A

COMPREHENSIVE REVISION TEST (UNIT TEST) SERIES - 2023

TEST No. 12

MATHEMATICS - UNIT 2 **Time : 45 mts**

MPUT

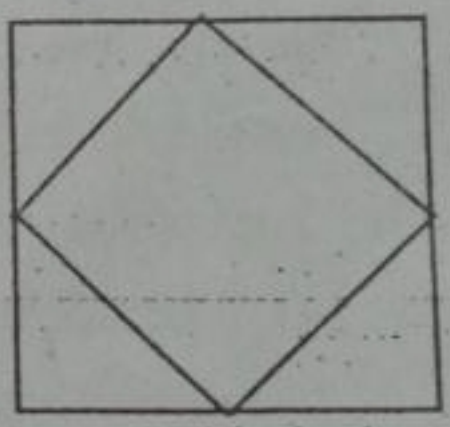
Std. X **| Chapters : 3.Mathematics of chance 4.Second degree equations | Total Score : 20**

Instructions :

- *Answer the questions based on instructions.*
- *Give explanations wherever necessary.*
- *Answer the questions according to the score and time.*

*Answer **any three** questions from 1 to 5. Each carries 2 scores.* (3 x 2 = 6)

1. x is a natural number.
   a) What number should be added to $x^2 + 2x$ to get a perfect square?
   b) If $x^2 + 2x = 15$, find the natural number represented by x.
2. The letters of the word 'ASSASSINATION' are written in paper slips and put into a box. A child is asked to take one slip from the box without looking.
   a) What is the probability of getting the letter A?
   b) What is the probability of getting the letter S ?
3. The alegebraic expression of the sum of terms of an arithmetic sequence is $n^2 + 8n$. The sum of continuous terms starting from the first of this sequence is found to be 240.
   a) Write a second degree equation based on this statement?
   b) The sum of how many terms is 240?
4. In the picture, a square got by joining the mid point of a bigger square is shown.
   a) The side length of the bigger square is 10cm.
   What will be the area of the smaller square?
   b) If a dot is put on the figure without looking into it, what is the probability that the dot is on the smaller square?



5. a) Length of a rectangle is 25 + x metres and its breadth is 25 - x metres. What is the perimeter of the rectangle?
   b) Find the length and breadth of a rectangle having perimeter 100 metres and area 525sq.metres.

*Answer **any two** questions from 6 to 8. Each carries 3 scores.* (2 x 3 = 6)

6. While writing the equation to construct a rectangle of specified perimeter and area, perimeter was wrongly written as 46 instead of 64. One side of the rectangle was then computed as 20 metres.
   a) What is the length of the other side?
   b) What is the area of the rectangle?
   c) Find the sides of the rectangle in the original problem.

7. A box contains green and blue balls. 7 red balls are put into it. Now the probability of getting a red ball from the box is $\frac{7}{24}$ and that of a blue ball is $\frac{1}{3}$.

a) How many balls are there in the box?

b) How many of them are blue?

c) What is the probability of getting a green ball from the box?

8. There are 30 scouts and 20 guides in a school. In another school there are 20 scouts and 15 guides. From each school, one student among them is to be selected for participation in a seminar.

a) What is the total number of possible selections?

b) What is the probability of both being guides?

c) What is the probability of one scout and one guide?

*Answer **any two** questions from 9 to 11. Each carries 4 scores.* (2 x 4 = 8)

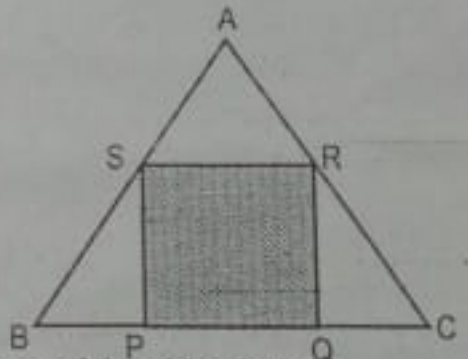
9. A rope of length 40 metres is cut into two pieces and two squares are made on the floor with them. The sum of the areas enclosed is 58 sq.metres.

a) If the length of one piece is taken as x, what is the length of the other piece?

b) What are the lengths of the sides of the squares?

c) What is the length of each piece?

10. In the picture, ΔABC is an equilateral triangle and PQRS is a square. If a dot is put on the triangle without looking into it, what is the probability that the dot is on the shaded part?



11. Sum of the areas of two squares is 41 sq.cm. The difference of the sides is 1cm.

a) If the side of the small square is x, then what is the side of the big square?

b) Form a second degree equation using the given conditions.

c) Find the side of each square.