**FMA TMC Finals**

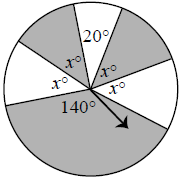
**YEAR 12– 2017**

Y12/1 A bag contains only blue balls and green balls. There are exactly 6 blue balls in the bag. The chances of drawing a ball at random is 1:4. What is the number of green balls in the bag?

Y12/2 What is the value of

Y12/3 A fair coin is tossed 3 times. What is the probability of atleast two consecutive heads?

Y12/4 A circular spinner is divided into six regions, as shown. Four regions each have a central angle of . The remaining regions have central angles of  and . An arrow is attached to the centre of the circle. The arrow is spun once. What is the probability that the arrow stops on a shaded region?



Y12/5 Jeff and Ursula each run 30 km. Ursula runs at a constant speed of 10 km/h. Jeff also runs at a constant speed. If Jeff’s time to complete the 30 km is 1 hour less than Ursula’s time to complete the 30 km, at what speed does Jeff run?

Y12/6 A group of students decided to buy a nice toy for their friend’s birthday. If they collect $10 from everybody, they will need $10 more. If they collect $12 each, there will be $20 more than they need. How many kids were there and how much did the toy cost?.

Y12/7 what will be the next number in the sequence

4, 11, 25, 53, …

Y12/8 Mary is 24 years old.Mary is twice as old as Ann when Mary was as old as Ann now.How old is Ann now?

Y12/9 If 12 cubic yards of wood are burnt in 9 fireplaces in 16 days, then in how many days are 9 cubic yards of wood burnt in 12 fireplaces?

Y12/10 If   and  what is the product of and 

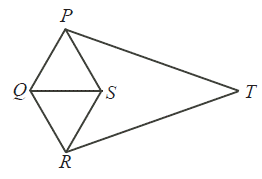
Y12/11  The expression is equals?

Y12/12 Fifty numbers have an average of 76. Forty of these numbers have an average of 80. What is the average of the other ten numbers?

Y12/13 The Sum of two nonzero real numbers is 4 times their product. What is the sum of the reciprocals of the two numbers?

Y12/14 Alice refuses to sit next to either Bob or Charli. David refueses to sit next to Esita. How many ways are there for the five of them to sit in a row of 5 chairs under these condition?

Y12/15 In the diagram, P Q = QR = RS = SP = SQ = 6 and P T = RT = 14. The length of ST is



Y12/16 A jacket was originally priced $100. The price was reduced by 10% three times and increased by 10% four times in some order. To the nearest cent, what was the final price?

Y12/17 Let **mod** denote the modulo operation, the remainder after division. What is the smallest number such that for each number 2, 3, 4, 5, 6, 7, 8.

Y12/18 A rectangle box has a square base and no top. Its surface area is 429 and its dimensions are all whole numbers. Find the dimensions of the box with largest volume.

Y12/19 Toothpicks are used to make agrid that is 60 toothpicks long and 32 toothpicks high. How many toothpicks are used altogether?

Y12/20 What is the ratio of the least common multiple of 180 and 594 to the greatest common factor of 180 and 594?

Tie Breaker

Y12/21 Seven children, each with the same birthday, were born in seven consecutive years. The sum of the ages of the youngest three children is 42. What is the sum of the ages of the oldest three?

Y12/22 If then what is/are the possible value(s) for ?

Y12/21 Seven children, each with the same birthday, were born in seven consecutive years. The sum of the ages of the youngest three children is 42. What is the sum of the ages of the oldest three?

Y12/22 If then what is/are the possible value(s) for ?