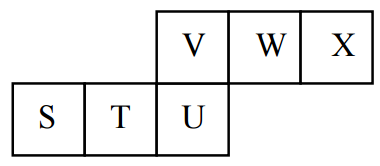
**FMA Team Mathematics Competition - FINALS**

**YEAR 9 – 2016**

Y9/1 If x and y are positive integers with x + y = 301, then the largest possible value of is…?

Y9/2 If the figure shown is folded to make a cube, then what is the letter opposite the T?



Y9/3 Mr Ram’s retirement party will cost $18 if he invites 4 guests. What is the maximum number of guests there can be if Ram can afford to spend a total of $200 on his retirement party?

Y9/4 Determine the coefficient of in the expansion of

Y9/5 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?

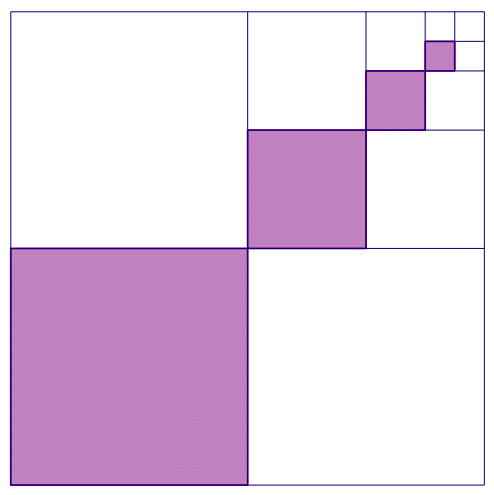
Y9/6 When the items in a box are put in groups of 3 or 5 or 6, there is always one item left over. How many items are in the box if there are fewer than 50?

Y9/7 Solve for x

3

Y9/8 A palindrome is a whole number that reads the same forwards or backwards, e.g. 474. How many 3-digit palindromes are there?

Y9/9 A teacher writes five numbers on the board. The five numbers have an average of 30. She then erases one of the numbers. The average of the four remaining numbers is 28. What number did she erase?

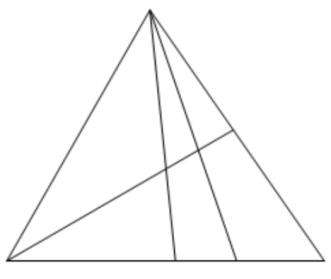


Y9/10 A square is divided into four smaller equal squares, and the process is then repeated as shown. What fraction of the large square is shaded?

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 1cm represents 8 km according to the scale on a map. How many square kilometres would be represented by an area of 240 cm2 on the map?

Y9/13 How many different triangles (of all sizes) are in this figure?



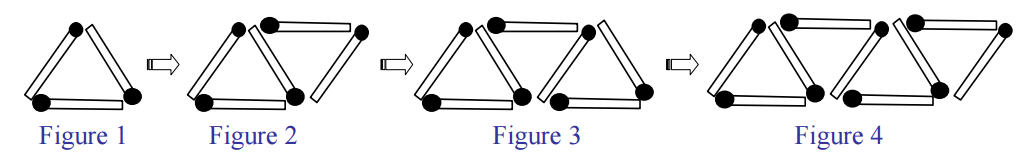
Y9/14 In a test consisting of 20 multiple choice questions, 6 points are awarded for each correct answer and 2 points are deducted for each wrong answer. David answered all the questions and scored 88. How many questions did David answer correctly?

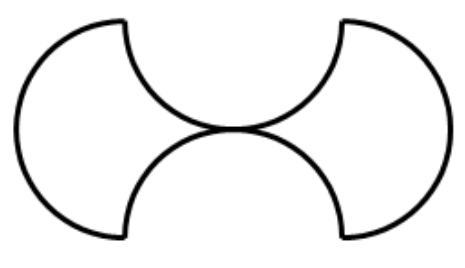
Y9/15 A car is travelling at 60 km/h. How many meters does it cover in 12 seconds?

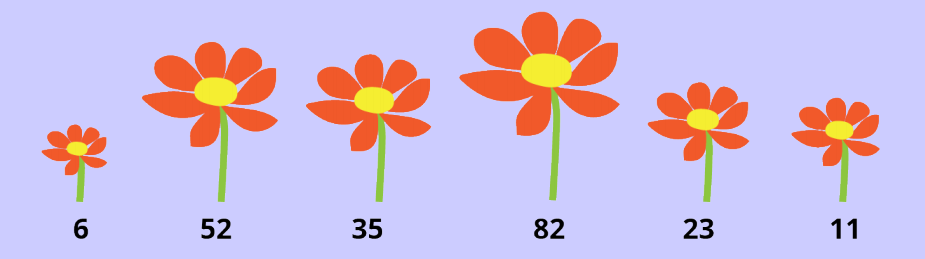
Y9/16 Thirty equally spaced points on a circle are labeled in order with the numbers 1 to 30. Which number is directly opposite to 7?

Y9/17 I picked a bunch of white, blue and yellow flowers. All but 6 were white, all but 6 were blue, all but 6 were yellow. How many flowers were in the bunch?

Y9/18 The figures below are built with matches. How many matches are needed to build the 30th figure in this sequence?



Y9/19 The figure is a combination of four semi-circles, each with a radius of 4 cm. What is the area (in cm2 ) of the figure?

Y9/20 Sam the bee flies to a park of flowers to collect pollen. On each flight, he visits only one flower and can collect up to 10 mg of pollen. He may return to the same flower more than once. The initial amount of pollen in each flower (in mg) is shown below. What is the maximum total amount of pollen that Sam can collect in 20 flights?

TIE BREAKER

Y9/21 In how many different ways can the five people be arranged in a line next to each other for the photograph?

Y9/22 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?

Y9/21 In how many different ways can the five people be arranged in a line next to each other for the photograph?

Y9/22 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?