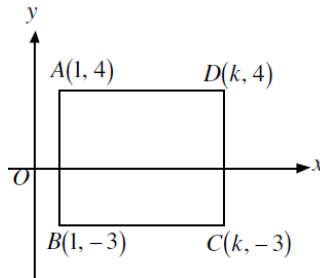


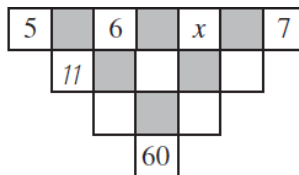
FMA Team Mathematics Competition - Zone
YEAR 10 – 2015

Y10/1 In the diagram, rectangle $ABCD$ has area 70, what is the value of k ?



Y10/2 Each of the numbers 1, 2, 3, and 4 is assigned, in some order, to p, q, r , and s . What is the largest possible value of $p^q + r^s$?

Y10/3 The number in an unshaded square is obtained by adding the numbers connected to it from the row above. (The '11' is one such number.) What will be the value of x ?



Y10/4 Three CD's are bought at an average cost of \$15 each. If a fourth CD is purchased, the average cost becomes \$16. What is the cost of the fourth CD?

Y10/5 The time on a digital clock is 5.55. How many minutes will pass before the clock next shows a time with all digits identical?

Y10/6 The numbers 49, 29, 9, 40, 22, 15, 53, 33, 13, 47 are grouped in pairs so that the sum of each pair is the same. Which number is paired with 15?

Y10/7 In an election for class president, 61 votes are cast by students who are voting to choose one of four candidates. Each student must vote for only one candidate. The candidate with the highest number of votes is the winner. What can be the smallest number of votes the winner receive?

Y10/8 A chocolate drink is 6% pure chocolate, by volume. If 10 litres of pure milk are added to 50 litres of this drink, what percent of chocolate will be in the new drink?

Y10/9 There were 60 birds on three trees. At some moment 6 birds flew away from the first tree, 8 birds flew away from the second tree, and 4 birds flew away from the third tree. After that, it turned out that the number of birds on each tree was the same. How many birds were there on the second tree in the beginning?

Y10/10 Harry let a parrot out at 7:30 a.m. to deliver an important message to his friend Ron. The parrot delivered the envelope at 9:10 a.m. A parrot flies 4km in 10 minutes. What was the distance between Harry and Ron?

Y10/11 An international organization has 32 members. It is predicted that the organization will increase the number of its members by 50% each year. How many members will the organization have in three years?

Y10/12 An island is inhabited by liars and nobles (the liars always tell lies and the nobles always tell the truth). One day, 12 islanders, among them both liars and nobles, gathered together and issued a few statements. Two people said: "Exactly two people among us twelve are liars". Another four people said: "Exactly four people among us twelve are liars". The remaining six people said: "Exactly six people among us twelve are liars". How many liars were there?

Y10/13 If $a^b = 0.5$, what is the value of a^{-3b} ?

Y10/14 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?

Y10/15 The base of a rectangle exceeds its height by 4 cm, and its perimeter is 40 cm. what is its area?

Y10/16 Anna wrote a 2-digit number. Ben created a 4-digit number by coping Anna's number twice. Then Anna divided Ben's number by her number. What was the result she got?

Y10/17 In a soccer match, the winner gets 3 points, the loser gets 0 points, while in the case of a draw each team gets 1 point. Four teams, A, B, C, D, take part in a soccer tournament. Each team plays three games: one against each other team. At the end of the tournament team A has 7 points and teams B and C have 4 points each. How many points does team D have?

Y10/18 If $\frac{3}{x+10} = \frac{1}{2x}$, then what is the value of x ?

Y10/19 The label on a package of cream cheese reads: 24% total fat. The same label also reads: 64% fat in dry matter. What is the percentage of water in this cheese?

Y10/20 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	

TIE BREAKER

Y10/21 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?

Y10/22 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?
