**FMA TMC- Finals**

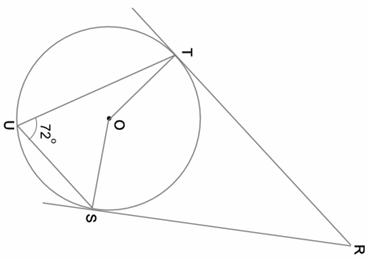
**YEAR 10– 2014**

Y 10/1 Given what is the value of.

Y 10/2 A boat took 3 hours to travel 24 km with the current. On the return trip, the boat took 5 hours to travel 24 km against the current. Determine the speed of the current.

Y 10/3 Evaluate the value of if .

Y 10/4 RS and RT are tangents to the circle center O. , what is the size of the?



Y 10/5 The price of an item decreased by 20% to $200. Then later the price decreased again from $200 to $150. What is the percent of decrease from the original price to the final price of $150?

Y 10/6 After knee surgery, your trainer tells you to return to your jogging program slowly.  He suggests jogging for 12 minutes each day for the first week.  Each week thereafter, he suggests that you increase that time by 6 minutes per day.  How many weeks will it be before you are up to jogging 60 minutes per day?

Y 10/7 The length of a rectangular paddock is 48m more than the width, and the perimeter is 176m. Determine the area of the paddock.

Y 10/8 Find the total surface area of a square pyramid with a perpendicular height of 12cm and base edge of 8 cm.

Y 10/9 Students in a poetry class are writing poems for their portfolios. The teacher wants them to write stanzas with certain numbers of lines each. Zoe wrote 2 short stanzas and 8 long stanzas, for a total of 72 lines. Brenda wrote 2 short stanzas and 7 long stanzas, for a total of 64 lines. How many lines do the two sizes of stanzas contain?

Y 10/10 Of the last 12 balloons sold at a party store, 3 were green. What is the experimental probability that the next balloon sold will be green?

Y 10/11 A rescue boat just picked up some sailors in a lifeboat. Now the rescue boat is heading north at 23 kilometres per hour. The lifeboat, which they abandoned, is drifting south at a speed of 5 kilometres per hour. How long will it be before the rescued sailors are 84 kilometres from their lifeboat?

Y 10/12 An electric motor makes 3,000 revolutions per minutes. How many degrees does it rotate in one second?

Y 10/13 An airplane flies against the wind from A to B in 8 hours. The same airplane returns from B to A, in the same direction as the wind, in 7 hours. Find the ratio of the speed of the airplane (in still air) to the speed of the wind.

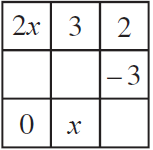
Y 10/14 Evaluate:

Y 10/15 In a shop, the cost of 4 shirts, 4 pairs of trousers and 2 hats is . The cost of 9 shirts, 9 pairs of trousers and 6 hats is What is the total cost of 1 shirt, 1 pair of trousers and 1 hat?

Y 10/16 Which number(s) is (are) equal to the quarter of its (their) square?

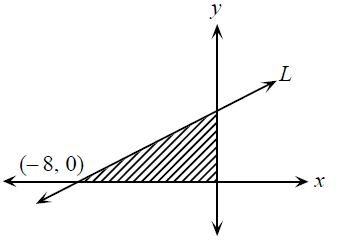
Y 10/17 If and are positive numbers and the average of 4, 20 and is equal to the average of and 16, then what is the ratio ?

Y 10/18 In the magic square, the sum of the three numbers in any row, column or diagonal is the same. What is the sum of the three numbers in any row?



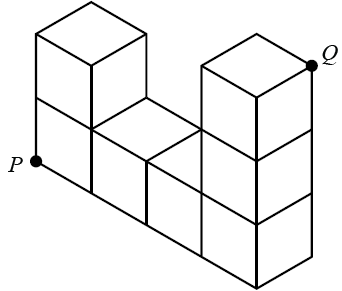
Y 10/19 A “double-single” number is a three-digit number made up of two identical digits followed by a different digit. For example, 553 is a double-single number. How many double-single numbers are there between 100 and 1000?

Y 10/20 The line crosses the axis at . The area of the shaded region is 16. What is the slope of the line?



**Tie Breaker**

Y 10/21 In the diagram, the shape consists of seven identical cubes with edge length 1. Entire faces of the cubes are attached to one another, as shown. What is the distance between and ?



Y 10/22 A string has been cut into 4 pieces, all of different lengths. The length of each piece is 2 times the length of the next smaller piece. What fraction of the original string is the longest piece?