MMC '26

Edition 01

MATHS MASTERY CHALLENGE

Class 10th | 18 January 2026 | Edition 01

SOLUTION PAPER | 20 Questions | 90 Mins | 40 Marks

Here is how to use this solution paper:

- Against each question, a "Laptop symbol" is given– click it to open the solution. You will get:

- Correct answer of the question
- Toppers' proven method to write an answer and score full marks
- Video solution with approach and step – by - step explanation of answer

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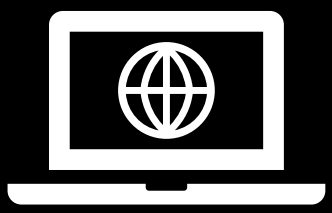
Question: 01

The table given below shows the runs scored by a cricket team during the overs of a match. What is the modal class?

a) 50-60 b) 60-70
c) 40-50 d) 30-40

Solution



Click for answer

Overs	*Runs scored*
20 – 30	37
30 – 40	45
40 – 50	40
50 - 60	60
60 – 70	51
70 - 80	35

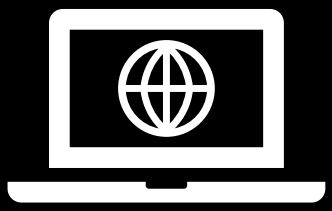
Question: 02

Three bells ring at intervals of 6, 12 and 18 minutes.

If all the three bells rang at 6 AM, when will they ring together again?

a) 6:06 AM b) 6:24 AM
c) 6:36 AM d) 6:48 AM

Solution



Click for answer

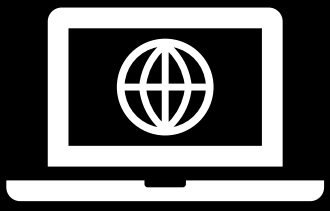
Question: 03

250 logs are stacked in the following manner: 22 logs in the bottom row, 21 in the next row, 20 in the row next to it and so on.

In how many rows, are the 250 logs placed?

a) 25 b) 22
c) 20 d) 18

Solution



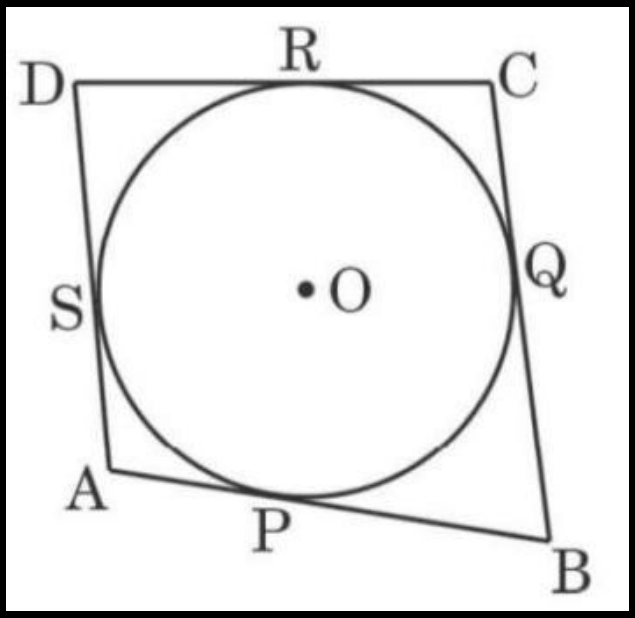
Click for answer

Question: 04

In a park, four poles are standing at positions A, B, C and D around the circular fountain such that the cloth joining the poles AB, BC, CD and DA touches the circular fountain at P, Q, R and S respectively as shown in the figure.

If O is the center of the circular fountain with ∠ QCR = 60°, then find the measure of ∠ QOR.

a) 30° b) 120° c) 60° d) 90°



Solution

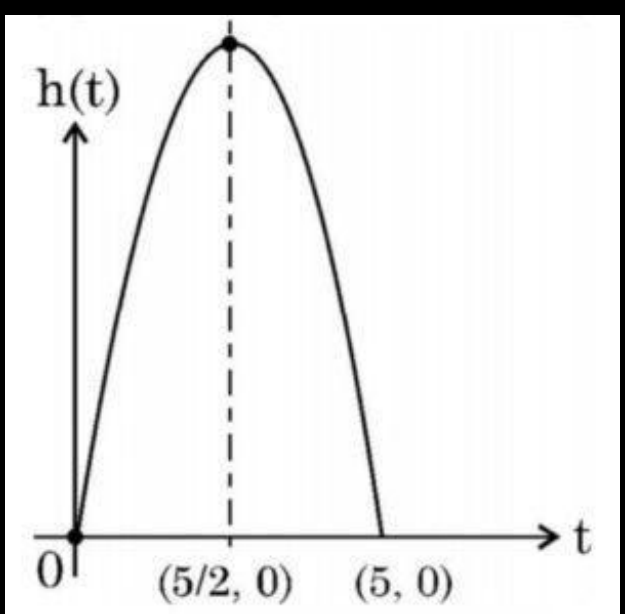
Click for answer

Question: 05

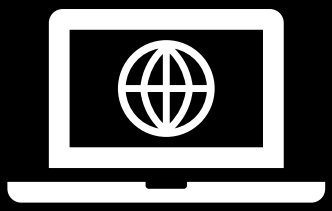
A ball is thrown in the air so that t seconds after it is thrown, its height h metre above its starting point is given by the polynomial: $h = 25t - 5t^2$.

Observe the graph of the polynomial and write zeroes of the given polynomial.

a) 20, 25 b) 5, 20 c) 25, 0 d) 0, 5



Solution



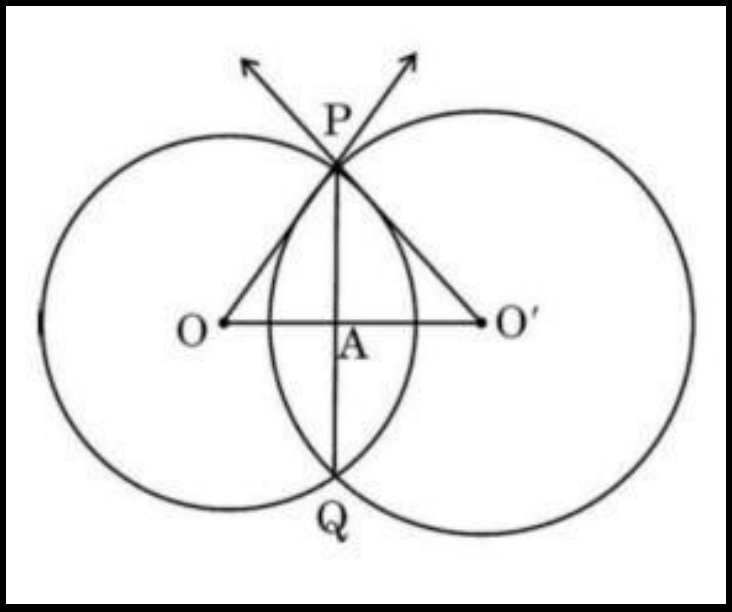
Click for answer

Question: 06

Two circles with centres O and O' of radii 6 cm and 8 cm, respectively intersect at two points P and Q such that OP and O'P are tangents to the two circles.

Find the length of the common chord PQ.

a) 4.8 cm b) 3.6 cm c) 7.2 cm d) 9.6 cm



Solution

Click for answer

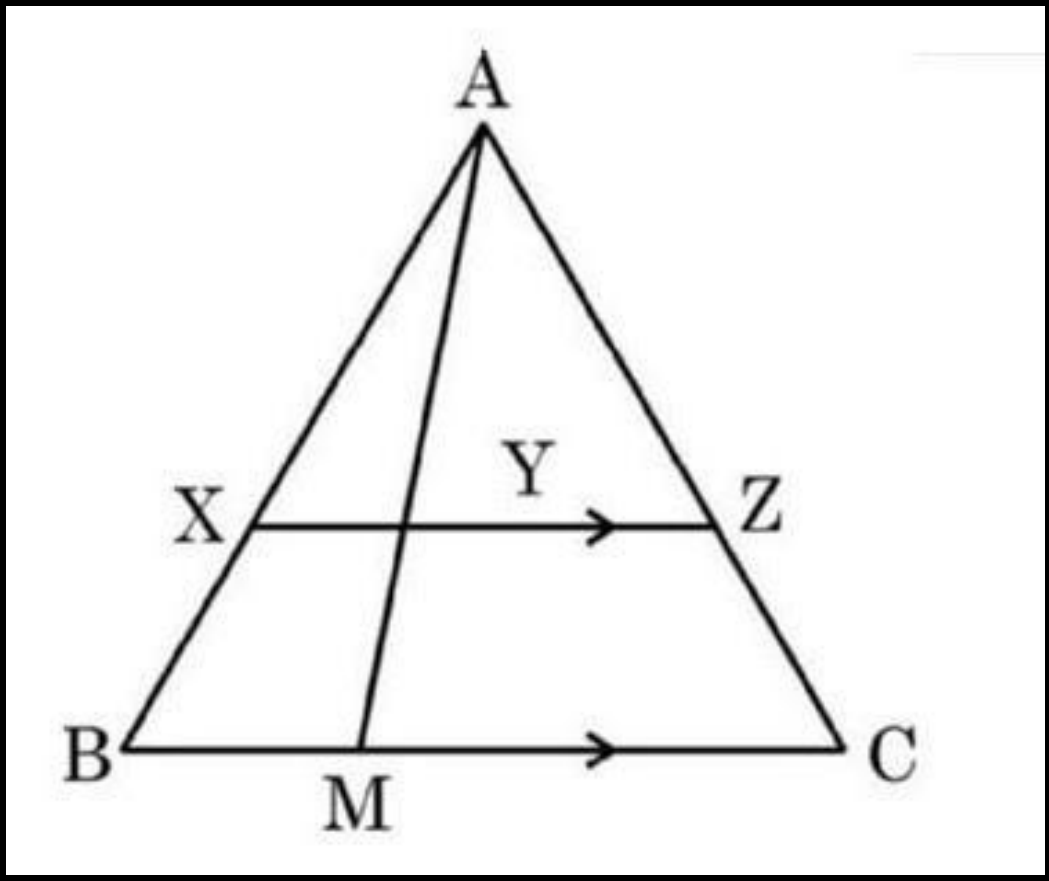
Question: 07

In the given figure, XZ is parallel to BC. AZ = 3 cm, ZC = 2 cm, BM = 3 cm and MC = 5 cm. Find the length of XY.

a) 1.2 cm b) 1.5 cm
c) 1.8 cm d) 2.4 cm

Solution

Click for answer

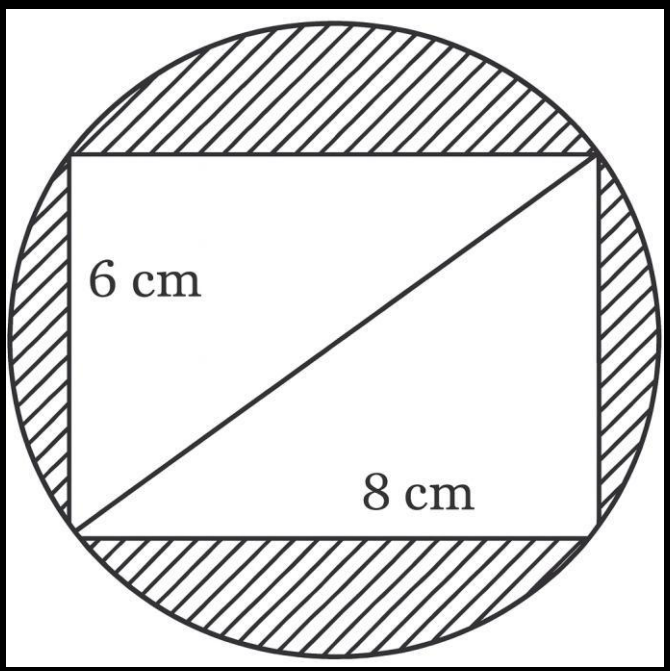


Question: 08

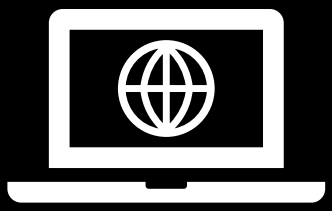
Reeti prepares a Rakhi for her brother Ronit. The Rakhi consists of a rectangle of length 8 cm and breadth 6 cm inscribed in a circle as shown in the figure.

Find the area of the shaded region. (Use pi = 3.14)

a) 48 m^2 b) 92.6 m^2 c) 78.5 m^2 d) 30.5 m^2



Solution



Click for answer

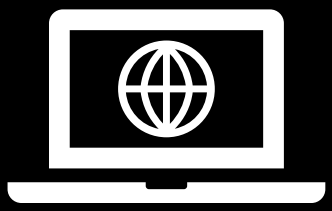
Question: 09

Your friend Veer wants to participate in a 200m race. He can currently run that distance in 51 seconds and with each day of practice it takes him 2 seconds less. He wants to do in 31 seconds.

What is the minimum number of days he needs to practice till his goal is achieved?

a) 10 b) 12 c) 11 d) 93

Solution



Click for answer

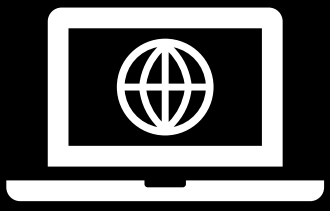
Question: 10

Two pipes together can fill a tank in 15/8 hours. The pipe with larger diameter takes 2 hours less than the pipe with smaller diameter to fill the tank separately.

Find the time in which each pipe can fill the tank separately.

a) 3, 5 b) 4, 6 c) 2, 5 d) 8, 15

Solution



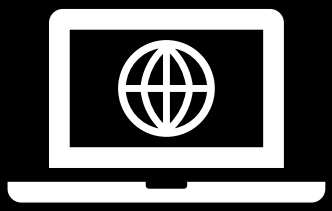
Click for answer

Question: 11

If $\sin \alpha = 1/\sqrt{2}$ and $\cot \beta = \sqrt{3}$, then find the value of $\operatorname{cosec} \alpha + \operatorname{cosec} \beta$.

a) $\sqrt{2}$ b) $\sqrt{2}(1+\sqrt{2})$
b) 2 d) $\sqrt{2} + \sqrt{3}$

Solution



Click for answer

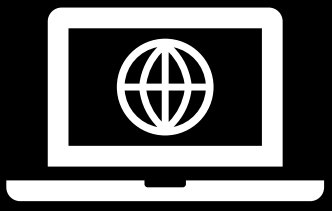
Question: 12

If $4 \cot^2 45° - \sec^2 60° + \sin^2 60° + p = ¾$, then find the value of P.

a) 1/4 b) 1/2

c) 3/4 d) 0

Solution



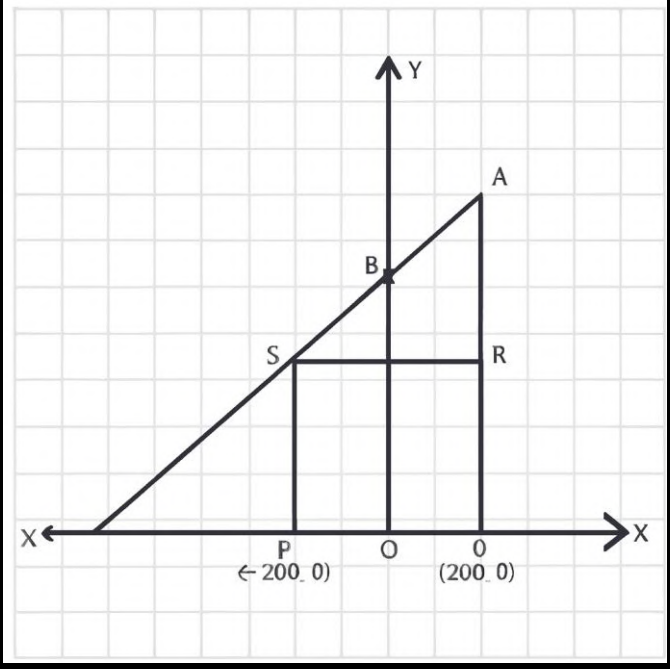
Click for answer

Question: 13

Jagdish has a field which is in the shape of a right-angled triangle AQC. He wants to leave a space in the form of a square PQRS inside the field for growing wheat and the remaining for growing vegetables. In the field, there is a pole marked as O.

If S divides CA in the ratio K : 1, what is the value of K, where point A is (200, 800)?

a) 0.5 b) 1 c) 2 d) 0.75



Solution

Click for answer

Question: 14

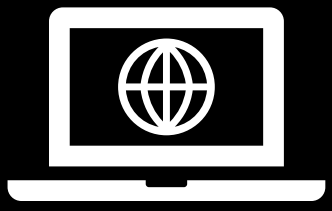
The monthly incomes of A and B are in the ratio 8 : 7 and their expenditures are in the ratio 19 : 16.

If each saves Rs. 2500 per month, find the monthly income of each (in Rs).

a) 12,000, 10,500 b) 8,000, 7,000

c) 5,600, 4,900 d) 4,000, 3,500

Solution



Click for answer

Question: 15

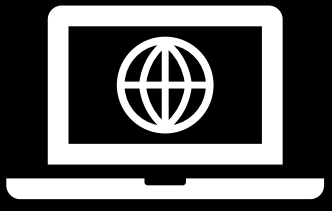
An empty cone is of radius 3 cm and height 12 cm. Ice-cream is filled in it so that lower part of the cone, which is 1/6 th of volume of the cone, is unfilled but hemisphere is formed on the top.

Find volume of the ice-cream in terms of π.

a) 48 π b) 36 π

c) 18 π d) 30 π

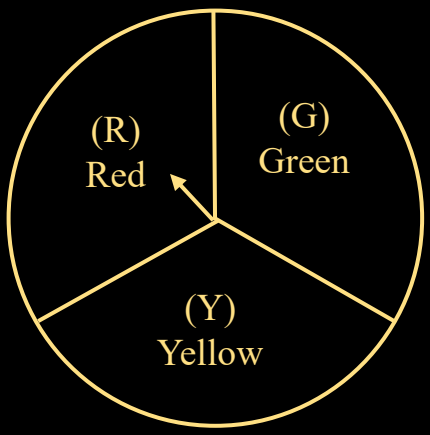
Solution



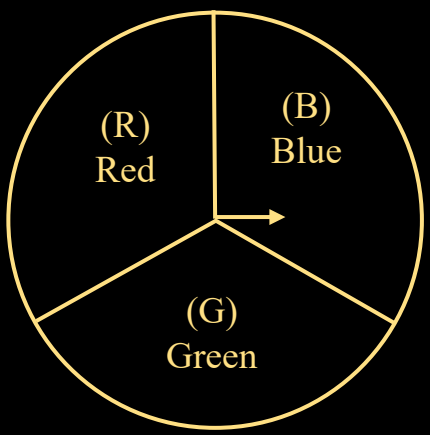
Click for answer

Question: 16

A middle school decided to run the following spinner game as a fund-raiser on Christmas Carnival. Making Purple: Spin each spinner once. Blue and red make purple. So, if one spinner shows Red (R) and another Blue (B), then you 'win'. One such outcome is written as 'RB'.



I



II

For each win, a participant gets Rs. 10, but if he/she loses, he / she has to pay Rs. 5 to the school. If 99 participants played, calculate how much fund could the school have collected.

a) Rs. 330 b) Rs. 110

c) Rs. 770 d) Rs. 880

Solution

Click for answer

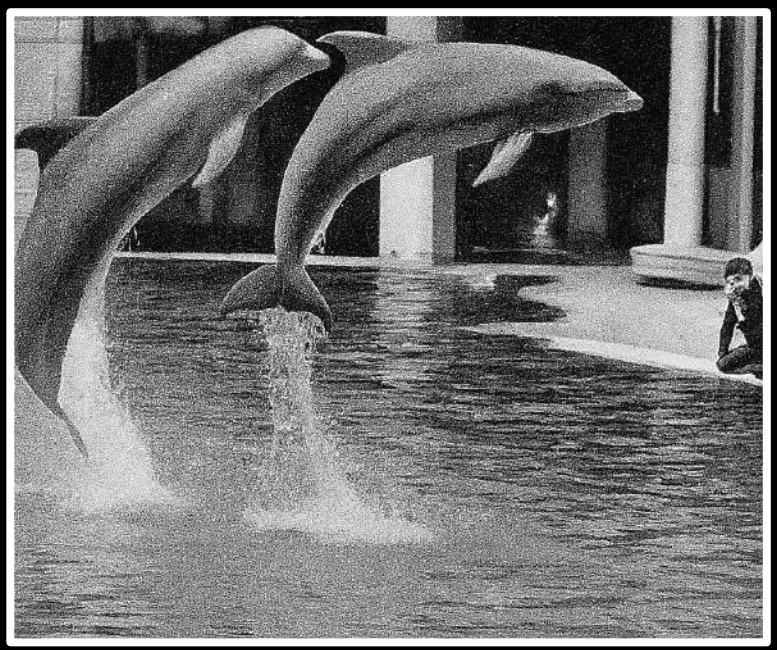
Question: 17

In a pool at an aquarium, a dolphin jumps out of the water travelling at 20 cm per second. Its height above water level after t seconds is given by:

$$h = 20\,t - 16\,t^2$$

How much distance has the dolphin covered before hitting the water level again?

a) 30 cm b) 25 cm c) 20 cm d) 50 cm



Solution

Click for answer

Question: 18

Two people are 16 km apart on a straight road. They start walking at the same time.

If they walk towards each other with different speeds, they will meet in 2 hours.

Had they walked in the same direction with same speeds as before, they would have met in 8 hours.

Answer the following:

i. Find their walking speeds in km/hr.

a) 2 and 6 b) 3 and 5
c) 4 and 4 d) 6 and 10

i. What are there cumulative and differential speeds in km/hr?

a) 8 and 4 b) 8 and 0
c) 8 and 2 d) 16 and 4

Solution

Click for answer

Question: 19

Raj and Ajay are very close friends. Both the families decide to go to Ranikhet by their own cars.

Raj's car travels at a speed of x km/h while Ajay's car travels 5 km/h faster than Raj's car. Raj took 4 hours more than Ajay to complete the journey of 400 km.

Answer the following:

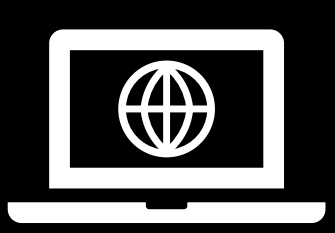
i. Which of the following quadratic equation describe the speed of Raj's car?

a) $x^2 - 5x - 500 = 0$
b) $x^2 + 4x - 400 = 0$
c) $x^2 + 5x - 500 = 0$
d) $x^2 - 4x + 400 = 0$

ii. How much time took Ajay to travel 400 km?

a) 20 hour b) 40 hour
c) 25 hour d) 16 hour

Solution



Click for answer

Question: 20

A ladder set against a wall at an angle 45° to the ground.

If the foot of the ladder is pulled away from the wall through a distance of 4 m, its top slides a distance of 3 m down the wall making an angle 30° with the ground.

Answer the following:

i. Find the final height of the top of the ladder from the ground.

a) 4.2 m b) 6 m
c) 7.23 m d) 1.4 m

ii. What is the length of the ladder?

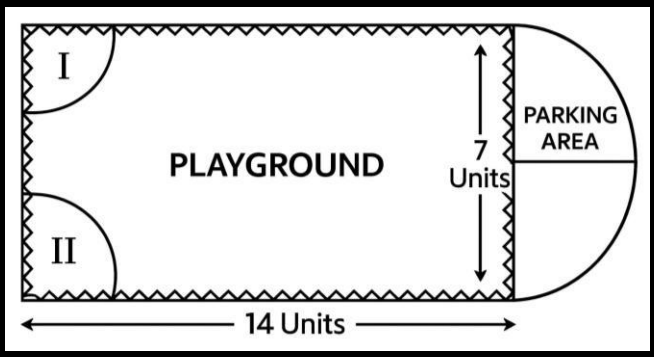
a) 14.46 m b) 7.23 m
c) 3.615 m d) 28.92 m

Solution

Click for answer

Question: 21

Governing council of a local public development authority of Dehradun decided to build an adventurous playground on the top of a hill, which will have adequate space for parking.



After survey, it was decided to build rectangular playground, with a semi-circular area allotted for parking at one end of the playground. The length and breadth of the rectangular playground are 14 units and 7 units, respectively. There are two quadrants of radius 2 units on one side for special seats.

Based on the above information, answer the following questions:

i. What is the total area of parking and the two quadrants?

a) 18 units^2 b) 25.54 units^2 c) 24 units^2 d) 19.25 units^2

ii. Find cost of fencing the playground and parking area at the rate of Rs. 2/unit.

a) Rs. 84 b) Rs. 22 c) Rs. 106 d) Rs. 212

Solution

Click for answer ☞

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