**FMA TMC Zone**

**YEAR 12– 2017**

Y12/1 What is the value of 6 × 2017 − 2017 × 5?

Y12/2 If , then what is the value of ?

Y12/3 Kamile turned her computer off at 5 p.m. Friday, at which point it had been on for exactly 100 hours. At what time and day had Kamile turned her computer on?

Y12/4 If what is the value of ?

Y12/5 On my first spelling test, I score one mark out of five. If I now work hard and get full marks on every test, how many more tests should I take for my average to be four out of five correct answers?

Y12/6 The Breakfast Restaurant has a special pricing day. If a customer arrives at the restaurant between 4:30 a.m. and 7:00 a.m., the time that they arrive in hours and minutes becomes the price that they pay in dollars and cents. For example, if a customer arrives at 5:23 a.m., they will pay $5.23. Larry and Mio arrived separately during the period of the special pricing. In total, they paid $11.98. Determine the ranges of times during which Larry could have arrived.

Y12/7 What is the value of the fraction ? (give answer in smallest fraction).

Y12/8 On Monday, Daniel had 90 cups, each of which was either purple or yellow. He distributed the cups among three boxes as follows: Box D: 9 purple and 23 yellow cups for a total of 32 cups Box E: 6 purple and 24 yellow cups for a total of 30 cups Box F: 28 cups in total. On Tuesday, Avril brought 9 more purple cups and included them with Daniel’s cups. Barry brought some yellow cups and included them with Daniel’s cups and Avril’s cups. The percentage of cups that were purple was again 30%. How many cups did Barry bring?

Y12/9 The yearly changes in the population census of a town for four consecutive years are, respectively, 25% increase, 25% increase, 25% decrease, 25% decrease. What is the net change over the four years, to the nearest percent (and show a decrease or increase).

Y12/10 There are 200 fish in an aquarium. 1% of them is blue, all the rest are yellow. How many yellow fish do we have to take out the aquarium so that blue fish represent 2% of all aquarium fish?

Y12/11  There are 29 people in a room. Of these, 11 speak French, 24 speak English and 3 speak neither French nor English. How many people in the room speak both French and English?

Y12/12 Working together, Bill and Tom painted a fence in 8 hours. Last year, Tom painted the fence by himself. The year before, Bill painted it by himself, but took 12 hours less than Tom took. How long Tom take, when he painted alone?

Y12/13 Given circle with tangent, secant and chord, Find the value of x.



Y12/14 The arithmetic mean of a set of 50 numbers is 38. If two numbers of the set, namely 45 and 55, are discarded, what will be the arithmetic mean of the remaining set of numbers?

Y12/15 Given that and, then what is the difference betweenand?

Y12/16 How many different words can you form from the letters ABCD, where a word is a sequence of one to four letters, using every letter at most once (for example, words DC and CADB)?

Y12/17 Rani and Elma collect ladybugs. Rani only collects the ones with 2 spots, and Elma only collects the ones with 7 spots. Rani has 5 more ladybugs than Elma. The total number of spots found on all of their ladybugs is 100. How many ladybugs do they have in their combined collection?

Y12/18 On a test the passing students had an average of 83, while the failing students had an average of 55. If the overall class average was 76, what percent of the class passed?

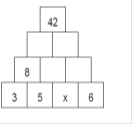
Y12/19 A drawer contains 64 socks. Each sock is one of 8 colours, and there are 8 socks of each colour. If the socks in the drawer are thoroughly mixed and you randomly choose two of the socks, then what is the probability that these two socks will have the same colour.

Y12/20 Eight teams compete in a tournament. Each pair of teams plays exactly one game against each other. There are no ties. If the two possible outcomes of each game are equally likely, what is the probability that every team loses at least one game and wins at least one game?

Tie Breaker

Y12/21 In the figure the number 8 is obtained by adding the two numbers directly below it. The

other numbers in the top three rows can be obtained in the same way. What is the value of x?



Y12/22 Sarah started school at the age of five. She spent one quarter of her life being educated, and went straight into work. After working for one half of her life, she lived for fourteen happy years after retiring.

How old was she when she retired?