

# Revision IV

December 4, 2025

- From a  $4\text{m} \times 5\text{m} \times 6\text{m}$  cuboid, two cubes are to be cut out such that both of them have faces parallel to those of the cuboid.  
What is the maximum possible total volume of the cubes?

- A lecturer uses a microphone while teaching. The  $4.8 \text{ m} \times 7.2 \text{ m}$  classroom has speakers mounted at the four corners. Whenever the lecturer ventures within 3 m distance of the corners, there is a disturbance on the speakers. What is the maximum distance that he can walk in a single direction, parallel to the longer sides of the room, without any disturbance?

- In a box, there are some red balls, some blue balls and two yellow balls. The probability that a ball picked at random is red is  $\frac{1}{2}$ . Also, the probability that two balls picked simultaneously are blue is  $\frac{1}{11}$ . How many balls are present in the box?

- If  $\log 4 = 0.6$ , find  $\log 5$ .

- Out of 15 points that lie in a plane, 3 points lie on a line and another 4 points lie on a line parallel to it. If no other 3 points are collinear, find the number of triangles that can be formed using these points.

- A man standing at the bottom of a staircase starts tossing a coin. Every time it shows Heads, he climbs two steps, while every time it shows Tails he climbs one step. After a while, he finds that he has climbed 8 steps. How many possible sequences of Heads and Tails could he have thrown?

- Rahul has just made a  $3 \times 3$  magic square, in which, the sum of the cells along any row, column or diagonal, is the same number  $N$ . The entries in the cells are given as expressions in  $x, y$  and  $z$ . Find  $N$ .

$3x + 4y$	$2x$	$2x + y + z$
$2x^2$	$4y$	$16 + z$
$y + z$	$3x + 2z$	$z - 1$



- In a True / False quiz, 4 marks are awarded for each correct answer and 1 mark is deducted for each wrong answer. Amit, Benn and Chitra answered the same 10 questions, and their answers are given below in the same sequential order.

**Amit:** T T F F T T F T T F

**Benn:** T T T F F T F T T F

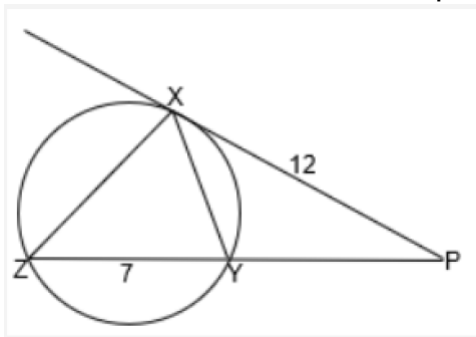
**Chitra:** T T T T F F T F T T

If Amit and Benn both score 35 marks each then Chitra's score will be.

- The sum of series,  $(-100) + (-95) + (-90) + \dots + 110 + 115 + 120$ , is

- How many ways can twelve similar balls be divided into three groups with each group containing at most six balls?

- In the figure below,  $PX = 12$  cm,  $YZ = 7$  cm and the perimeter of  $\triangle PXY$  is 27 cm. Find the perimeter of  $\triangle PXZ$ .



- It has been planned to connect the five cities Delhi, Mumbai, Chennai, Kolkata and Bangalore through a network of super-expressways, with certain conditions. Each of the five cities should be connected to at least three other cities. Also, Delhi, being the national capital, should be connected to all the other cities. What is the minimum number of super-expressways required for this plan?

- During Diwali season, Jaideep a shop owner marked the price of an article 50% above the cost price and then offered a discount of 40%. Find the profit or loss percent made by Jaideep in selling the article.









