



MATHS

BOOKS - EDUCART PUBLICATION

SAMPLE PAPER SOLVED 4

Section A

1. A quadratic polynomial with sum and product of zeroes as $-\frac{1}{4}$ and $\frac{1}{4}$, respectively, is:

A. $4x^2 - x + 1$

B. $4x^2 + x + 1$

C. $4x^2 + x - 1$

D. $4x^2 - x - 1$

Answer: B



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2. In a $\triangle ABC$ right - angled at B, $AB : AC = 1 :$

2. Then the value of $\frac{\cot A + \tan C}{\sin B + \cos B}$ is:

A. $\frac{2}{\sqrt{3}}$

B. $\frac{\sqrt{3} + 1}{2}$

C. $\frac{2\sqrt{2} - \sqrt{2}}{2}$

D. $\sqrt{3} - 1$

Answer: A



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3. The value of

$\sin^2 60^\circ + 2\tan 45^\circ - \cos^2 30^\circ$ is :

A. 0

B. 1

C. 2

D. $\frac{1}{3}$

Answer: C



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4. What will be the decimal expansion of the rational number $\frac{27}{1250}$?

A. 0.0125

B. 0.0021

C. 0.0315

D. 0.0216

Answer: D



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5. What is the point on y - axis which is equidistant from the points $(2,3)$ and $(-4,1)$?

A. $(0,-1)$

B. $(0,1)$

C. $(0,2)$

D. $(0,-2)$

Answer: A



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6. Ramesh draws a card randomly from a deck of 52 cards. The probability that this card bears an even number in black is:

A. $\frac{1}{13}$

B. $\frac{1}{52}$

C. $\frac{2}{13}$

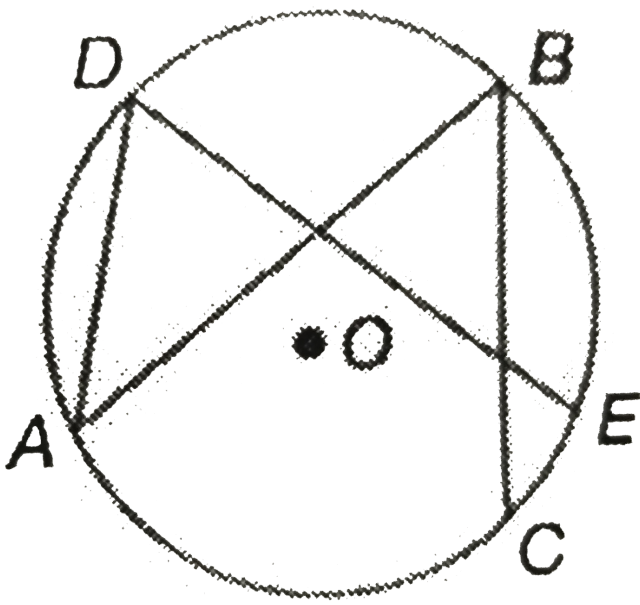
D. $\frac{5}{26}$

Answer: D



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7. In the given figure, the angles $\angle ADE$ and $\angle ABC$ differ by 15° . Find $\angle CAE$.



A. 30°

B. 25°

C. 35°

D. 50°

Answer: D



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8. Find a relation between a and b , for which the system of equations $ax + 2y = 7$ and $3x + by = 16$ represents parallel lines.

A. $a - b = 5$

B. $a + 2b = 7$

C. $ab = 6$

D. $a = 2b$

Answer: C



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9. Calculate the value of $\alpha^2 - \beta^2$ where α, β are zeroes of the polynomial $x^2 - 5x + 6$.

A. 0

B. 2

C. 7

D. 5

Answer: D



10. A number is selected from the numbers 1, 2, ..., 15. What is the probability that it is a multiple of 4?

A. $\frac{7}{15}$

B. $\frac{2}{5}$

C. $\frac{1}{5}$

D. $\frac{2}{15}$

Answer: C





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11. From where does the graph of the equation $x - y = 0$ pass?

A. x - axis

B. y - axis

C. Origin

D. Data insufficient

Answer: C



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12. What is the value of $\beta - \alpha$, if \sin

$$\alpha = \frac{\sqrt{3}}{2} \text{ and } \cos \beta = 0?$$

A. 0°

B. 30°

C. 45°

D. 60°

Answer: B



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13. If $(x - 2)$ is a factor of polynomial $p(x) = x^3 + 2x^2 - kx + 10$, then the value of k is:

A. 10

B. 11

C. 12

D. 13

Answer: D



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14. $A(3, 2)$ and $B(-2, 1)$ are two vertices of a triangle ABC whose centroid G has the coordinates $\left(\frac{5}{3}, -\frac{1}{3}\right)$. Find the coordinates of the third vertex C of the triangle.

A. (4,-4)

B. (1,-4)

C. (3,2)

D. (9,7)

Answer: C



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15. The maximum number of students among who 1001 pens and 910 pencils can be distributed in such a way that each student gets same number of pens and same number of pencils is

A. 70

B. 93

C. 91

D. 82

Answer: C



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16. Calculate the value of a , if $x = a$ and $y = b$ is the solution of the linear equations $x - y = 2$ and $x + y = 4$.

A. 1

B. 3

C. 2

D. 0

Answer: B



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17. If $\sin \theta + \cos \theta = \sqrt{2} \cos \theta$, ($\theta \neq 90^\circ$) then

value of $\tan \theta$ is

A. 0

B. $\sqrt{2}$

C. $\sqrt{2} + 1$

D. $\sqrt{2} - 1$

Answer: D



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18. A rational number in its decimal expansion is 1.7351. What can you about the prime factors of q this number is expressed in the form $= \frac{p}{q}$ Give reason.

A. $2^m 7^n$

B. $3^m 5^n$

C. $2^m 5^n$

D. $3^m 7^n$

Answer: C



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19. What is the value of k in the quadratic polynomial $kx^2 + 4x + 3k$, if the sum of the zeroes is equal to their product?

A. $-\frac{4}{3}$

B. $\frac{2}{3}$

C. $\frac{1}{0}$

D. -5

Answer: A



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20. Find the value of k for which the linear equations $x + 2y = 3$ and $5x + ky = 7$, does not have a unique solution.

A. 5

B. 7

C. 2

D. 10

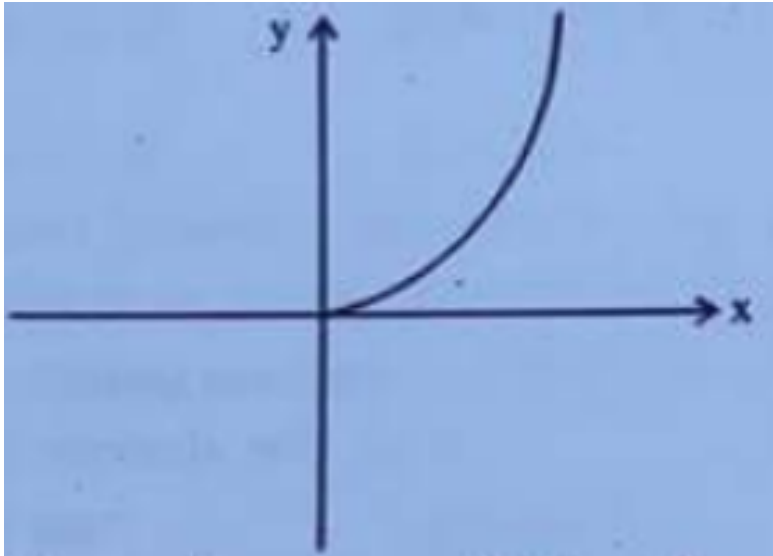
Answer: D



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Section B

1. Which of the following equation is best representation of given graph's?



A. 2

B. 5

C. 3

D. 4

Answer: C



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2. Centroid of $\triangle ABC$ with the vertices

$A(6, 3)$, $B(1, -4)$ and $C(-2, 7)$ is

A. $\left(3, \frac{5}{2}\right)$

B. $\left(\frac{5}{2}, 3\right)$

C. $\left(2, \frac{5}{3}\right)$

D. $\left(\frac{5}{3}, 2\right)$

Answer: D



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3. Salesman was having a lot of 100 shirts of which 88 are good, 8 have minor defects and 4 have major defects. Suresh, a shopkeeper will buy only those shirts which are good. If a shirt is selected at random from the lot, what is the probability that he will buy the shirt?

A. $\frac{22}{25}$

B. $\frac{23}{25}$

C. $\frac{11}{100}$

D. $\frac{24}{25}$

Answer: A



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4. The sum of two numbers is 33 and their difference is 17. Find the numbers.

A. 11 and 22

B. 25 and 8

C. 17 and 26

D. 24 and 9

Answer: B



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5. The number of solutions of the pair of linear equations $x + 3y = 4$ and $2x + y = 5$ is:

A. One

B. infinite

C. No Solution

D. Two

Answer: A



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6. Write the sum of exponents of prime factors in the prime factorisation of 250.

A. 4

B. 6

C. 8

D. 3

Answer: A



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7. Which of the following condition is correct for the graph of a quadratic polynomial $p(x) = ax^2 + bx + c$ to be an upward parabola?

A. $a < 0$

B. $a = 0$

C. $a > 0$

D. $b = 0$

Answer: C



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8. Evaluate $0.\overline{65} + 2.\overline{61}$.

A. $1.\overline{31}$

B. $3.\overline{27}$

C. $1.\overline{21}$

D. $1.0\overline{1}$

Answer: B



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9. Calculate the LCM of two positive. Integers whose product is 108 and HCF is 3.

A. 72

B. 36

C. 18

D. 9

Answer: A



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10. What is the value of θ in the expression, \tan

$$3\theta = \sin 45^\circ \cos 45^\circ + \sin 30^\circ ?$$

A. 0°

B. 15°

C. 30°

D. 45°

Answer: B



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11. The probability of guessing the correct answer to a certain test questions is $\frac{x}{12}$. If the probability of not guessing the correct answer to this question is $\frac{2}{3}$. then $x = 2$ (b) 3 (c) 4 (d) 6

A. 4

B. 6

C. 5

D. 3

Answer: A



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12. The mid-point of $(3p,4)$ and $(-2,2q)$ is $(2,6)$

The value of $(p + q)$ is:

A. 5

B. 6

C. 7

D. 8

Answer: B



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13. Degree of the zero polynomial is

A. 0

B. 1

C. 2

D. Not defined

Answer: D



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14. In the given figure, $AC = 12$ cm, $AB = 3$ cm and $BC = 4$ cm. Then $\cot \theta = ?$



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15. The value of

$(\tan \theta \csc \theta)^2 - (\sin \theta \sec \theta)^2$ is:

A. -1

B. 0

C. 1

D. 2

Answer: C



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16. Aruna has only Rs. 1 and Rs. 2 coins with her. If the total number of coins that she has is 50 and the amount of money with her is Rs. 75, then the number of Rs. 1 and Rs. 2 coins are, respectively

A. 10

B. 20

C. 22

D. 25

Answer: D





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17. Find the value of x , if the distance between the points $(x, -1)$ and $(3, 2)$ is 5.

A. 7,-1

B. 1,7

C. -7, 1

D. -1, 7

Answer: A



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18. In what ratio does the x-axis divide the join of A(2, 3) and B(5, 6)?

A. 1 : 1

B. 2 : 1

C. 1 : 2

D. 1 : 3

Answer: C



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19. Calculate the least positive integer which is divisible by 20 and 24.

A. 120

B. 200

C. 150

D. 480

Answer: A



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20. Find a relation between x and y such that the point (x, y) is equidistant from the points $(7, 1)$ and $(3, 5)$.

A. $x - y = 2$

B. $3x + 2y = 6$

C. $7x - 8y = 0$

D. $3x - 2y = 4$

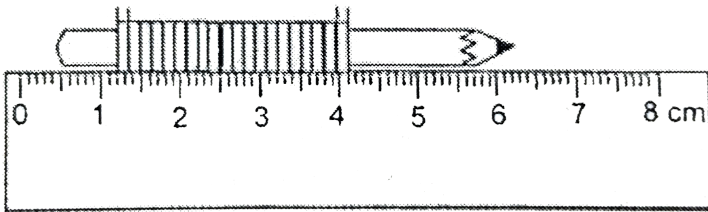
Answer: A



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Section C

1. A wire is wound over a pencil and placed over a scale as shown in the figure. The diameter of the given wire is _____.



A. 36.5cm^2

B. 38.5cm^2

C. 39cm^2

D. 40cm^2

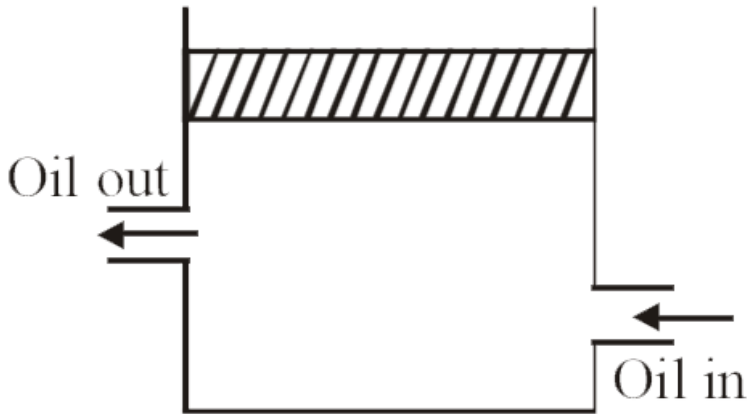
Answer: B



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2. The top of an insulated cylindrical container is covered by a disc having emissivity 0.6 and conductivity $0.167 \text{ WK}^{-1}\text{m}^{-1}$ and thickness 1 cm. The temperature is maintained by circulating oil as shown in figure. Find the radiation loss to the surrounding in $\text{Jm}^{-2}\text{s}^{-1}$

if temperature of the upper surface of the disc is 127°C and temperature of the surrounding is 27°C .



A. 50cm^2

B. 48cm^2

C. 50cm^2

D. 52cm^2

Answer: C



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3. A word is represented by only one set of numbers as given in any one of the alternatives. The sets of numbers given in the alternatives are represented by two classes of alphabets as shown in the given two matrices. The columns and rows of Matrix-I are numbered from 0 to 4 and that of Matrix-II are numbered from 5 to 9. A letter from these

matrices be represented first by its row and next by its column, for example, 'E' can be represented by 32, 67, etc., and 'A' can be represented by 12, 68, etc. Similarly, you have to identify the set for the word "LOCKS".

Matrix-I

मि०-१

	0	1	2	3	4
0	Y	L	U	A	D
1	K	S	A	O	E
2	J	M	N	L	T
3	V	C	E	F	U
4	D	K	J	U	A

Matrix-II

मि०-२

	5	6	7	8	9
5	Q	H	O	Y	S
6	F	P	E	A	C
7	N	H	I	J	R
8	K	N	G	Q	O
9	V	R	T	H	I

A. Rs. 200

B. Rs. 230

C. Rs. 280

D. Rs. 420

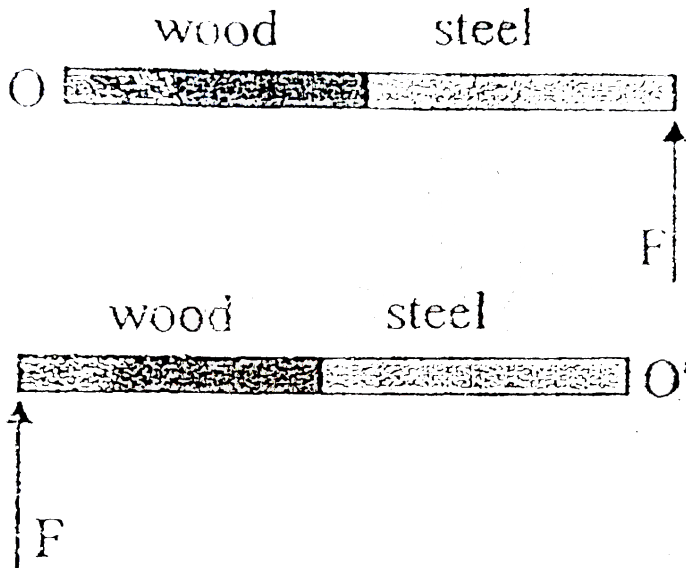
Answer: B



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4. Figures 1 and 2 below show a meter stick, half of which is wood and half of which is steel. (Steel is denser than wood). In figure 1, the stick is pivoted at the wooden end, at O, and a force F is applied to the steel end. In figure 2,

the stick is pivoted at the steel end at O, and an identical force is applied to the wooden end. [Neglect Gravity].



A. 112cm^2

B. 114cm^2

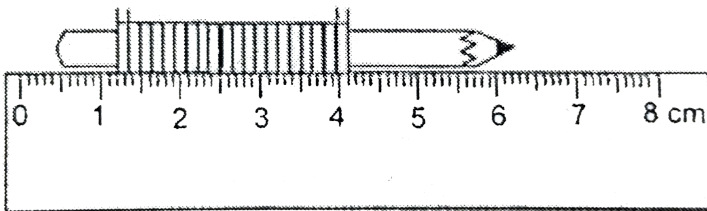
C. 100cm^2

D. 115.5cm^2

Answer: D

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5. A wire is wound over a pencil and placed over a scale as shown in the figure. The diameter of the given wire is _____.



A. 10 cm

B. 11 cm

C. 12 cm

D. 14 cm

Answer: B



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6. Which among the following is incorrect ?

A. ASA

B. SSS

C. SAS

D. AAA

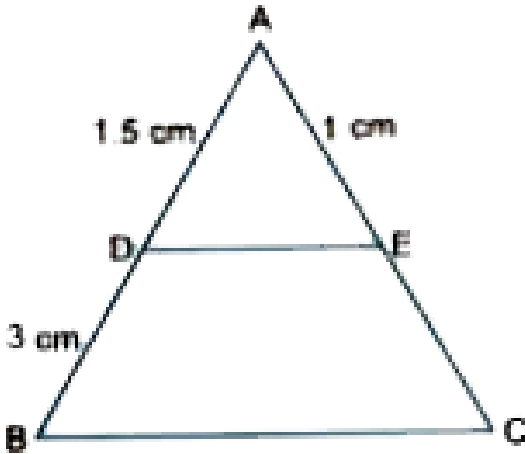
Answer: A



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7. If a line is drawn parallel to one side of a triangle to intersect the other two sides in distinct points, the other two sides are divided in the same ratio. Using this theorem. Find EC

in if $DE \parallel BC$.



- A. Bisector theorem
- B. Pythagoras theorem
- C. Thales theorem
- D. Alternate segment theorem

Answer: C





8. Find the set of all real 'a' such that $5a^2 - 3a - 2$, $a^2 + a - 2$ and $2a^2 + a - 1$ are the lengths of the sides of a triangle?

A. 55.2 m

B. 53.05 m

C. 54 m

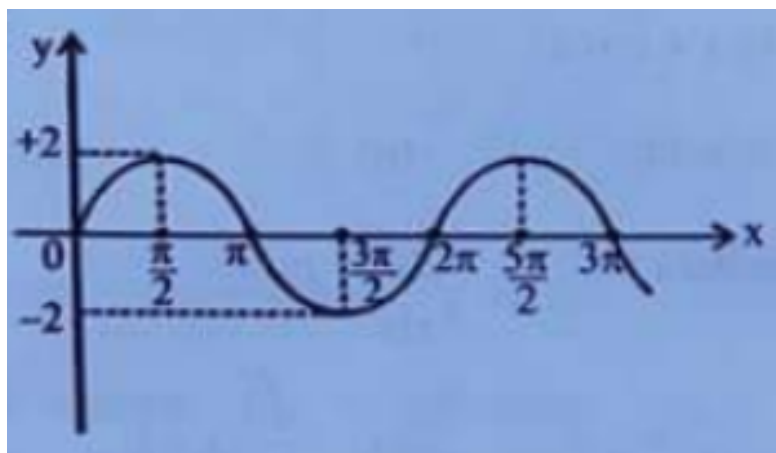
D. 52.05 m

Answer: B



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9. Which of the following equation is best representation of given graph's?



A. $2850.70m^2$

B. $2820.04m^2$

C. $2930m^2$

$$D. 2814.30m^2$$

Answer: D



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10. Rakesh has a rectangular field of length 80 m and breadth 60 m. In it, he wants to make a garden 10 m long and 4 m broad at one of the corners and at another corner, he wants to grow flowers in two floor-beds each of size 4 m by 1.5 m. In the remaining part of the field, he

wants to apply manures. Find the cost of applying the manures at the rate of Rs 300 per area.

A. $3232.5m^2$

B. $3645m^2$

C. $3250m^2$

D. $3233.7m^2$

Answer: D



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