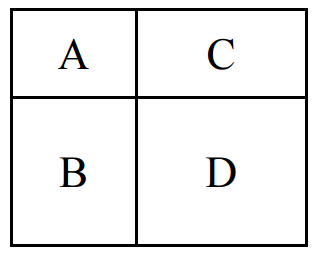
**FMA Team Mathematics Competition - Finals**

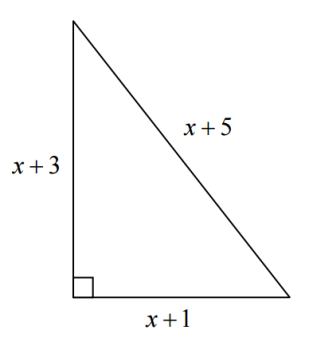
**YEAR 10 – 2016**



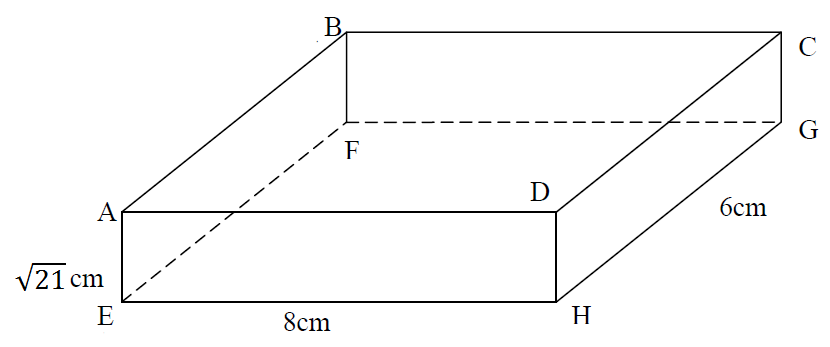
Y10/1 The areas of rectangles A, B and C below are 12 cm2, 21 cm2 and 20 cm2 respectively. What is the area of rectangle D?

Y10/2 Factorize

Y10/3 97 is a prime number. When its digits are reversed, the new number is also prime, i.e. 97 and 79 are both prime. How many two-digit prime numbers, less than 50, have this property

Y10/4 Determine the value of x

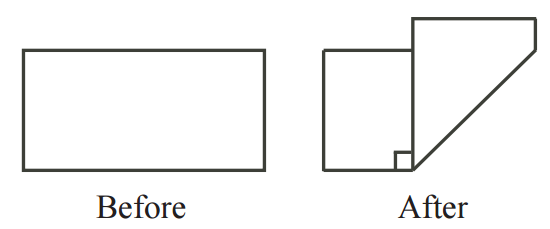
Y10/5 The game of Scrabble gives values to letters: A = 1, B = 3, C = 3, D = 2, E = 1, F = 4, G = 2, H = 4, I = 1, J = 8, K = 5, L = 1, M = 3, N = 1, O = 1, P = 3, Q = 10, R = 1, S = 1, T = 1, U = 1,V = 4, W = 4, X = 8, Y = 4, Z = 10. The value of a word is the sum of the values of the letters. For example, ONE = 1 + 1 + 1 = 3. The name of which positive integer has Scrabble score equal to itself?

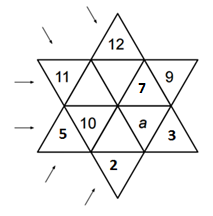
Y10/6 The rectangle box has dimensions as shown. What is the length of

Y10/7 A box with 30 chocolates weighs 1.1 kg. If 12 chocolates are taken out, it weighs 680 g. How much does the empty box weigh?

Y10/8 A bank teller has some stacks of bills. The total value of the bills in each stack is $1000. Every stack contains at least one $20 bill, at least one $50 bill, and no other types of bills. If no two stacks have the same number of $20 bills, what is the maximum possible number of stacks that the teller could have?

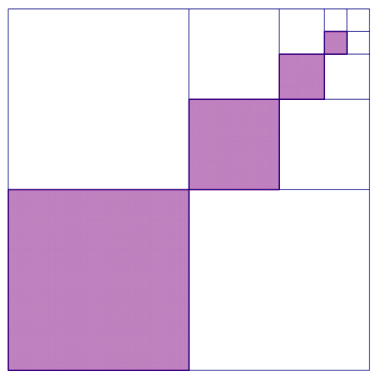
Y10/9 In an election for class president, 61 votes are cast by students who are voting to choose one of four candidates. Each student must vote for only one candidate. The candidate with the highest number of votes is the winner. What is the smallest number of votes the winner can receive?

Y10/10 A rectangular piece of paper measures 17 cm by 8 cm. It is folded so that a right angle is formed between the two segments of the original bottom edge, as shown. What is the area of the new figure?



Y10/11 A magic hexagram has twelve triangles in which the numbers 1 to 12 are placed so that the sum along any of the six lanes is 32. (Each number is used exactly once.) Four numbers have been given in the hexagram below. To make a magic hexagram, what must be the value of a?

Y10/12 Given that a and b are digits from 1 to 9, what is the number of fractions of the form , expressed in lowest terms, which are less than 1?

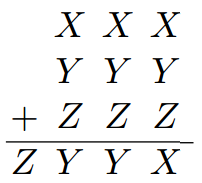
Y10/13 A square is divided into four smaller equal squares, and the process is then repeated as shown. What fraction of the large square is shaded?

Y10/14 Two numbers are selected at random from the set of numbers {2, 5, 7, 8} and are multiplied. What is the probability that the product is even?

Y10/15 If determine the value of

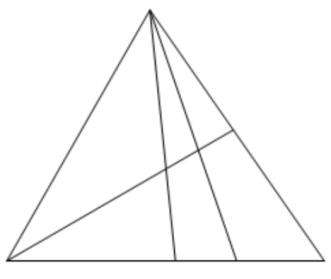
Y10/16 If , evaluate the value of 

Y10/17 A bathtub fills in 12 minutes if the plug is in. It empties in 18 minutes when the tap is off. If the tap is running and the plug is out, how long will it take to fill the bathtub?



Y10/18 In the addition shown, the letters X, Y, and Z each represent a different non-zero digit. What is the value of digit X?

Y10/19 How many different triangles (of all sizes) are in this figure?



Y10/20 In a village, in one month, one-tenth of the people are sick and nine-tenths are well. In the next month, seven-tenths of those who were sick are now well, while three-tenths of the people who were well are now sick. What fraction of the people is sick at the end of the second month?

TIE BREAKER

Y10/21 How many ordered triplets of non – zero real numbers have the property that each number is the product of the other two?

Y10/22 20 can be written as the sum of two squares: 20 = 4 + 16 = 22 + 42 .In how many different ways (ignore the order) can 85 be written as the sum of two squares?

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