

FMA Team Mathematics Competition - Zone
YEAR 9 – 2015

Y9/1 What is the value of $\frac{1}{1+\frac{1}{x}}$ when $x = \frac{1}{5}$?

Y9/2 A field trip costs \$9000 for the bus, plus \$125 per student. Each student pays \$375. How many students must go on the trip so that the total amount paid is equal to the total cost of the trip?

Y9/3 What is the lowest common multiple of 30 and 24?

Y9/4 The air temperature in the atmosphere decreases at the rate of 9°C every 300 meters. What height would a plane have to fly to experience a temperature of –81°C? The temperature is 0°C at sea level.

Y9/5 Evaluate $6 - 5(4 + 3(2 - 1))$.

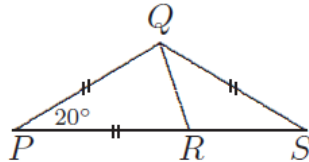
Y9/6 My uncle's garden is 18m long by 12m wide. One third is a vegetable patch and a quarter is a barbeque patio. The rest is lawn. What is the area of the lawn?

Y9/7 In a training session, Sally takes three strides to cover 10m while Harry takes four strides to cover 12m. How far apart are Sally and Harry after they have both taken 300 strides?

Y9/8 Two airplanes left the same airport at the same time, flying in opposite directions. One flew at 400 km/h and the other flew at 250 km/h. In how many hours will the distance between the two planes be 1625 km?

Y9/9 Kini has the same number of sisters as she has brothers, but her brother Peni has twice as many sisters as he has brothers. If their family has fewer than 10 children, how many children are there?

Y9/10 In the diagram $PQ = PR = QS$ and $\angle QPR = 20^\circ$. what is the size of $\angle RQS$?



Y9/11 A litre of orange fruit juice drink contains 10% orange juice. How many millilitres of orange juice must be added to produce a mixture containing 50% orange juice?

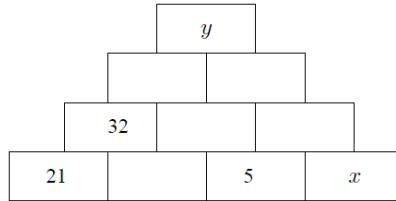
Y9/12 The first three terms of a sequence are 1, 2, and 3. Each succeeding term is the sum of the last three terms. What is the 8th term of the sequence?

Y9/13 Raj eats $\frac{1}{4}$ of a pizza. Bobby then eats $\frac{1}{3}$ of what is left. Finally, Christine eats $\frac{1}{2}$ of the remaining pizza. What proportion of the pizza did they not eat?

Y9/14 There are 120 different five digit numbers that can be constructed by putting the digits 1, 2, 3, 4 and 5 in all possible different orders. If these numbers are placed in numerical order, from smallest to the largest, what is the 60th number in the list?

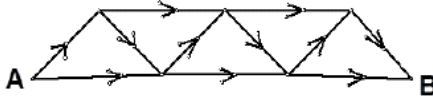
Y9/15 A car leaves a starting point and drives at 60 km/hour. A second car leaves the same starting point some time later following the first car at a speed of 75 km/hour. It catches the first car after traveling a distance of 30 km. How many minutes later did the second car leave?

Y9/16 The number in each block is the sum of the numbers in the two blocks beneath it. Some of the numbers are hidden. What is the value of $y - x$?



Y9/17 A box containing 5 oranges weighs 1.678 kilograms. The same box with 10 oranges in it weighs 2.278 kilograms. How much does the empty box weigh in kilograms? (Assume all oranges weigh the same).

Y9/18 In the shown diagram, how many paths are there from A to B, if you must always move in the direction of the arrows?



Y9/19 A magic square is a square of numbers in which the sum of the numbers in each row, in each column and in each diagonal is always the same. Patrick wants to fill a magic square using the numbers 1 to 16 once each. He has filled some of the boxes as shown in the diagram below. Which number must he put in the shaded box?

14	1		
11			2
	10	3	

Y9/20 The base of a rectangle exceeds its height by 4 cm, and its perimeter is 40 cm.
what is its area?

TIE BREAKER

Y9/21 At Timmy's cafe, to buy one sandwich, two cups of coffee and three doughnuts costs \$8.50. One sandwich, one cup of coffee and one doughnut costs \$6.00. How much does it cost to buy three sandwiches, two cups of coffee and one doughnut?

Y9/22 A truck is half full of sand. Another 2 cubic meters of sand is put into the truck making the truck two thirds full. How many cubic meters of sand can the truck hold?
