Category I

MATHEMATICS OLYMPIAD COMPETITION - 2018
SELECTION TEST FOR PROVINCIAL LEVEL TRAINING POOL

General Instructions.

- Answer all   20questions.(5 marks per each)
- Write the answer on the dotted line given under each question and <u>it is necessary to mention the relevant units if any with the answer.</u>
- Diagrams are not to scale.

Index No .... :

School   .... :

Grade   .... :
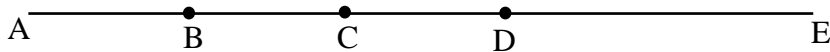
Time : 1 hour

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1. Write mathematical operation that gives results 1 by using all the digits of the number 2018.

   Answer:…………………..

2. Sum of four consecutive numbers is 2018. Find the prime number among them.

   Answer:…………………..

3. The length of *AE* is 4cm. *B* is the midpoint of *AC*, *C* is the midpoint of *BD* and *D* is the midpoint of *BE*. What is the length of *DE*?

   Answer:…………………..

4. Length and Breadth of a rectangle are 8*cm* and 5*cm* respectively. If the length and breadth are increased by 2cm each, express the area increased by the first rectangle as a percentage.

   Answer:…………………..

5. If the sum of the digits of a prime number is also a prime number is called as an additive prime number. Find the sum of the first five, two digits additive prime numbers.

   Answer:…………………..

6. Last year my age was a multiple of 7 and next year it will be a multiple of 11. How old will I be 6 years from now If my age is less than 100 ?

   Answer:…………………..

7. Kamal wants to write nine distinct positive integers in the cells of the 3×3 grid shown, so that the product of four numbers in every 2×2 grid equals to 180. Four numbers have already been written in the grid. What is the least possible value of x?
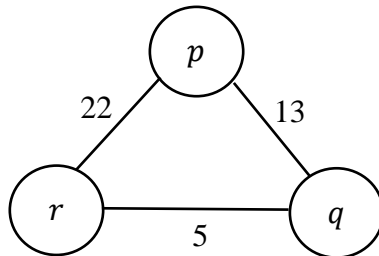
	4	
15	x	9
	2	

Answer:…………………..

8. The product of two positive integers is 128 and their quotient is 8. Which is the largest?

Answer:…………………..

9. The number on the line joined two circles is equal to the sum of these two numbers in two circles. Find the value of $p + q + r$ according to the following figure.

Answer:…………………..

10. Mr. Perera shares equally, the cost of a new fence with three other neighbors and the cost of road repair with two other neighbors. The fence cost $600 and the road repair cost $1,200. If 1$ = Rs.150 then what is Mr. Perera's share of the costs in rupees? ($ - Doller)

Answer:…………………..

11. Given that n is an odd number less than 1000 and the product of all its digits is 252. How many such odd numbers are there?
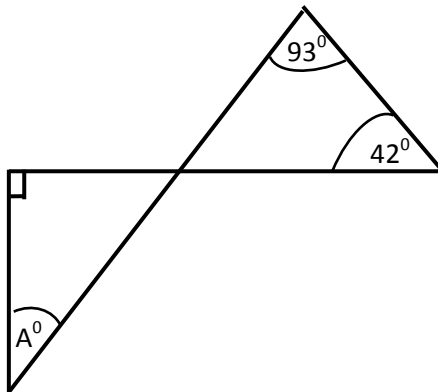
Answer:…………………..

12. Nimal, Amal, Bimal and Vimal are in a race. Amal is $60m$ ahead of Vimal. Nimal is $50m$ behind Bimal. Vimal is $20m$ behind Nimal. Who is winning this race?

Answer:…………………..

13. The front wheel of a car has a circumference of 1.5m, and the rear wheel has a circumference of 2m. How many more complete turns will the front wheel make than the rear wheel in traveling $1\frac{1}{2}$ km on a straight road?

Answer:…………………..
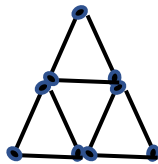
14. Find angle A.
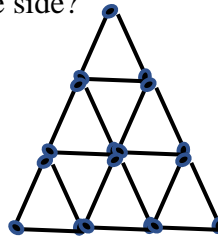

93⁰

Answer:…………………...

93^0

42^0

A^0

15. The pictures given below show how matches can be used to make triangular shapes that have one, two and three matches along a side. How many matches are needed to make a triangular shape of the same pattern, which has 6 matches along one side?
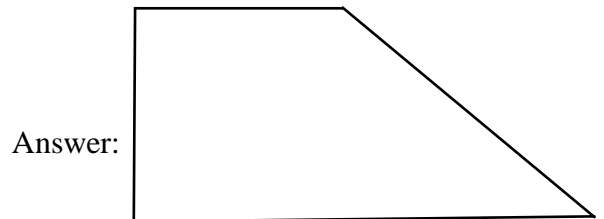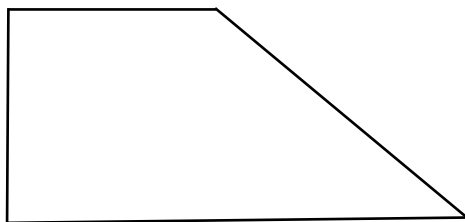

Side length: 1 match   **2 matches**   **3 matches**

Answer:…………………...

16. In the addition problem below, different letters represent different digits and *B* is twice *A*. What is the two- digit number does *CA*, represent?

$$
\begin{array}{r}
A \quad B \\
A \quad B \\
+ \quad A \quad B \\
\hline
C \quad A \\
\hline
\end{array}
$$

Answer:…………………...

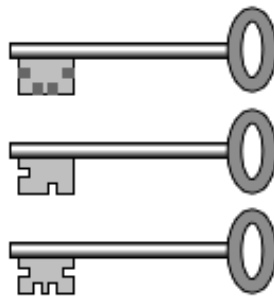17. Divide the given region in four congruent pieces.

Answer:

18. Visitors to a school fair had to guess the number of marbles in a jar. Prizes were awarded on how close the guesses were to the exact number.

First prize went to Gayani who guessed 123 marbles, second prize to Jeevanie who guessed 140, third prize to Sandya who guessed 141, and fourth prize to Jayani who guessed 120.
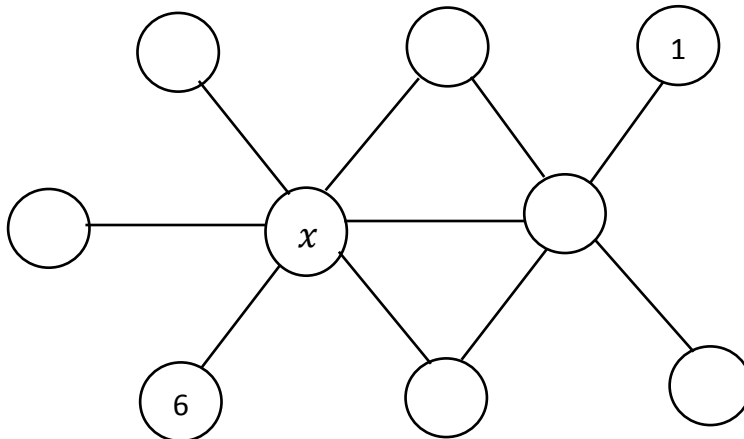
How many marbles were in the jar?

Answer:…………………..

19. A type of key has four places where a notch can be cut out. These are shown shaded in the top picture. For example, the middle key has two notches cut, while the bottom key has all four notches cut. If every key has at least one notch cut, how many different keys can be made?

Answer:…………………..

20. In the diagram, each of the integers 1 through 9 is to be placed in one circle so that the integers in every straight row of three joined circles, both horizontal and diagonal, add to 18. The 6 and 1 have been filled in as shown. Determine the value of the number represented by x in the diagram.

Answer:…………………..