**FMA-TMC - Final**

**YEAR 10 – 2015**

Y10/1 I think of a positive number, square it, add 12, halve the answer and end up with 38. What is the original number?

Y10/2 John bought a pressure cooker for $60. Somehow, he did not find it useful and so when a friend Jane offered him $70 he sold it to her. However, he felt bad after selling it and decided to buy it back for $80. After having bought it once again, he felt that he did not really need the cooker and finally sold it on TradeMe for $90. How much **profit or loss** did John make?

Y10/3 Lucy runs the first half of a race at 5 kph. Then she picks up her pace and runs the last half of the race at 10 kph. What is her average speed on the course in hours?

.

Y10/4 Three brothers, Tom, Dick and Harry, after finishing a meal in a restaurant, ordered a bowl of marshmallows. While waiting for the marshmallows to arrive, all three fell asleep. After a while, Tom woke up and found the marshmallows on the table. He ate his equal share of the marshmallows and went back to sleep. Then Dick woke up, ate what he thought was his equal share, and fell asleep again. Then Harry woke up, ate what he thought was his equal share of the remaining marshmallows and went back to sleep. A little while later, all three brothers woke up and discovered that eight marshmallows were left in the bowl. How many marshmallows were in the bowl originally?

Y10/5 A circular table has a radius of 160 cm. It is covered by a table cloth with a radius of 240 cm. How many times larger than the area of the table is the area of the table cloth?

Y10/6 The mean of six numbers is 4. A seventh number is added and the new mean is 5. What is the seventh number?

Y10/7 A newspaper is made up of several A2 sheets folded in the middle so that each sheet makes 4 numbered pages. This means that two sheets make 8 pages. Tuesday’s newspaper has 64 pages. One sheet has the page number 11 on it. What are the other three page numbers on this sheet?

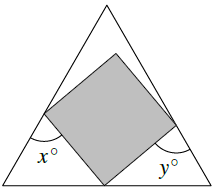
Y10/8 Two trains, 50 km apart, are traveling towards each other at speeds of 80 and 120 km per hour, respectively. Meanwhile, Superman is flying between the trains at a speed of 500 km per hour, and he instantly changes direction when he touches a train. How far does Superman travel before the trains meet?

Y10/9 A piece of elastic is first stretched by 20% and then has 30% of that length cut off. The remainder is allowed to return to normal length. What percentage will the remainder be of the original piece?

Y10/10 Determine the value of where and

Y10/11 In a fishing Contest I saw a Salmon hanging that has just been weighed. I asked the fisherman “how much does it weigh?” He replied curiously, “It weighs 3 fifths of its weight, and 4 fifths of a kilogram.” What was the weight of the salmon?

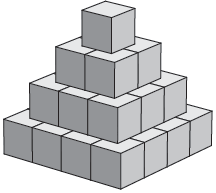
Y10/12 The diagram shows a square inside an equilateral triangle. What is the value of ?



Y10/13 Write down the four digit number described by the following:

* The first digit is one-third of the third digit.
* The fourth digit is two times the second digit.
* The first digit and the third digit add up to twice the sum of the second digit and the fourth digit.

Y10/14 The diagram shows a pyramid made up of 30 cubes, each measuring 1m × 1m× 1 m. What is the total surface area of the whole pyramid (including its base)?



Y10/15 A stock dam has 3 pipes to fill it with water. Pipe 1 can fill the Dam in 12 hours, Pipe 2 can fill the Dam in 6 hours and Pipe 3 can fill the Dam in 4 hours. If all 3 pipes are filling the pool, how long will it take to fill the dam?

Y10/16 There is a number which is very peculiar. This number is three times the sum of its digits. Can you work out what this number is?

Y10/17 Each letter represents a different digit

S E N D

+ MO R E

------------

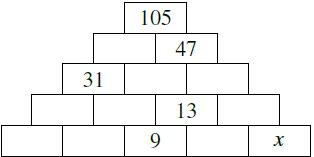
M ON E Y

Rewriting the calculation and answer using numerical digits, state what number does letter “N” represent?

Y10/18 A set of numbers are said to be co-prime if they have no common factors other than 1. Which pair of consecutive co-prime numbers has a product of 210?

Y10/19 A horse is tied by a rope 40 metres long to the wall of a rectangular building 50m by 20m. The rope is tied 10 metres from the corner of the longest side of the building. Find the maximum grazing area for the horse. (Use π = 3.14).

Y10/20 In this partly completed pyramid, each rectangle is to be filled with the sum of the two numbers in the rectangles immediately below it. What number should replace?



Tie Breaker

Y10/21 If it takes 8 men 6 days to dig 16 holes, how many days does it take 2 men to dig 20 holes?

Y10/22 If the operation is defined by what is the value of?