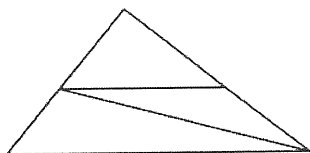


**MATHS OLYMPIAD
2017 CONTEST**

- 1 The birthdays of two sisters are on the same day. The elder sister is 4 years older than the younger sister. When the sum of their ages reaches 50 years, how old is the younger sister?

- 2 How many different triangles can be found in the diagram?



- 3 How many zeros are there in the end of the product of $20 \times 30 \times 40 \times 50$?

- 4 Some students form a rectangle. Joseph is in the fourth row if we count from the front and in the seventh row if we count from the back. He is in the third column if we count from left and in the ninth column if we count from the right.
How many students are there?

- 5 The mirror image of a mathematical expression reads

$$\underline{\hspace{2cm}} = 8105 - 5015$$

What is the correct difference?

MATHS OLYMPIAD 2017 CONTEST



- 6 A man walked 6 meters forward, 4 meters backward, 7 meters forward, 8 meters backward, and then it rests. How many meters apart are the current position and the initial position of the man?

- 7 Altogether, there are 240 books owned by 4 children. If A gives B 3 books, B gives C 4 books, C gives D 5 books and D gives A 6 books. Then each has the same number of books. Initially, how many books belong to the child with the least number of books?

- 8 Zachary has a computer program which accepts an input and produces an output. Some of the data are shown in the table below?

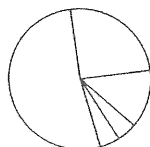
Input	1	2	3	4	5	6	7
Output	4	7	10	13	16	?	22

What is the output when the input is 6?

- 9 In an art class, the teacher presented shaped patterns. What is the 99th patterns if she continued drawing?

■ ▲ ● ★ ■ ▲ ● ★ ■ ●

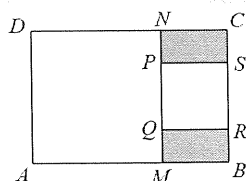
- 10 Hanna divides a circular piece of paper into 5 regions as shown in the diagram. She wants to paint each region using a color so that two regions sharing a common side with different colors. What is the smallest number of colors she needs?



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- 11 The diagram below shows two squares $AMND$ and $PQRS$ inside a rectangle $ABCD$. The areas of the two squares are 16 cm^2 and 4 cm^2 respectively. What is the sum of area of the shaded regions in cm^2 ?

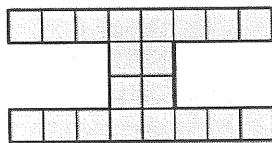


- 12 In the mathematical sentence below, A, B, C, D, E and F represent six distinct digits from 0 to 9. What is the numeral value of E ?

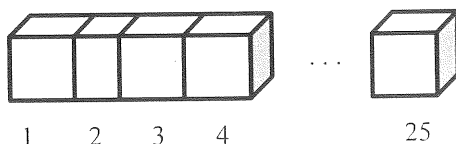
$$\begin{array}{r} 6A \\ \times 35 \\ \hline 33B \\ 1C8 \\ \hline DEFB \end{array}$$

- 13 For every \$4 Jessica spends, May spends \$7. May spends \$120 more than Jessica does. How much does May spend?

- 14 Each small region in the figure shown is a square. The area of the entire figure is 180 cm^2 . What is the number of cm in the perimeter of the entire figure?

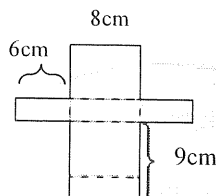


- 15 Twenty-five cubes are placed in a line such that they are joined face to face. The edges of each cube are 1 cm long. Find the surface area in cm^2 of the resulting solids.





- 16 An empty carton is opened and flattened to form the figure shown. The carton has both a top and a bottom. Find the total area of the figure shown in cm^2 .

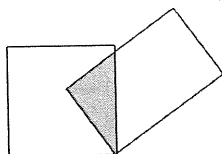


- 17 Alexis bakes 90 pizzas. Each pizza is cut either into 8 small slices or 6 large slices. Alexis has 5 small slices for every 3 large slices. How many of the 90 pizzas are cut into small slices?
- 18 Lin has 8 marbles. Each marble weighs either 2 g or 3 g or 5 g. He has a different number of marbles (at least one) of each weight. What is the smallest possible total weight of Lin's marbles?
- 19 In a group of 30 girls, 12 run for the track team, 9 are on the math team, and 6 are on both teams. How many of the girls are not on either team?
- 20 The ages of Amanda, Brittany, and Carly are each prime numbers. Amanda is the youngest. The sum of the ages of Amanda and Brittany is Equal to Carly's age. How old is Amanda?

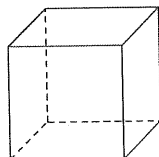


- 21 Some cards are missing from a deck of 52 cards. If the incomplete deck is dealt to four players so that each receives the same number of cards, then 3 cards are left. If it is dealt to three players instead, with each still receiving the same number of cards, then 1 card is left. What is the maximum number of cards are there in the incomplete deck?

- 22 The diagram shows a 4 cm by 4 cm piece of paper overlapping a 3 cm by 5 cm piece of paper. By how many cm^2 does the area of the non-overlapped part of the square piece of paper exceeds the area of the non-overlapped part of the rectangular piece of paper?



- 23 The six faces of a cubical die are labelled with six different positive integers. If the numbers on any two adjacent faces differ by at least 2, what is the minimum value of the sum of these six numbers?



- 24 For the class photo of 42 students, the photo shop charges 10 dollars for the first copy and 3 dollars for each additional copy. Moreover, 2 bonus copies are given for any order over 30 copies. If each student gets one copy, how many dollars must they pay the photo shop altogether?

- 25 Let \triangle , \square and \star represent three distinct digits. If $7\triangle 90901$ is larger than $79\square 9001$, which is in turn larger than $798900\star$, what is the value of $\triangle + \square + \star$?