 pairs of identical red socks, 2 pairs of identical green socks, 3 pairs of identical blue socks, and 4 pairs of identical yellow socks all stuffed in drawer. (A left sock is indistinguishable from a right sock.) One morning you rummage through the drawer and pull one sock out at time until you have a matching pair. How many socks must you pull out to guarantee having a matching pair?

Y10/11 In a rectangle we decrease one side by 3 and increase an adjacent side by 2 to form a square of area 25. Find the perimeter of the rectangle.

Y10/12 Teachers salary is reduced by 15%. By what percent would his salary then have to be raised to bring it back to the original amount?

Y10/13 A ferryboat operator charges a fee for crossing a river. You have the choice between paying a fare of $2 per trip or to pay $10 for a pass that allows you to receive a 25% discount from the regular price for each crossing. What is the least number of times that you must cross the river so that you would pay less by buying the pass than by paying the full fare each time you cross?

Y10/14 An automobile dealer sells 2 models of cars, A and B. Model A can be purchased in 7 different colours and 4 different engine sizes. Model B comes in 8 colours and 3 engine sizes. How many cars must the dealer order to have one car of each model in each colour and engine size?

Y10/15 How much 1% fat milk should we mix with 15% fat cream to obtain 5 litres of 3% fat mixture?

Y10/16 A reservoir has 3 sources of water. Source A can fill the reservoir in 2 days, source B in 3 days and source C in 6 days. How long would it take to fill the reservoir using all 3 sources?

Y10/17 How many 3 digit numbers are there which contain exactly one zero?

Y10/18 The fuel consumption rate of automobiles is usually given as the number of liters of gasoline required to travel 100km. If an automobile can travel 12.5km on one liter of gas, what is the consumption rate for the automobile?

Y10/19 If Michael Jordan has an average of 29 points per game after 100 games, how many points does he need in the remaining 50 games so that he finishes the season with an average of 30 points per game?

Y10/20 If you save 10 cents the first day, 20 cents the second, 30 cents the third and so on, what is the minimum number of days needed to save a total of more than $10.

TIE BREAKER

Y10/21 How many ordered triplets of non – zero real numbers have the property that each number is the product of the other two?

Y10/22 20 can be written as the sum of two squares: 20 = 4 + 16 = 22 + 42 .In how many different ways (ignore the order) can 85 be written as the sum of two squares?