MATHS

BOOKS - EDUCART PUBLICATION

SAMPLE PAPER 8

Section A

1. Calculate the value of HCF (8, 9, 25) $\times$ LCM (8, 9, 25)

A. 500

B. 1800

C. 200

D. 2500

Answer: B

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2. The dependent pair of linear equations is always?

A. Inconsistent

B. Parallel

C. Straight

D. Consistent

Answer: D

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3. Find the value of k, if the lines given by 4x + 5ky = 10 and 3x + y + 1 = 0 are parallel.

A. 7

B. $\frac{3}{8}$

C. $\frac{4}{15}$

D. -1

Answer: C

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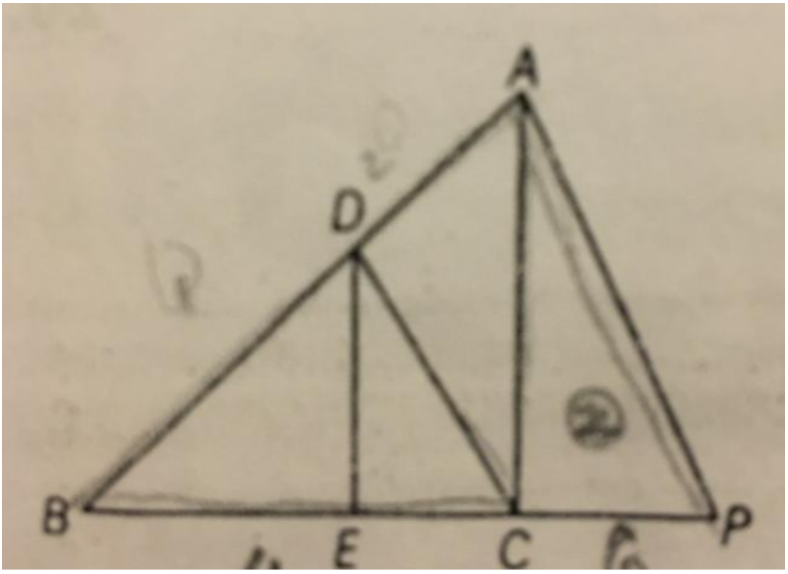
4. In the figure below, DE || AC and DC || AP. Find $\frac{BE}{EC}$ such that BC = 4 cm and BP = 6 cm.



A. $1:1$

B. $1:2$

C. $2:1$

D. $1:3$

Answer: C

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5. Find the least number which when divided by 15, leaves a remainder of 5, when divided by 25, leaves a remainder of 15 and when divided by 35 leaves a remainder of 25.

A. 515

B. 550

C. 530

D. 600

Answer: A

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6. In a Δ ABC , DE||BC if DE=$\frac{2}{3}$ BC and area of Δ ABC =81cm^2 find the area of ΔADE

A. $24cm^2$

B. $16cm^2$

C. $36cm^2$

D. $32cm^2$

Answer: C

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7. Find the value of (x, y), if centroid of the triangle with coordinates (x, 0), (0, y) and (6,3) is (3,4).

A. (3, 0)

B. (6, 6)

C. (3, 9)

D. (-6, 8)

Answer: C

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8. Which type of lines are represented by the pair of linear equations

$4x + 3y - 1 = 5$ and $12x + 9y = 15$.

A. Coincident

B. Intersecting

C. Parallel

D. both (a) and (c)

Answer: C

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9. 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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10. Evaluate λ, if three points (0, 0), $\left(3, \sqrt{3}\right)$ and $(3, \lambda)$ form an equilateral triangle.

A. -4

B. 2

C. -3

D. $\pm\sqrt{3}$

Answer: D

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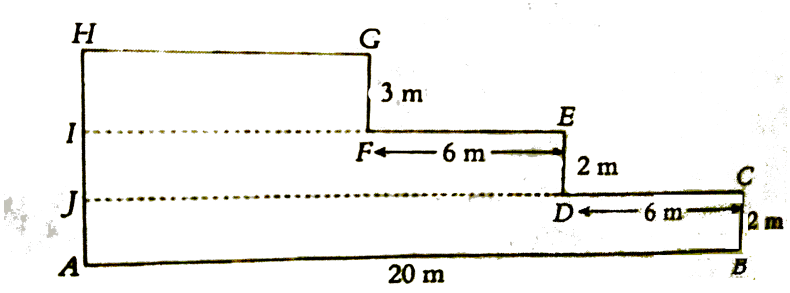
11. Find the area of figure given below.



A. 0

B. 1

C. 2

D. 3

Answer: A

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12. What is the value of x, if the probability of guessing the correct answer to a certain test question is $\frac{x}{12}$ and the probability of not guessing the correct answer to this question is $\frac{2}{3}$?

A. 4

B. 6

C. 5

D. 3

Answer: A

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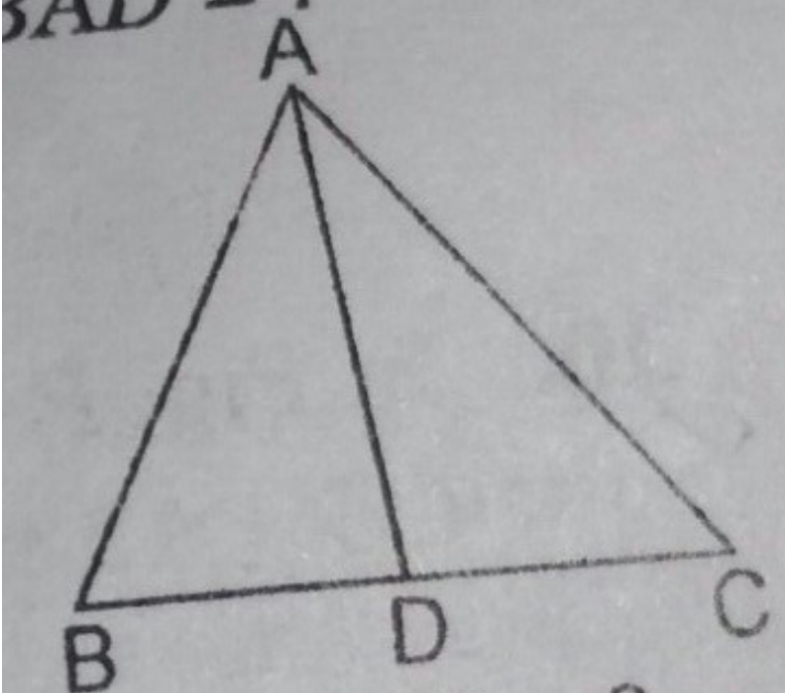
13. Find the value of $\angle BAD$ in ΔABC, if $\frac{AB}{AC} = \frac{BD}{DC}, \angle B = 70^\circ$ and $\angle C = 50^\circ$.



A. 30°

B. 45°

C. 60°

D. 75°

Answer: A

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14. If corresponding angles of two triangles are equal, then two triangles are called .....

A. congruent

B. similar

C. equiangular

D. equal

Answer: C

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15. Find the least number which is divisible by all numbers from 1 to 10 (both inclusive).

A. 2500

B. 2550

C. 2520

D. 3750

Answer: C

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16. Find the coordinates of S, if S is the midpoint of line joining $A(-3, 7)$ and $D(9, 1)$.

A. $(-1, 1)$

B. $(1, -1)$

C. $(-2, 2)$

D. $(3, 4)$

Answer: D

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17. What is the probability of getting different numbers on two dice, if two dice are thrown at the same time?

A. $\frac{1}{6}$

B. $\frac{1}{2}$

C. $\frac{5}{6}$

D. $\frac{1}{4}$

Answer: C

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18. What are the coordinates of the point c, such that $B\left(\frac{1}{2}, 6\right)$ divides the line segment joining the points A(3, 5) and C in the ratio of 1 : 3 ?

A. (0, 0)

B. (7, 9)

C. (7, -9)

D. (-7, 9)

Answer: D

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19. In a ΔABC, right angled at B, what is the value of 2 sin A cot A if $\tan A = \sqrt{3}$.

A. $\frac{1}{\sqrt{2}}$

B. 1

C. -1

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

Answer: B

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20. The decimal expansion of the rational number $\frac{14587}{1250}$ will terminate after:

A. 11.6696

B. 12.6182

C. 9.3120

D. 10.717

Answer: A

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Section B

1. $\sqrt{7}$ is a :

A. Rational No.

B. Irrational No.

C. Whole number

D. Integer

Answer: B

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2. Find the value of 'p' for which the following pair of linear equations have infinitely many solutions ?

$(p-3)x+3y=p$

$px+py=12$

A. -6

B. 0

C. 6

D. 12

Answer: C

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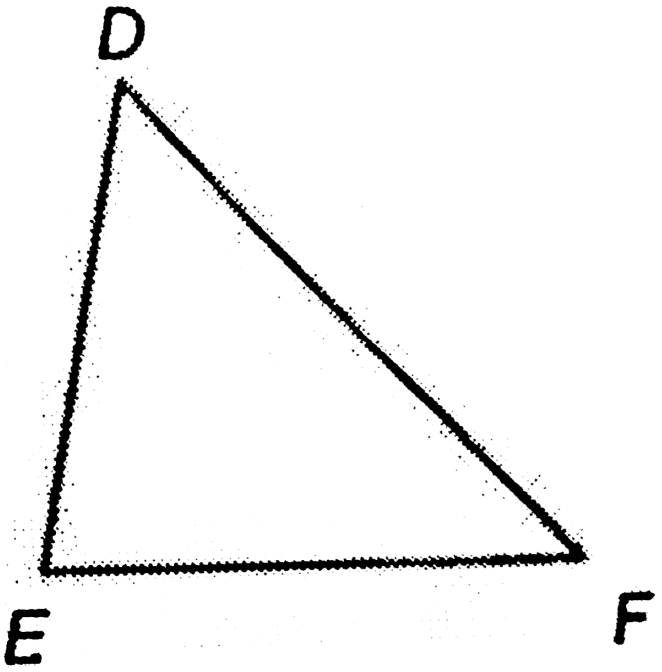
3. In the given figure, DEF is a triangle. If DF is the longest side and EF is the shortest side, then which of the following is true?



A. $\Delta ABC - \Delta XYZ$

B. $\Delta PQR - \Delta XYZ$

C. $\Delta ABC - \Delta YZX$

D. $\Delta QPR - \Delta BCA$

Answer: C

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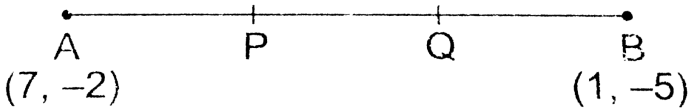
4. In the given figure P(5, -3) and Q(3, y) are the points of trisection of the line segment joining A(7,

-2) and B(1, -5). Then, y equals



A. -4

B. 4

C. -3

D. 5

Answer: A

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5. What is the value of k, in the expression, $\sec^2\theta(1+\sin\theta)(1-\sin\theta)=k$

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

B. 7

C. 1

D. 12

Answer: C

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6. Calculate the value of (a + b),

if $y = a + \frac{b}{x}$ where a, b are real numbers and y = 1 when x = -1, y = 5 when x = -5.

A. 9

B. 11

C. 15

D. 7

Answer: B

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7. What is the value of θ $(0^\circ < \theta \leq 90^\circ)$,

if

$2\cos^2\theta = \frac{1}{2}$?

A. 30°

B. 45°

C. 60°

D. 75°

Answer: C

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8. The probability of getting a bad egg in a lot of 400 is 0.035. The number of bad eggs in the lot is

A. 14

B. 21

C. 28

D. 7

Answer: A

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9. It is given that in a group of 3 students, the probability of 2 students not having the same birthday is 0.992. What is the probability that the 2 students have the same birthday?

A. 0.001

B. 0.008

C. 0.007

D. 0.006

Answer: B

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10. A square and a rhombus are always :

A. similar but not congruent

B. similar

C. congruent

D. neither similar nor congruent

Answer: D

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11. Find the value of 'n' if

$a = 2^3 \times 3$

$b = 2 \times 3 \times 4$

$c = 3^n \times 5$

LCM (a, b, c) = $2^3 \times 3^2 \times 5$.

A. 1

B. 2

C. 3

D. 4

Answer: B

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12. Rahul and Rohit are 10^{th} standard student. Both of them have certain number of fruit with them. Rahul says to, Rohit "If you give me your 10 fruits, I will have twice the number of fruits left with you." Rohit replies that you give me 10 of your fruits, I will have the same number of fruits as left with you."

Signify the number of fruits that Rahul and Rohit has by 'x' and 'y' respectively.

What are the number of fruits that Rahul had?

A. 50

B. 60

C. 55

D. 70

Answer: D

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13. The shadow of a 5-m-long stick is 2m long. At the same time, the length of the shadow of a $12.5m$ high tree is

A. 7.5 m

B. 6 m

C. 6.5 m

D. 5 m

Answer: D

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14. Find the length of diagonals of a rectangle AOBC whose three vertices are A(0, 3), O(0, 0) and B(5, 0).

A. $\sqrt{23}$ units

B. 5 units

C. $\sqrt{21}$ units

D. $\sqrt{34}$ units

Answer: D

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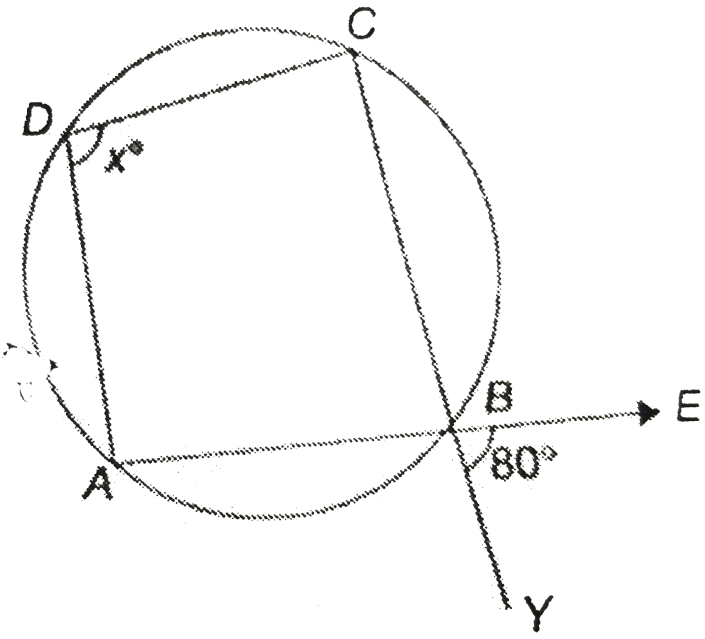
15. In Fig, find the value of x.



A. 70°

B. 60°

C. 80°

D. 40°

Answer: D

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16. Evaluate for what value of k the system of equations $2x - y = 5$ and $6x + ky = 15$ has infinitely many solutions.

A. 8

B. -3

C. 3

D. 6

Answer: B

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17. Evaluate the distance between the points $(a\sin\alpha, -b\cos\alpha)$ and $(-a\cos\alpha, b\sin\alpha)$.

A. 2

B. $\sqrt{a^2+b^2}$

C. $2\sqrt{a^2+b^2}$

D. $\sqrt{a^2+b^2}(\sin\alpha+\cos\alpha)$

Answer: D

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18. If $\tan(3x + 30^\circ) = 1$ then find the value of x

A. 10°

B. 25°

C. 5°

D. 30°

Answer: C

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19. What are the zeroes of the polynomial

$2x^2 + 14x + 20$?

A. $-5, \ -2$

B. 5, 2

C. $-3, \ -2$

D. 3, 2

Answer: A

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20. In the ΔABC , MN||BC and AM : : MB = $\frac{1}{3}$.

Then, $\frac{ar(\Delta AMN)}{ar(\Delta ABC)}$=?

A. $9:1$

B. $1:16$

C. $2:3$

D. $3:2$

Answer: B

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Section C

1. What is the shape formed by $x^2 - 8$?

A. Spiral

B. Parabola

C. Oval

D. Ellipse

Answer: B

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2. Ants moves in a groups. Their group is called an army, as they follow a definite pattern. Sulekha observed the pattern in movement of the ants on the floor. She traced the path moved by the ants on the floor. This is shown as below.

If the path traced by the ants is represented by $x^2 + 2x - 3$, then its zeroes are:

A. $3, \ -1$

B. $-2, 3$

C. $-3, 1$

D. $2, \ -3$

Answer: C

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3. What is the number of zeroes of the polynomial $3x^2 + 7x - 5$?

A. at least two

B. less than two

C. atmost two

D. one

Answer: C

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4. Find the polynomial whose sum and product of roots are 6 and -16?

A. $x^2 + 6x$

B. $x^2 - 6x - 16$

C. $x^2 - 6x + 16$

D. $x^2 - 10x + 96$

Answer: B

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5. The zero (s) of the polynomial $x^2 - 8$ is (are):-

A. 3

B. 2

C. 1

D. 0

Answer: B

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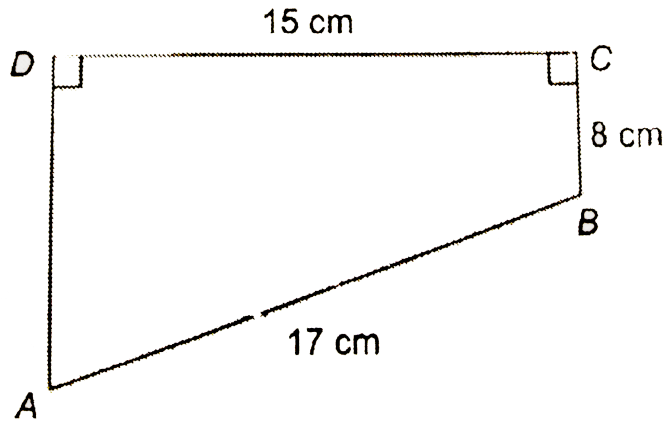
6. The given figure shows a trapezium ABCD in which AB = 17 cm, BC = 8 cm and CD = 15 cm. Find the area of the trapezium.



A. 36 cm

B. 56 cm

C. 30 cm

D. 46 cm

Answer: B

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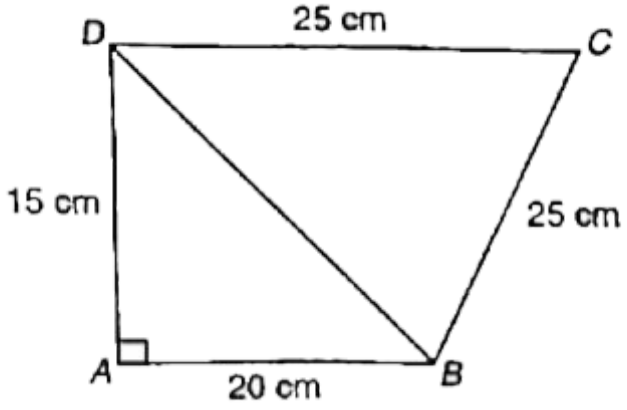
7. In the given figure $AD = 15cm$, $AB = 20cm$ and $BC = CD = 25cm$.

Find the area of $\square ABCD$:



A. π sq cm

B. 10π sq cm

C. 50π sq cm

D. 100π sq cm

Answer: D

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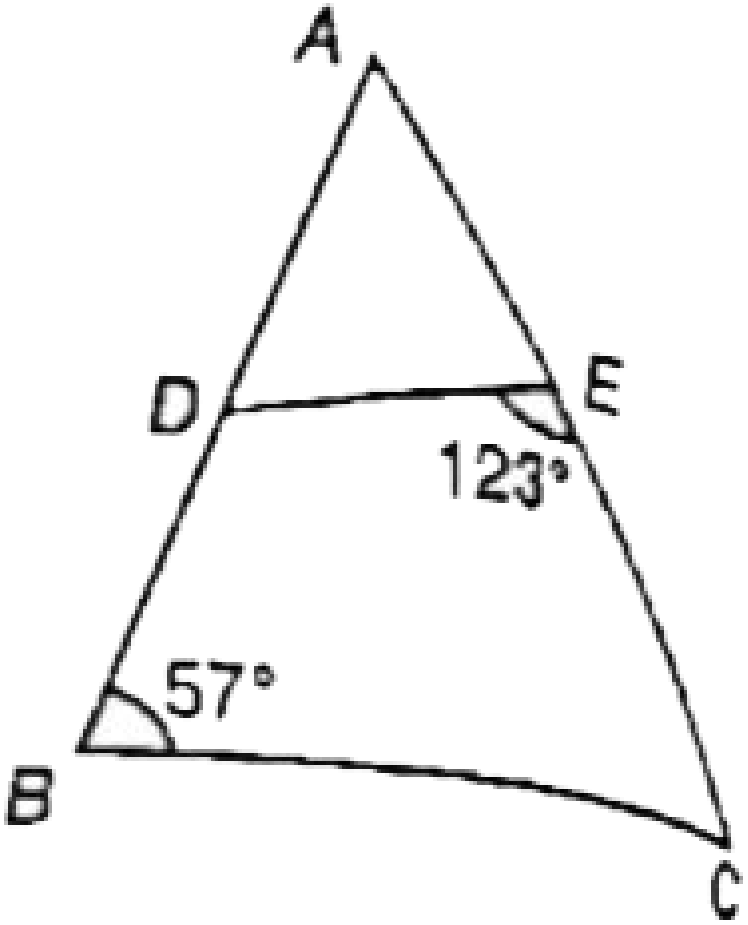
8. In the figure

$AD = 12cm, AB = 20cm$ and $AE = 10cm.$

Find EC :



A. 90 cm

B. 70 cm

C. 50 cm

D. 40 cm

Answer: A

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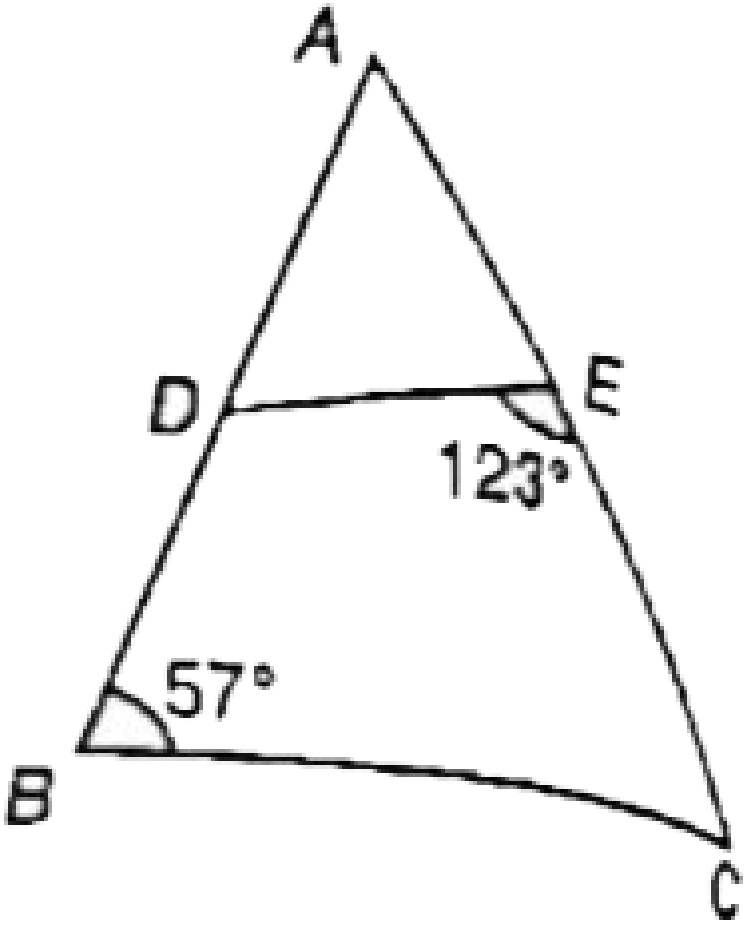
9. In the figure

$AD = 12cm, AB = 20cm$ and $AE = 10cm.$

Find EC :



A. 83 cm

B. 86 cm

C. 117.4 cm

D. 130.4 cm

Answer: C

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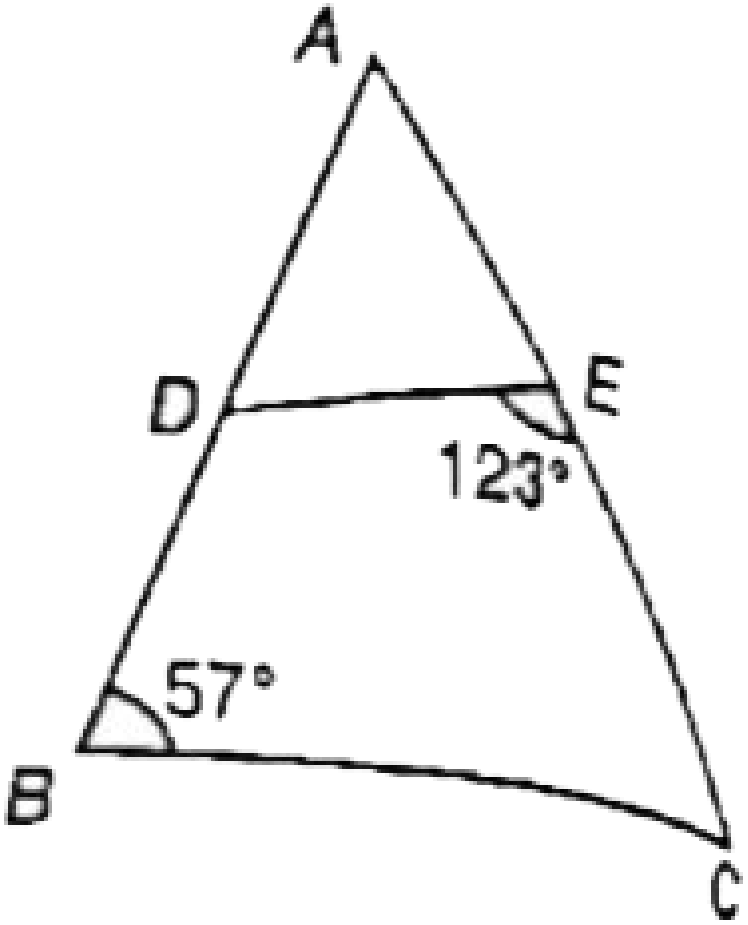
10. In the figure

$AD = 12cm$, $AB = 20cm$ and $AE = 10cm$.

Find EC :



A. 873 sq cm

B. 738 sq cm

C. 783 sq cm

D. 837 sq cm

Answer: D

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Part A Section I

1. What is the HCF of 40 and 54 ?

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2. Find the value of k for which the polynomial $21x^2 - 3kx + 7$ has real roots.

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3. If the value of 'x' in the equation $2x + 3y = 13$ is 2, then find the corresponding value of y.

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4. Find the ratio in which x-axis divides the join of points (2, -3) and (5,6) internally.

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5. The coordinates of the point P dividing the line segment joining the points A(1, 3) and B(4, 6) in the ratio 2:1 is

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6. If $\Delta ABC \sim \Delta DEF$ and $AB = DE, BC = 8cm,$ then the value of EF ?

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7. ABC is a right triangle, right angled at C and $AB = \sqrt{2}BC$. Then, find $\angle ABC$.

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8. The ratio fo the height of a tower and the length of its shadow is $\sqrt{3}:1$. Find the angle of elevation of the Sun.

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9. Find the value of

$\sec^2 45^\circ \cos 45^\circ - \text{cosec}^2 30^\circ \tan 45^\circ$

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10. Find the 10^{th} term of the AP : 2, 7, 12, . . .

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11. Find the sum of the first 10 multiples of 2.

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12. Write a quadratic polynomial whose zero are 2 and -5.

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13. The sum of the digits of a 2-digit number is 10. A number is selected at random. Find the probability of the chosen number to be divisible by 3.

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14. In a single throw of a die, what is the probability of getting a prime number?

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15. Find the median of the given data:

2, 4, 6, 12, 3, 5, 10, 8, 2, 4, 9, 2, 10

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16. If θ is the angle (in degrees) of a sector of a circle of radius r, then area of sector is

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17. A cylindrical pencil sharpend at one edge is the combination of

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18. If one zero of $p(y) = 4y^2 - 8ky - 9$ is negative of other, then find the value of K.

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19. Find the value of k if the given system of equations 5x + ky = - 7 and x + 2y = 3 is inconsistent :

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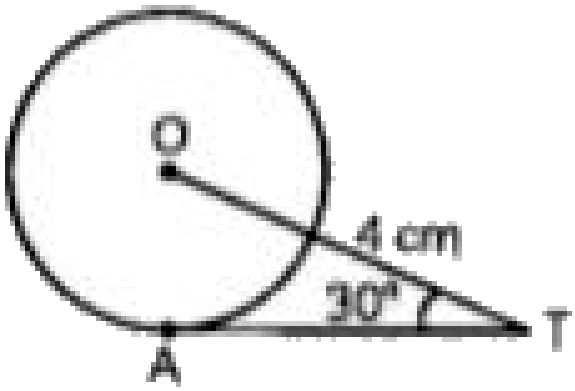
20. AT is a tangent to circle with centres such that OT = 4 cm and $\angle OTA = 30^\circ$. Find the length of

AT.



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21. If $\Delta ABC \sim \Delta PQR$, perimeter of $\Delta ABC = 32cm$, perimeter of ΔPQR = 48 cm and PR = 6 cm, then find the length of AC.

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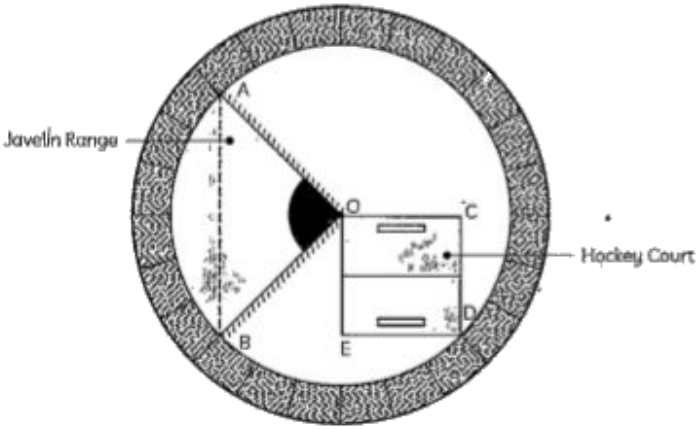
Part A Section Ii

1. Jawaharlal Nehru Stadium in New Delhi is conducting the annual sports competition soon. The curator of the stadium is tasked with preparing the grounds for various sports as per the technical requirements of sports invigilator.

The engineer assigned to assist the curator is tasked with figuring out the dimensions for carving out some areas allotted for a 'hockey court' and a 'javelin range', as shown in the figure below.



The shapes of the 'hockey court' and the 'javelin range' are square and triangle respectively. Both of the courts have a common edge that touches the

centre of stadium. The construction of the javelin range is such that the angle to centre is 90°. The radius of the stadium is 200 metres.

The area (in sq m) allotted to 'javelin" range' is

A. 11400

B. 20000

C. 31400

D. 40000

Answer: A

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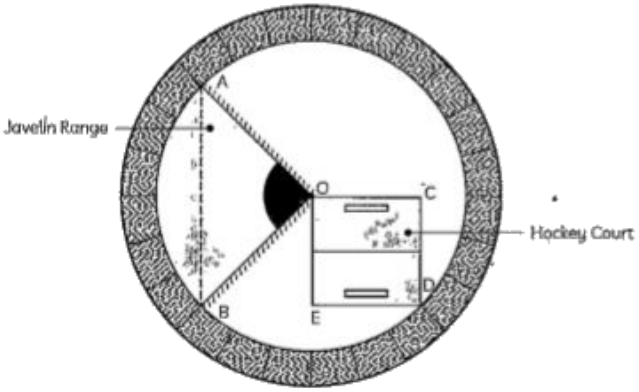
2. Jawaharlal Nehru Stadium in New Delhi is conducting the annual sports competition soon. The curator of the stadium is tasked with preparing the grounds for various sports as per the technical requirements of sports invigilator.

The engineer assigned to assist the curator is tasked with figuring out the dimensions for carving out some areas allotted for a 'hockey court' and a 'javelin range', as shown in the figure below.



The shapes of the 'hockey court' and the 'javelin range' are square and triangle respectively. Both of the courts have a common edge that touches the

centre of stadium. The construction of the javelin range is such that the angle to centre is 90°. The radius of the stadium is 200 metres.

On the basis of the above information, answer any four of the following question:

The area (in sqm) allotted to 'Hockey court' is

A. 11400

B. 20000

C. 31400

D. 40000

Answer: B

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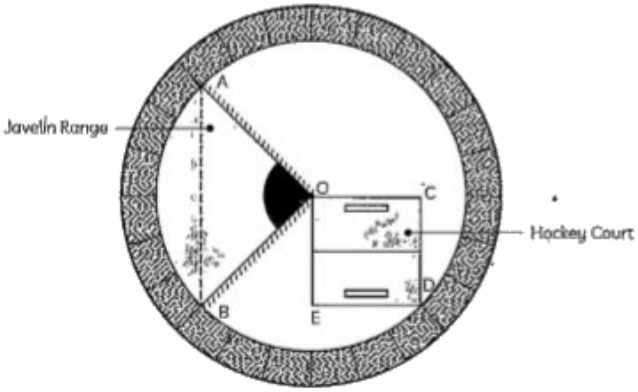
3. Jawaharlal Nehru Stadium in New Delhi is conducting the annual sports competition soon. The curator of the stadium is tasked with preparing the grounds for various sports as per the technical requirements of sports invigilator.

The engineer assigned to assist the curator is tasked with figuring out the dimensions for carving out some areas allotted for a 'hockey court' and a 'javelin range', as shown in the figure below.



The shapes of the 'hockey court' and the 'javelin range' are square and triangle respectively. Both of the courts have a common edge that touches the

centre of stadium. The construction of the javelin range is such that the angle to centre is 90°. The radius of the stadium is 200 metres.

If the team of the curators managing the stadium, likes to allot space for some more sports, how much area (in sq m) is available to them?

A. 1,25,600

B. 1,05,600

C. 85600

D. 58600

Answer: C

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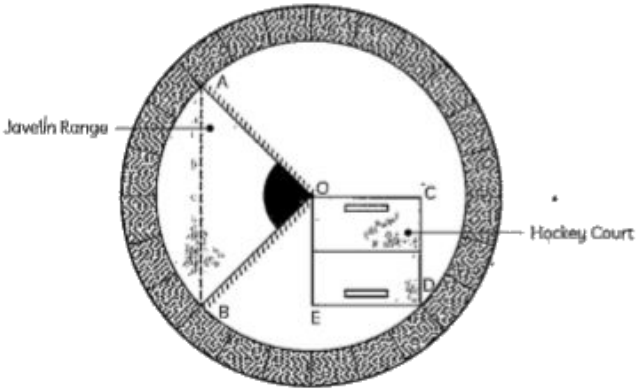
4. Jawaharlal Nehru Stadium in New Delhi is conducting the annual sports competition soon. The curator of the stadium is tasked with preparing the grounds for various sports as per the technical requirements of sports invigilator.

The engineer assigned to assist the curator is tasked with figuring out the dimensions for carving out some areas allotted for a 'hockey court' and a 'javelin range', as shown in the figure below.



The shapes of the 'hockey court' and the 'javelin range' are square and triangle respectively. Both of the courts have a common edge that touches the

centre of stadium. The construction of the javelin range is such that the angle to centre is 90°. The radius of the stadium is 200 metres.

If the boundaries of the hockey court and javelin range are to be fenced, then the total length (in m) of the fence required is

A. $100\left(2+3\sqrt{2}\right)$

B. $100\left(1+5\sqrt{2}\right)$

C. $200\left(2+5\sqrt{2}\right)$

D. $200\left(2+3\sqrt{2}\right)$

Answer: D

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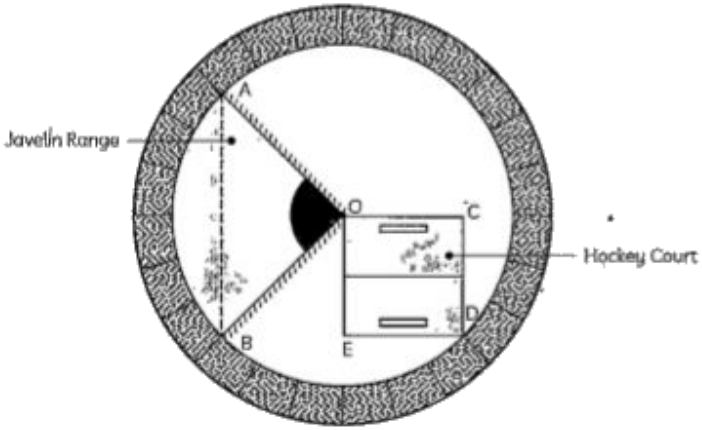
5. Jawaharlal Nehru Stadium in New Delhi is conducting the annual sports competition soon. The curator of the stadium is tasked with preparing the grounds for various sports as per the technical requirements of sports invigilator.

The engineer assigned to assist the curator is tasked with figuring out the dimensions for carving out some areas allotted for a 'hockey court' and a 'javelin range', as shown in the figure below.



The shapes of the 'hockey court' and the 'javelin range' are square and triangle respectively. Both of the courts have a common edge that touches the

centre of stadium. The construction of the javelin range is such that the angle to centre is 90°. The radius of the stadium is 200 metres.

If the cost of fencing is Rs 12 per metre, then the total cost of fencing is

A. Rs 1200 $\left(2+3\sqrt{2}\right)$

B. Rs 1200 $\left(2+5\sqrt{2}\right)$

C. Rs 400 $\left(2+5\sqrt{2}\right)$

D. Rs 2400 $\left(2+3\sqrt{2}\right)$

Answer: D

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6. A resourceful home decorator manufactures two types of lamps say A and B. Both lamps go through two technician, first a cutter, second a finisher. Lamp A requires 2 hours of th cutters time and 1 hour of the finishers time. Lamp B requires 1 hour of cutters and 2 hours of finishers time. The cutter has 104 hours and finisher has 76 hours of time available each month. Profit o one lamp A is Rs. 6.00 and on one lamp B is Rs.11.00. Assuming that he can sell all that he produces, how many of each

type of lamps should he manufacture to obtain the best return.

A. 46 masks of type A, and 54 masks of type B

B. 54 masks of type A, and 46 masks of type B

C. 41 masks of type A, and 59 masks of type B

D. 59 Masks of type A, and 41 masks of type B

Answer: D

Watch Video Solution

7. A company manufactures two types of lamps say A and B. Both lamps go through a cutter and then a finisher. Lamp A requires 2 hours of the cutter's time and 1 hours of the finisher's time. Lamp B requires 1 hour of cutter's and 2 hours of finisher time. The cutter has 100 hours and finisher has 80 hours of time available each month. Profit on one lamp A is Rs. 7.00 and on one lamp B is Rs. 13.00. Assuming that he can sell all that he produces, how many of each type of lamps should be manufactured to obtain maximum profit?

A. Rs 550

B. Rs 560

C. Rs 1050

D. Rs 1100

Answer: D

8. A resourceful home decorator manufactures two types of lamps say A and B. Both lamps go through two technician, first a cutter, second a finisher. Lamp A requires 2 hours of th cutters time and 1 hour of the finishers time. Lamp B requires 1 hour

of cutters and 2 hours of finishers time. The cutter has 104 hours and finisher has 76 hours of time available each month. Profit o one lamp A is Rs. 6.00 and on one lamp B is Rs.11.00. Assuming that he can sell all that he produces, how many of each type of lamps should he manufacture to obtain the best return.

A. 120 masks of type A, and 130 masks of type B

B. 130 masks of type A, and 120 masks of type B

C. 155 masks of type A, and 95 masks of type B

D. 165 masks of type A, and 85 masks of type B

Answer: D

Watch Video Solution

9. A company manufactures two types of lamps say A and B. Both lamps go through a cutter and then a finisher. Lamp A requires 2 hours of the cutter's time and 1 hours of the finisher's time. Lamp B requires 1 hour of cutter's and 2 hours of finisher time. The cutter has 100 hours and finisher has 80 hours of time available each month. Profit on one lamp A is Rs. 7.00 and on one lamp B is Rs. 13.00. Assuming that he can sell all that he produces, how many of each type of lamps should be manufactured to obtain maximum profit?

A. Rs 3000

B. Rs 3052

C. Rs 2941

D. Rs 2938

Answer: A

Watch Video Solution

10. A resourceful home decorator manufactures two types of lamps say A and B. Both lamps go through two technician, first a cutter, second a finisher. Lamp A requires 2 hours of th cutters time

and 1 hour of the finishers time. Lamp B requires 1 hour of cutters and 2 hours of finishers time. The cutter has 104 hours and finisher has 76 hours of time available each month. Profit o one lamp A is Rs. 6.00 and on one lamp B is Rs.11.00. Assuming that he can sell all that he produces, how many of each type of lamps should he manufacture to obtain the best return.

A. 200% in type A, and 100% in type B

B. 180% in type A and 110% in type B

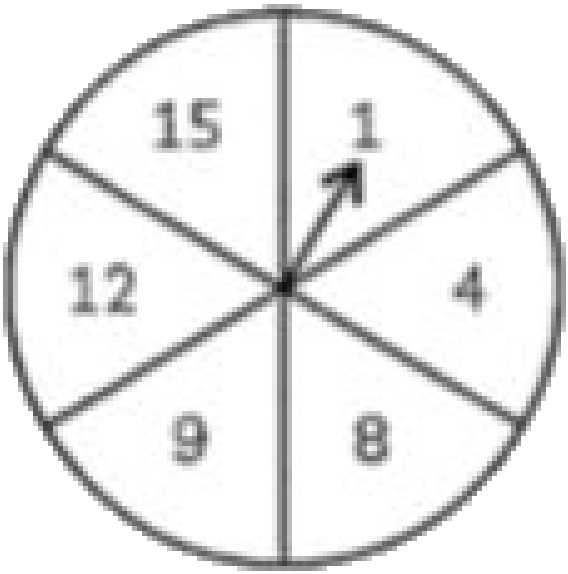
C. 150% in type A and 120% in type.B

D. 110% in type A and 180% in type B

Answer: B

Watch Video Solution

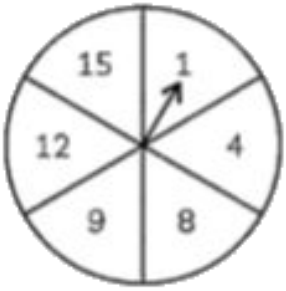
11. A game at a stall in Diwali fare involves using a spinner first as a pre-cursor to complete the game with certain rules. If the spinner stops at a particular number, then the player is allowed to roll a 6. faced unbiased die,



What is the probability of getting an odd number on the spinner?

Watch Video Solution

12. A game at a stall in Diwali fare involves using a spinner first as a pre-cursor to complete the game with certain rules. If the spinner stops at a particular number, then the player is allowed to roll a 6. faced unbiased die,



If getting an even number on the spinner allows a player to roll the die, then the probability of his rolling the die is

A. $\frac{1}{4}$

B. $\frac{1}{2}$

C. $\frac{1}{8}$

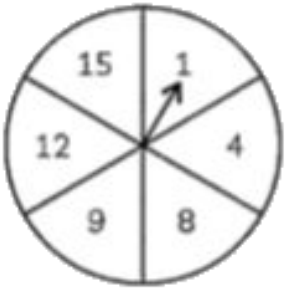
D. $\frac{1}{16}$

Answer: B

Watch Video Solution

13. A game at a stall in Diwali fare involves using a spinner first as a pre-cursor to complete the game with certain rules. If the spinner stops at a particular number, then the player is allowed to

roll a 6. faced unbiased die,



If the player is allowed to roll the die and getting a prime number entitles him to get prize, then the probability of his winning the prize is

A. $\frac{1}{4}$

B. $\frac{1}{2}$

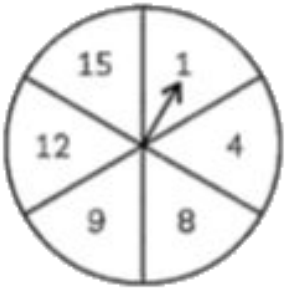
C. $\frac{1}{3}$

D. $\frac{1}{6}$

Answer: B

Watch Video Solution

14. A game at a stall in Diwali fare involves using a spinner first as a pre-cursor to complete the game with certain rules. If the spinner stops at a particular number, then the player is allowed to roll a 6. faced unbiased die,



If getting a square number on the spinner allows a player to'roll the die, then the probability of his rolling the die is

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

B. $\frac{1}{2}$

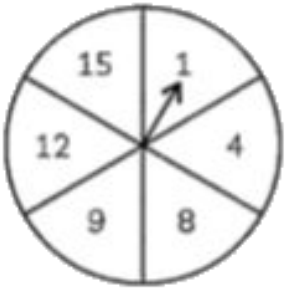
C. $\frac{1}{3}$

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

Answer: B

Watch Video Solution

15. A game at a stall in Diwali fare involves using a spinner first as a pre-cursor to complete the game with certain rules. If the spinner stops at a particular number, then the player is allowed to roll a 6. faced unbiased die,



If the player is allowed to roll the die and getting a number greater than 5 erititles him to get prize, then the probability of his winning the prize'is

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

B. $\frac{1}{6}$

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

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

Answer: B

Watch Video Solution

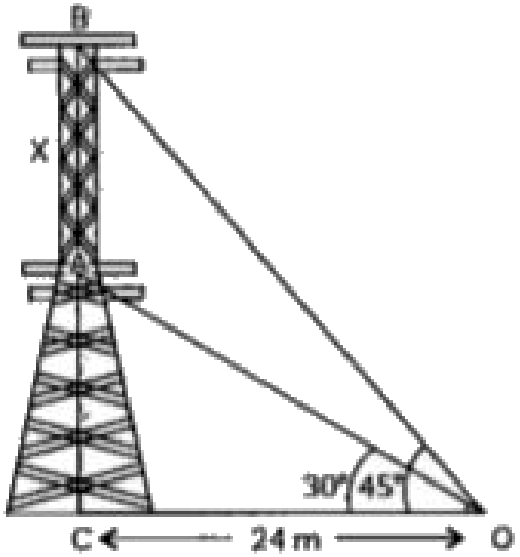
16. Radio towers are typically tall structures designed to support antennas for tele communications and broadcasting, including television. There are 2 main types: guyed and self-

supporting structures.

They are among the tallest human-made structures. Masts are often named after the broadcasting organizations that originally built them or currently use them.

On a similar concept, a radio - station tower was built in two sections A and B. From a point 24 m from the base of the tower, the angle of elevation of the top of section A is 30° and the angle of

elevation of the top of section B is 45°).



The height of the section A is

A. $13.84m$

B. $14.6m$

C. $16.7m$

D. $34.6m$

Answer: A

Watch Video Solution

17. Radio towers are typically tall structures designed to support antennas for tele communications and broadcasting, including television. There are 2 main types: guyed and self-supporting structures.

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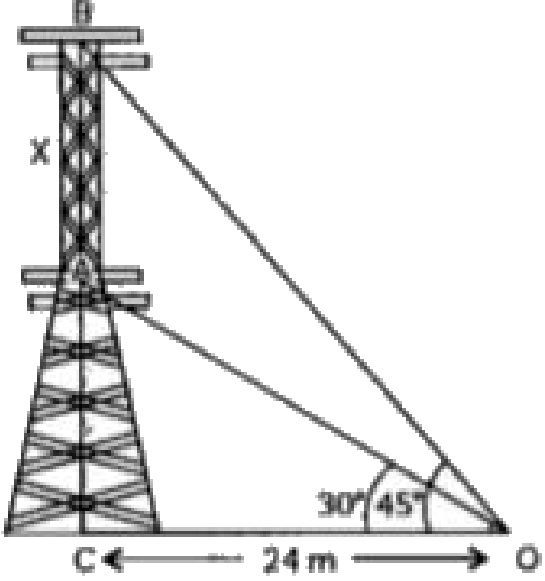

The height of the section B is

A. $5.4m$

B. $3.3m$

C. $6.16m$

D. $10.16m$

Answer: D

Watch Video Solution

18. Radio towers are typically tall structures designed to support antennas for tele communications and broadcasting, including television. There are 2 main types: guyed and self-supporting structures.

They are among the tallest human-made structures. Masts are often named after the broadcasting organizations that originally built them or currently use them.

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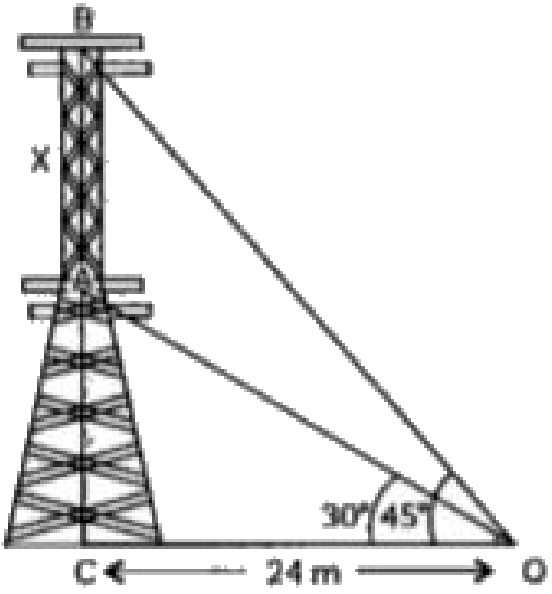

The height of the tower is

A. $17.9m$

B. $24m$

C. $31.6m$

D. 20 m

Answer: B

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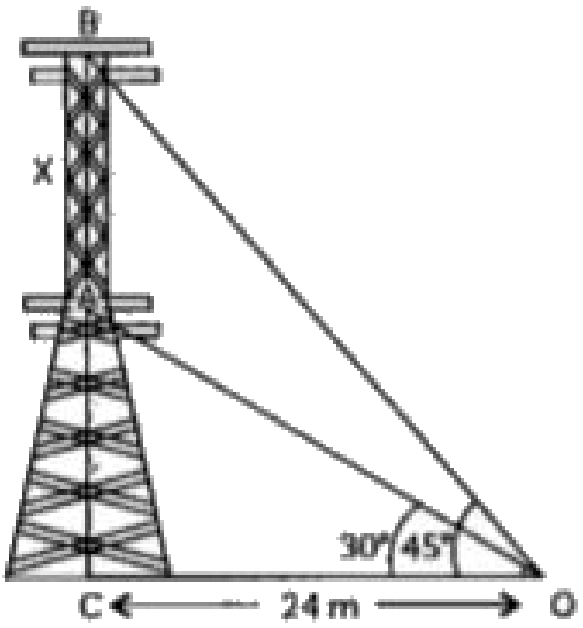
19. Radio towers are typically tall structures designed to support antennas for tele communications and broadcasting, including television. There are 2 main types: guyed and self-supporting structures.

They are among the tallest human-made structures. Mosts are often named after the broadcasting organizations that originally built them or currently use them.

On a similar concept, a radio - station tower was built in two sections A and B. From a point 24 m from the base of the tower, the angle of elevation of the top of section A is 30° and the angle of elevation of the top of section B is 45°).



On the basis of the above information, answer any four of the following question:

The length of the wire structure from the point to the top of section A is

A. 11.8 m

B. 14.6 m

C. 27.7 m

D. 33.84 m

Answer: C

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20. Radio towers are typically tall structures designed to support antennas for tele communications and broadcasting, including television. There are 2 main types: guyed and self-supporting structures.

They are among the tallest human-made

structures. Masts are often named after the broadcasting organizations that originally built them or currently use them.

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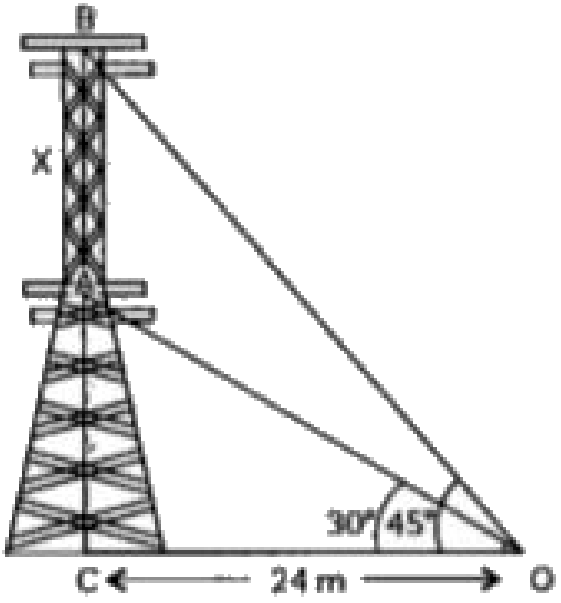


On the basis of the above information, answer any four of the following question:

The length of the wire structure from the point o to the top of section B is

A. 11.8 m

B. 14.6 m

C. 27.7 m

D. 33.84 m

Answer: D

Watch Video Solution

Part B Section Iii

1. Express 0.3528 in the form $\frac{p}{2^m 5^n}$ and write the values of p, m and n.

Watch Video Solution

2. If HCF (150, 210) = 30, then find LCM (150, 210).

Watch Video Solution

3. Find the value of x for which 2x, (x + 10) and (3x + 2) are three consecutive terms of an A.P.

Watch Video Solution

4. If the first term of an A.P. is p and its common difference is q. then find its 6th term.

Watch Video Solution

5. Find a relation between x and y such that the point $(x,\ y)$ is equidistant from the points $(3,\ 6)$ and $(-3,\ 4)$

Watch Video Solution

6. The shadow of a 5-m-long stick is 2m long. At the same time, the length of the shadow of a $12.5m$ high tree is

Watch Video Solution

7. The area of a circle is 154 sq. cm. Find its circumference.

Watch Video Solution

8. A bag contains 3 red and 5 blue balls. A ball is drawn at random from the bag. What is the probability that the ball drawn is:

red?

Watch Video Solution

9. A bag contains 3 red and 5 blue balls. A ball is drawn at random from the bag. What is the probability that the ball drawn is yellow ?

Watch Video Solution

Part B Section Iv

1. Find the greatest 4-digit number which is divisible by 15, 24 and 36.

Watch Video Solution

2. Solve for x and y:

$3x + 2y = 11,$

$2x + 3y = 4$

Watch Video Solution

3. Determine the AP whose 3^{rd} term is 5 and the 7^{th} term is 9.

Watch Video Solution

4. Find the coordinates of the points of trisection of the line segment joining the points (2,-2) and (-7,-4)

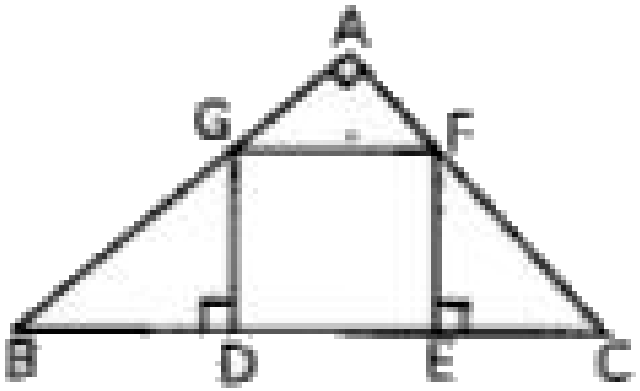
Watch Video Solution

5. In the figure, DEFG is a square and $\angle BAC = 90^\circ$. Prove that

(A) $\Delta AGF \sim \Delta DBG$

(B) $\Delta AGF \sim \Delta EFC$

(C) $\Delta DBG \sim \Delta EFC$



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6. Draw a line segment of length 5.6 cm and divide it in the ratio 4:3. Measure the two parts.

Watch Video Solution

7. A quadrilateral ABCD is drawn to circumscribe a circle. Prove that $AB + CD = AD + BC$

Watch Video Solution

8. A cubical block of side 7 cm is surmounted by a hemisphere. What is the greatest diameter of the

hemisphere can have? Find the total surface area of the solid.

Watch Video Solution

9. Find the mean from the following frequency distribution:

Classes	100-150	150-200	200-250	250-300	300-350
Frequency	4	5	12	2	2

Watch Video Solution

Part B Section V

1. Solve: $\frac{1}{(x+4)} - \frac{1}{(x-7)} = \frac{11}{30}, x \neq -4, 7.$

Watch Video Solution

2. Using the quadratic formula,solve for x:

$3x^2 + 2\sqrt{5}x - 5 = 0$

Watch Video Solution

3. State and prove the Pythagoras theorem.

Watch Video Solution

4. The angle of elevation of the top of a tower from a point on the ground, which is 30 m away from the foot of the tower, is 30°. Find the height of the tower.

Watch Video Solution

Part A Section I

1. After how many places will the decimal expansion of $\frac{189}{125}$ terminate?

Watch Video Solution

2. Insert a rational and an irrational number between 2 and 3.

Watch Video Solution

3. Find the zeroes of the polynomial $p(x) = 4x^2 - 12x + 9$.

Watch Video Solution

4. If x = a and y = b is the solution of the equations x - y =2 and x + y = 4 , then the values of a and b are, respectively

Watch Video Solution

5. Find discriminant of the quadratic equation $2x^2 + 4x - 7 = 0$

Watch Video Solution

6. Find the roots of quadratic equation $x^2 - 4x + 2$.

Watch Video Solution

7. If $S_n = 5n^2 + 3n$, then find its n^{th} term.

Watch Video Solution

8. If the common difference of an AP is 5, then what is $a_{18} - a_{13}$?

Watch Video Solution

9. In an A.P., a=-6 and d = 2. Find the sum of its first 20 terms.

Watch Video Solution

10. Write the relationship between the coefficients, if the following pair of equations is inconsistent.

$ax + by + c = 0$,

$a'x + b'y + c' = 0$

Watch Video Solution

11. In a $\triangle ABC$, right-angled at B, if AB : AC = 1:2, then find the value of

$$\frac{2\tan A}{1+\tan^2 A}.$$

Watch Video Solution

12. If $\tan\theta + \cot\theta = 2$ then find the value of $\tan^2\theta + \cot^2\theta$.

Watch Video Solution

13. If tan A = 1 $(0^\circ < A < 90^\circ)$ and cos B = $\frac{1}{\sqrt{2}}(0^\circ < B < 90^\circ)$, then find the value of cos (A + B).

Watch Video Solution

14. Evaluate: $\sin^2 60^\circ + 2\tan 45^\circ - \cos^2 30^\circ$

Watch Video Solution

15. Find the area of a circle whose circumference is 22 cm.

Watch Video Solution

16. The ratio between the volumes of two spheres is 8 : 27. What is the ratiobetween their surface areas?

Watch Video Solution

17. Find the class-marks of the class interval 10-25.

Watch Video Solution

18. One card is drawn at from a pack of 52 cards. Find the probability that the card drawn is:

either red or a queen.

 Watch Video Solution

19. How many face cards are there in a pack of 52 cards?

 Watch Video Solution

20. Determine the upper limit of the modal class of the following frequency distribution:

Class	0-5	6-11	12-17	18-23	24-29
Frequency	13	10	15	8	11

Watch Video Solution

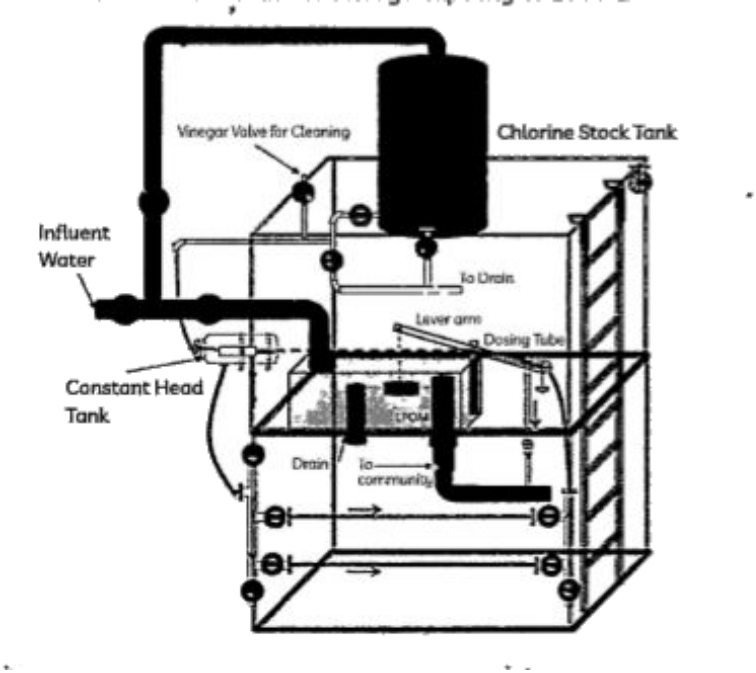
21. Empiricla relationship between the three measures of central tendency is

Watch Video Solution

Part A Section Ii

1. Selvi is setting up a water purifier system in her house which includes setting up an overhead tank in the shape of a right circular cylinder. This is filled by pumping water from a sump (underground tank) which is in the shape of a cuboid.

The underground water tank (sump) is a sturdy single moulded piece built to with stand underground pressure and is available in the storage capacity of 2000 L.

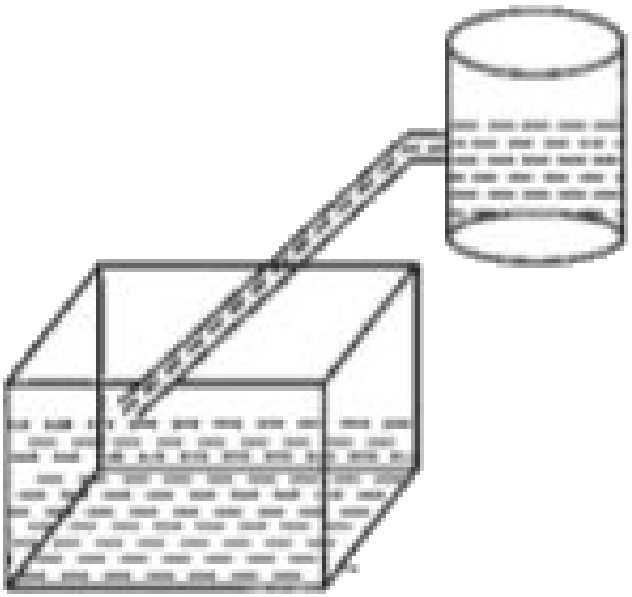


These, along with hassle-free installation and minimum maintenance needs make it the ideal water storage solution.

Dimensions (sump): 1.57 m × 1.44 m × 95 cm.

Dimensions (overhead tank):

Radius 60 cm and Height 95 cm



Water flow conditions at the required overload capacity should be checked for critical pressure drop to ensure that valves are adequately sized.

On the basis of the above information, answer the following qeuestions:

The ratio of the capacity of the sump to the capacity of the overhead tank is

A. $1:2$

B. $2:1$

C. $1:4$

D. $4:1$

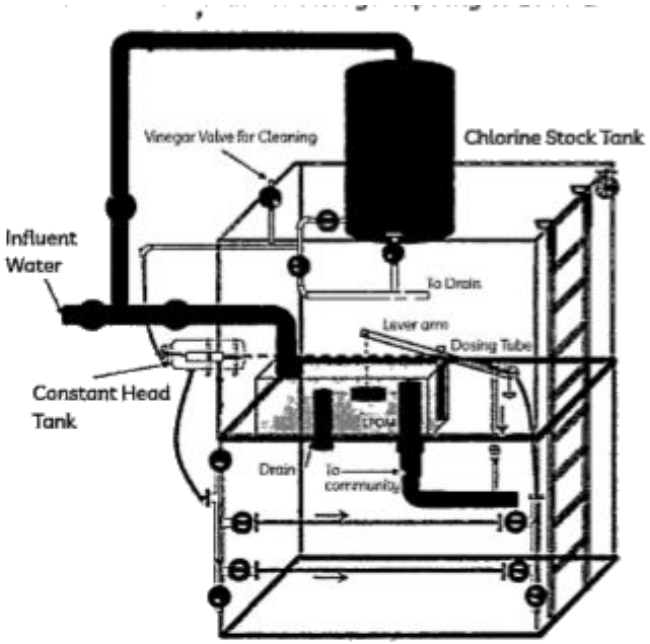
Answer: A

Watch Video Solution

2. Selvi is setting up a water purifier system in her house which includes setting up an overhead tank in the shape of a right circular cylinder. This is filled by pumping water from a sump

(underground tank) which is in the shape of a cuboid.

The underground water tank (sump) is a sturdy single moulded piece built to with stand underground pressure and is available in the storage capacity of 2000 L.



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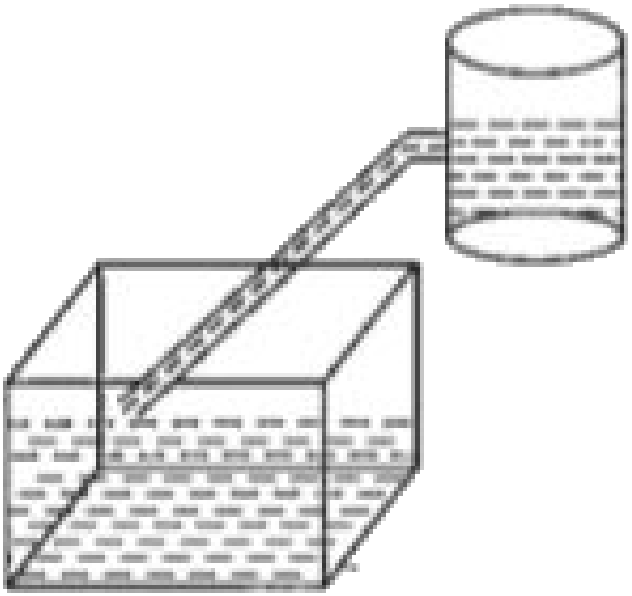
Radius 60 cm and Height 95 cm



Water flow conditions at the required overload capacity should be checked for critical pressure

drop to ensure that valves are adequately sized.

On the basis of the above information, answer the following qeuestions:

If overhead tank need to be painted to save it from corrosion, how much area need to be painted?

A. 2.92 sq m

B. 1.13 sq m

C. 4.71 sq m

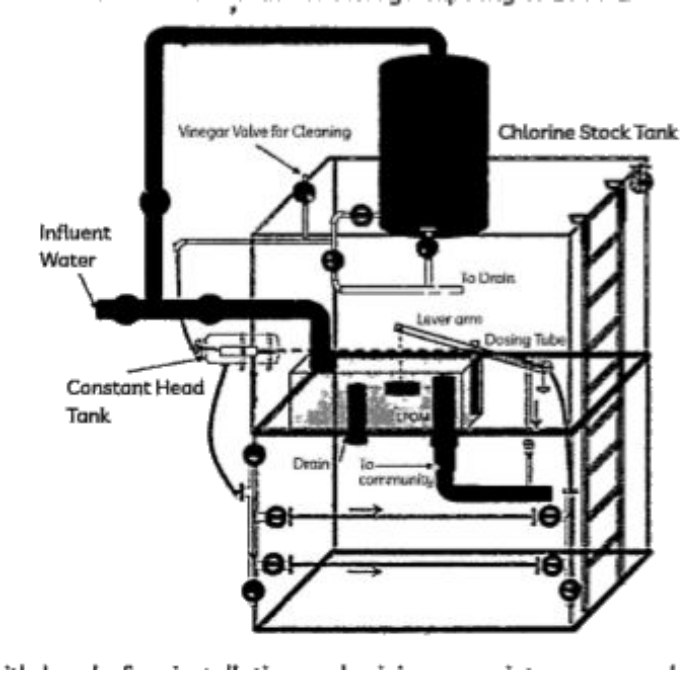
D. 3.58 sq m

Answer: D

Watch Video Solution

3. Selvi is setting up a water purifier system in her house which includes setting up an overhead tank in the shape of a right circular cylinder. This is filled by pumping water from a sump (underground tank) which is in the shape of a cuboid.

The underground water tank (sump) is a sturdy single moulded piece built to with stand underground pressure and is available in the storage capacity of 2000 L.



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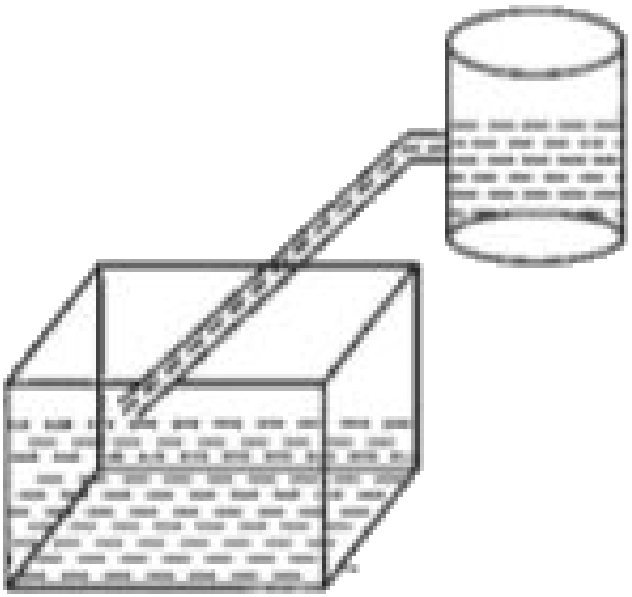
Dimensions (overhead tank):

Radius 60 cm and Height 95 cm



Water flow conditions at the required overload capacity should be checked for critical pressure drop to ensure that valves are adequately sized.

The capacity (in litres) of the overhead tank is

A. 1047 litres

B. 1074 litres

C. 1205 litres

D. 1207 litres

Answer: B

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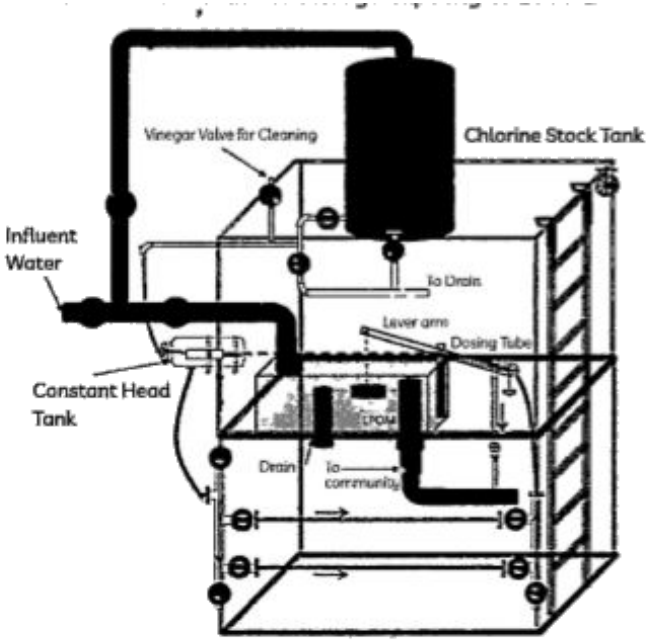
4. Selvi is setting up a water purifier system in her house which includes setting up an overhead tank in the shape of a right circular cylinder. This is filled by pumping water from a sump (underground tank) which is in the shape of a

cuboid.

The underground water tank (sump) is a sturdy single moulded piece built to with stand underground pressure and is available in the storage capacity of 2000 L.



These, along with hassle-free installation and minimum maintenance needs make it the ideal

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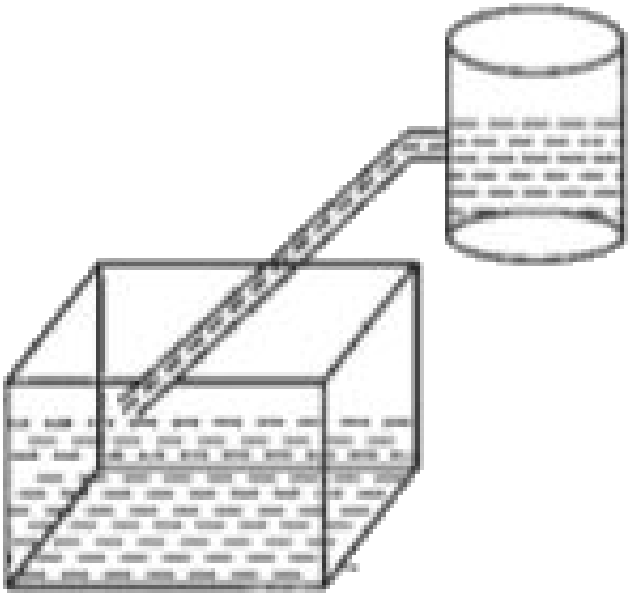
Dimensions (overhead tank):

Radius 60 cm and Height 95 cm



Water flow conditions at the required overload capacity should be checked for critical pressure drop to ensure that valves are adequately sized.

On the basis of the above information, answer the following qeuestions:

If water is filled in the overhead tank at the rate of 20 litre per minute the tank will be completely filled in how many time?

A. 45 minutes

B. 48 minutes

C. 54 minutes

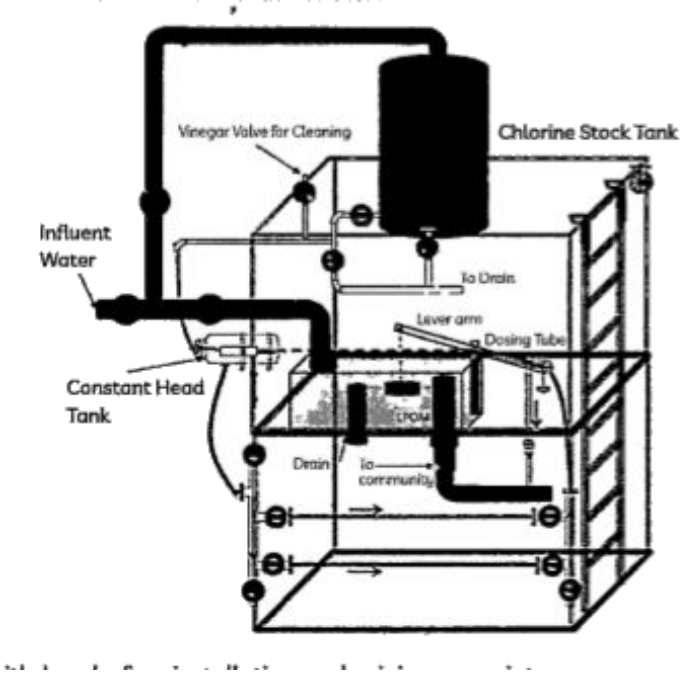
D. 60 minutes

Answer: C

Watch Video Solution

5. Selvi is setting up a water purifier system in her house which includes setting up an overhead tank in the shape of a right circular cylinder. This is filled by pumping water from a sump (underground tank) which is in the shape of a cuboid.

The underground water tank (sump) is a sturdy single moulded piece built to with stand underground pressure and is available in the storage capacity of 2000 L.



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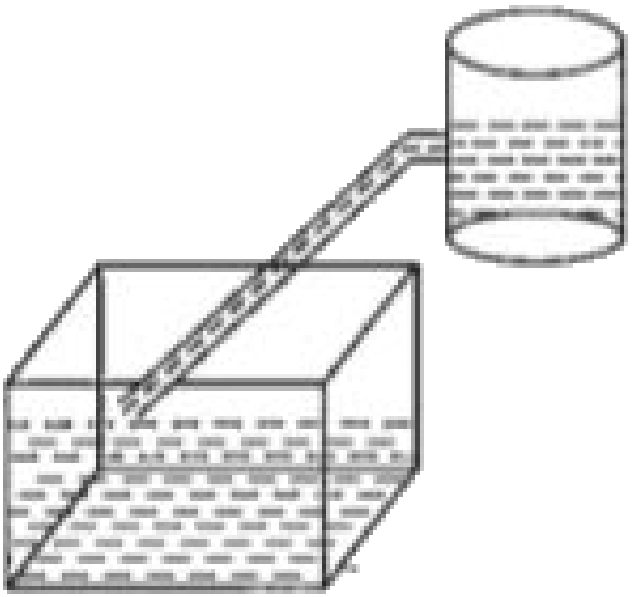
Dimensions (overhead tank):

Radius 60 cm and Height 95 cm



Water flow conditions at the required overload capacity should be checked for critical pressure drop to ensure that valves are adequately sized.

On the basis of the above information, answer the following qeuestions:

If the amount of water in the sump, at an instant,

is 1500 litres, then the water level in the sump at that instant is

A. 66.3 cm

B. 69.3 cm

C. 72.4 cm

D. 60.9 cm

Answer: A

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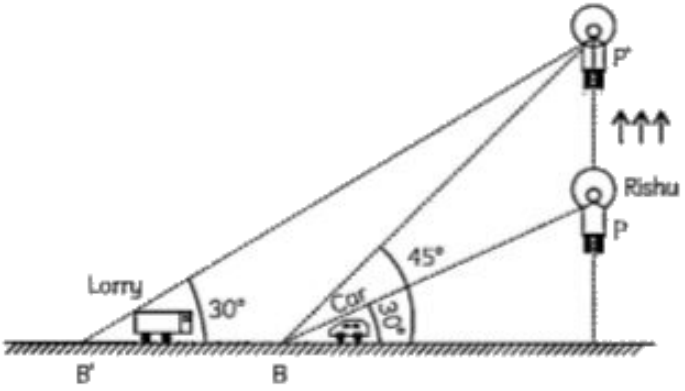
6. Rishu is riding in a hot air balloon. After reaching a point P, he spots a car parked at Bon the ground at an angle of depression of 30°. The balloon rises further by 50 metres and now he spots the same car at an angle of depression of 45o and a lorry parked at B' at an angle of depression of 30°. (Use $\sqrt{3}$ = 1.73)



The measurement of Rishu facing vertically is the height. Distance is defined as the measurement of

car/lorry from a point in a horizontal direction. If an imaginary line is drawn from the observation point to the top edge of the car/lorry, a triangle is formed by the vertical, horizontal and imaginary line.

If the height of the balloon at point P is 'h' m and distance AB is 'x' m, then 'x' and 'h' are related as:

A. h=2x

B. x=3h

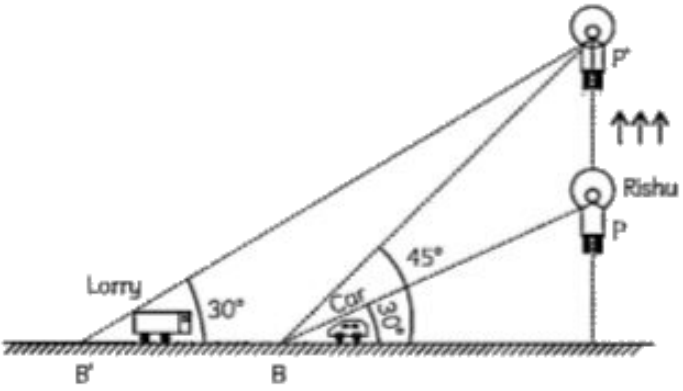
C. $h = \sqrt{3x}$

D. $x = \sqrt{3}h$

Answer: D

Watch Video Solution

7. Rishu is riding in a hot air balloon. After reaching a point P, he spots a car parked at Bon the ground at an angle of depression of 30°. The balloon rises further by 50 metres and now he spots the same car at an angle of depression of 45° and a lorry parked at B' at an angle of depression of 30°. (Use $\sqrt{3}$ = 1.73)



The measurement of Rishu facing vertically is the height. Distance is defined as the measurement of car/lorry from a point in a horizontal direction. If an imaginary line is drawn from the observation point to the top edge of the car/lorry, a triangle is formed by the vertical, horizontal and imaginary line.

The height of the balloon at point P' and distance AB are related as:

A. h=x+50

B. x=h+50

C. h=50-x

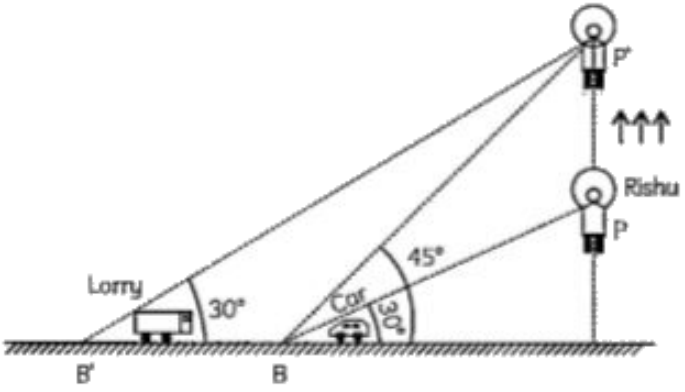
D. x=50h

Answer: B

Watch Video Solution

8. Rishu is riding in a hot air balloon. After reaching a point P, he spots a car parked at Bon the ground at an angle of depression of 30°. The balloon rises further by 50 metres and now he

spots the same car at an angle of depression of 45° and a lorry parked at B' at an angle of depression of 30°. (Use $\sqrt{3}$ = 1.73)



The measurement of Rishu facing vertically is the height. Distance is defined as the measurement of car/lorry from a point in a horizontal direction. If an imaginary line is drawn from the observation point to the top edge of the car/lorry, a triangle is formed by the vertical, horizontal and imaginary line.

The height of the balloon at point P, then

A. 68.25 m

B. 86.5 m

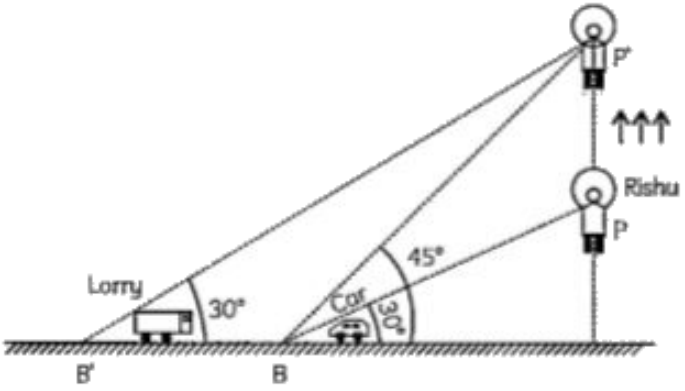
C. 73.2 m

D. 70.8 m

Answer: A

Watch Video Solution

9. Rishu is riding in a hot air balloon. After reaching a point P, he spots a car parked at Bon the ground at an angle of depression of 30°. The balloon rises further by 50 metres and now he spots the same car at an angle of depression of 45o and a lorry parked at B' at an angle of depression of 30°. (Use $\sqrt{3}$ = 1.73)



The distance AB on the ground is

A. 124.2 m

B. 118 m

C. 171.4 m

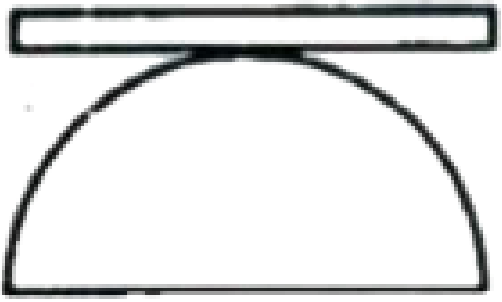
D. 142.6 m

Answer: B

Watch Video Solution

10. A board is balanced on a rough horizontal semicircular log. Equilibrium is obtained with the help of addition of a weight to one of the ends of the board when the board makes an angle $\theta$with

the horizontal. Coefficient of friction between the log and the board is



A. 80.8 m

B. 33.6 m

C. 87 m

D. 62 m

Answer: C

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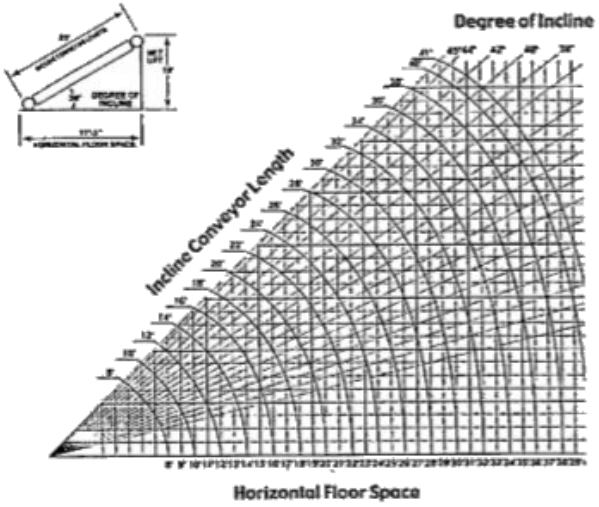
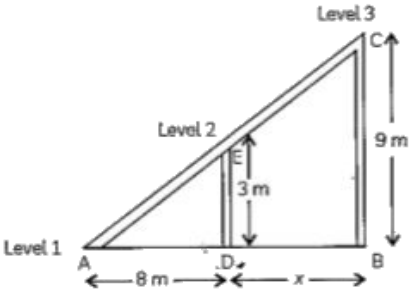
32



11.



Which concept of geometry helps in determining the distance AB

A. Area of sector

B. Congruency of triangles

C. Similarity of triangles

D. Pythagoras Theorem

Answer: C

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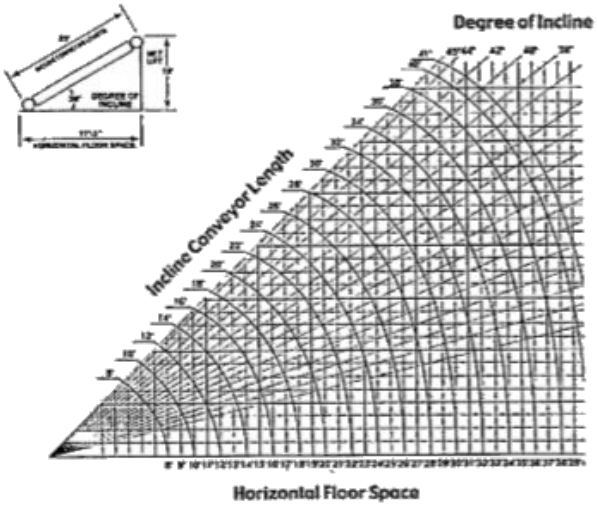

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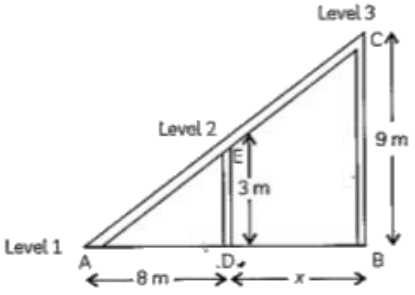

The length of AB is

A. 11 m

B. 14 m

C. 20 m

D. 24 m

Answer: D

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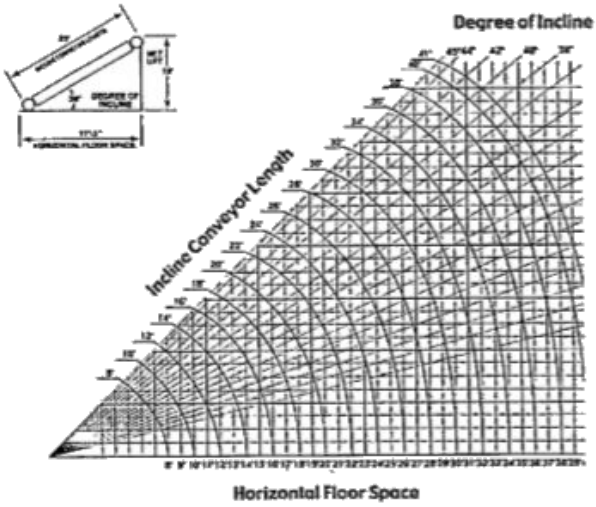
32



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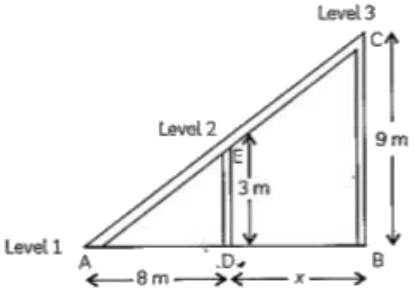

The length of DB is

A. 12 m

B. 16 m

C. 6 m

D. 3 m

Answer: B

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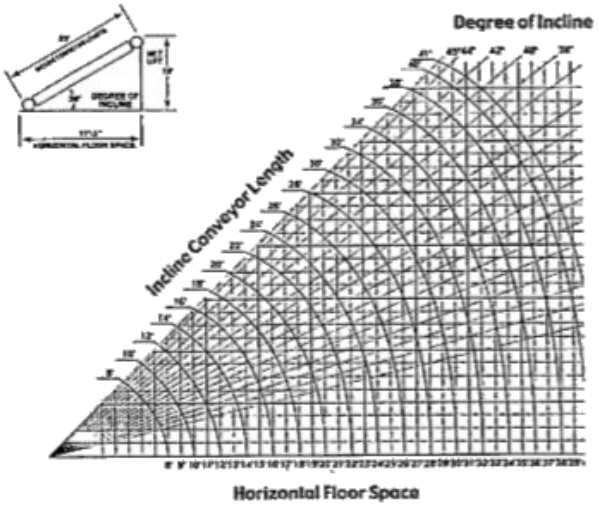

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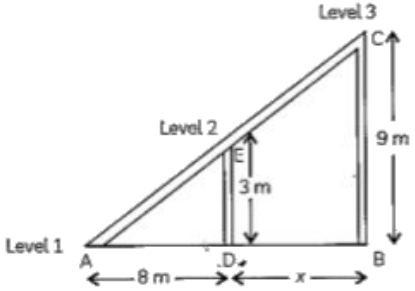

The length of AC is

A. 22.8 m

B. 26 m

C. 25.6 m

D. 33 m

Answer: B

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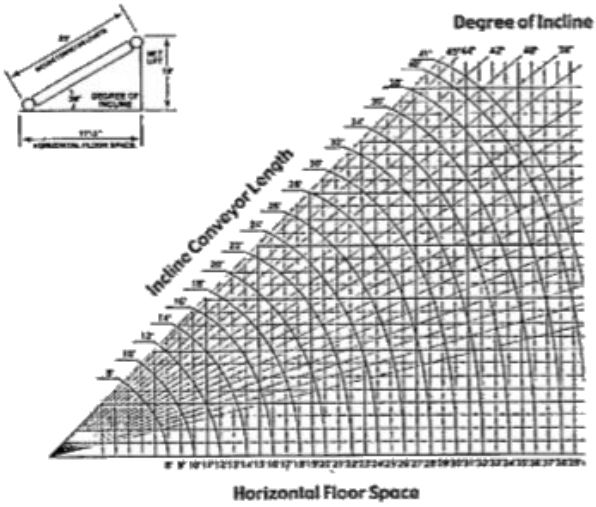
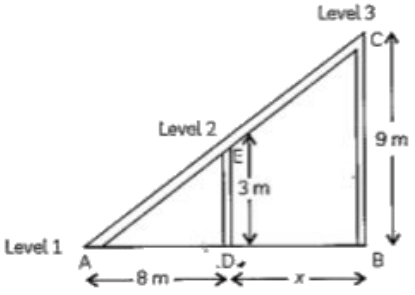


15.



The length of AE is

A. 12.1 m

B. 7.2 m

C. 6.9 m

D. 8.5 m

Answer: D

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16. To conduct Sports Day activities, in your rectangular shaped school ground ABCD, lines have been drawn with chalk powder at a distance of 1m each. 100 flower pots have been placed at a distance of 1m from each other along AD, as shown in Figur

A. (2, 50)

B. (2, 25)

C. (5,5)

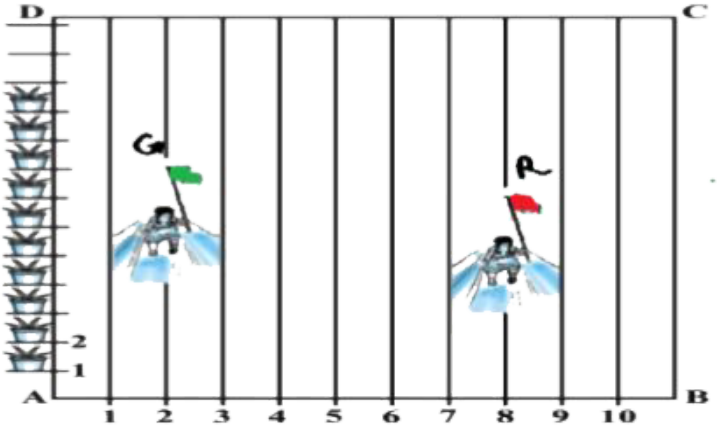
D. (5, 20)

Answer: B

Watch Video Solution

17. In order to conduct Sports Day activities in your School, lines have been drawn with chalk powder at a distance of 1 m each, in a rectangular shaped ground ABCD, 100 flowerpots have been placed at

a distance of 1 m from each other along AD, as shown in given figure below. Niharika runs 1/4 th the distance AD on the 2nd line and posts a green flag. Preet runs 1/5 th distance AD on the eighth line and posts a red flag.



If Joy has to post a flag at one-fourth distance from green flag ,in the line segment joining the green and red flags, then where should he post his flag?

A. (10,40)

B. (6,25)

C. (5, 20)

D. (8, 20)

Answer: D

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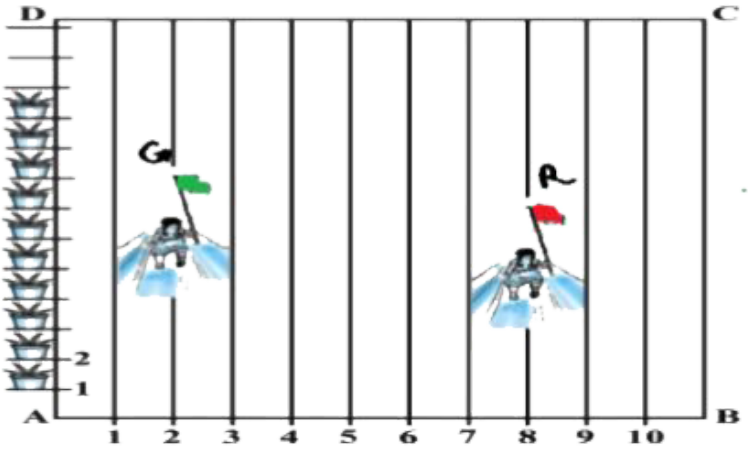
18. In order to conduct Sports Day activities in your School, lines have been drawn with chalk powder at a distance of 1 m each, in a rectangular shaped ground ABCD, 100 flowerpots have been placed at

a distance of 1 m from each other along AD, as shown in given figure below. Niharika runs 1/4 th the distance AD on the 2nd line and posts a green flag. Preet runs 1/5 th distance AD on the eighth line and posts a red flag.



Find the position of red flag

A. 10 m

B. 9 m

C. 8 m

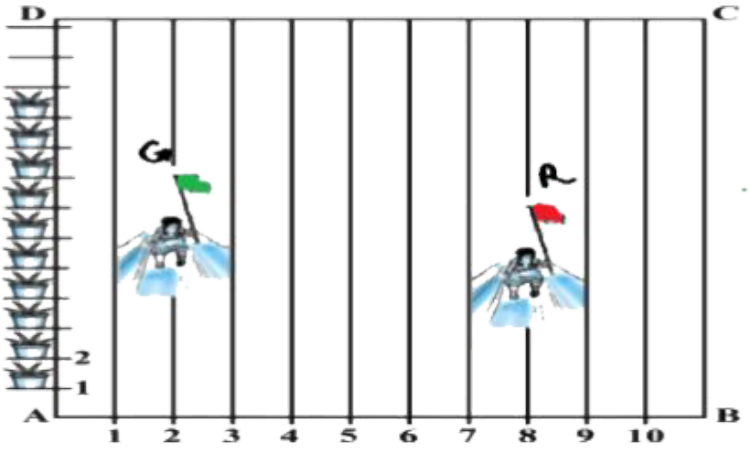
D. 7 m

Answer: C

Watch Video Solution

19. In order to conduct Sports Day activities in your School, lines have been drawn with chalk powder at a distance of 1 m each, in a rectangular shaped ground ABCD, 100 flowerpots have been placed at a distance of 1 m from each other along AD, as shown in given figure below. Niharika runs 1/4 th

the distance AD on the 2nd line and posts a green flag. Preet runs 1/5 th distance AD on the eighth line and posts a red flag.



If Rashmi has to post a blue flag exactly halfway between the line segment joining the two flags, where should she post her flag?

A. (6, 45)

B. (8,25)

C. $(5, \frac{45}{2})$

D. $(5, \frac{45}{2})$

Answer: C

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20. To conduct Sports Day activities, in your rectangular shaped school ground ABCD, lines have been drawn with chalk powder at a distance of 1m each. 100 flower pots have been placed at a distance of 1m from each other along AD, as shown in Figur

A. 55 m

B. 49 m

C. 52 m

D. 47 m

Answer: A

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Part B Section Iii

1. A line intersects the y-axis and x-axis at the points P and Q respectively. If (2,-5) is the mid-point of PQ then find the coordinates of P and Q.

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2. Find the third vertex of a triangle, if two of its vertices are at $(-3, 1)$ and $(0, -2)$ and the centroid is at the origin.

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3. Explain why $3 \times 5 \times 7 \times 9 \times 11 + 11$ is a composite number.

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4. If $n = 2^3 \times 3^4 \times 5^4 \times 7$, where n is a natural number, then find the number of consecutive zeros in n

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5. Solve for x and y:

$7x - 4y = 49$

$5x - y = 22$

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6. Metallic spheres of radii 6 cm, 8 cm and 10 cm respectively, are melted to form a single solid sphere. Find the radius of the resulting sphere.

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7. Find the missing frequency for the given data is mean of distribution is 52.

Wages in Rs	10-20	20-30	30-40	40-50	50-60	60-70	70-80
No. of Workers	5	3	4	f	2	6	13

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8. If a number x is chosen at random from the number $-2, -1, 0, 1, 2$. What is the probability that $x^2 < 2$?

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Part B Section Iv

1. If p is a prime number, then prove that $\sqrt{p}$ is irrational.

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2. Find the zeros of the polynomial $2x^2 - \left(1 + 2\sqrt{2}\right)x + \sqrt{2}$

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3. Solve for x:

$$\frac{1}{x-2}+\frac{2}{x-1}=\frac{6}{x}, x \neq 0,1,2$$

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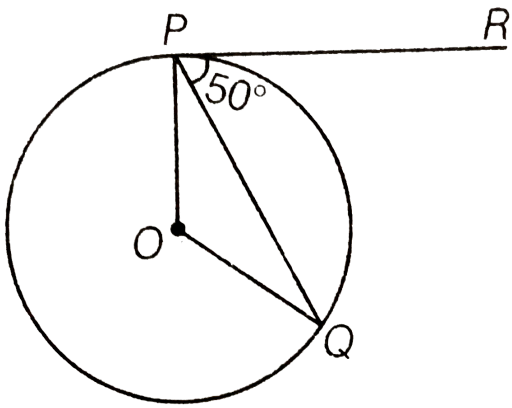
4. In figure, if O is the centre of a circle, PQ is a chord and the tangent PR at P makes an angle of

50° with PQ, then $\angle POQ$ is equal to



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5. O is any point inside a triangle ABC . The bisector of $\angle AOB, \angle BOC$ and $\angle COA$ meet the sides AB, BC and CA in point $D, EandF$ respectively. Show that $ADxBExCF = DBxECxFA$

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6. Draw a circle of radius 6 cm. From a point 10 cm away from its centre, construct the pair of tangents to the circle and measure their lengths.

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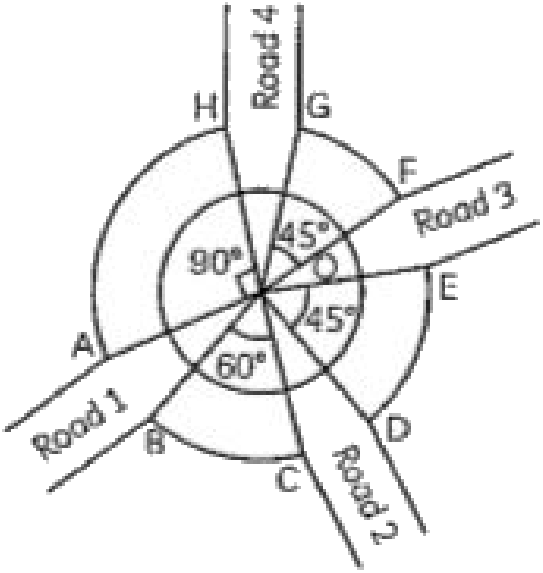
7. The central Park is in the form of a circle with centre O and radius 21 m.



Find the total lengths of the curbs,

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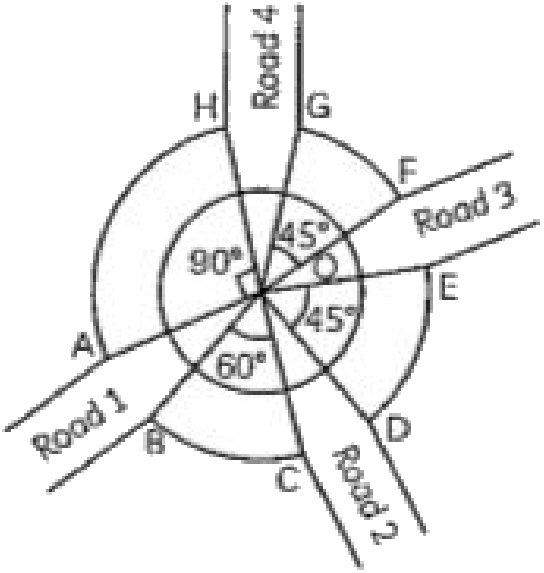
8. The diagram shows a round about at the junction of four roads (of equal width). The central Park is in the form of a circle with centre O and

radius 14 m.

The curbs BC, DE, FG and HA are in the form of arcs that lie on a circle with centre O and radius 21 m. The angles subtended by these curbs at O are $60^\circ, 45^\circ, 45^\circ, 90^\circ$



Find the area of the circular road surrounded the central park,

View Text Solution

9. Find the median of the following data:

Marks (out of 90)	No. of Students
0-10	2
10-20	2
20-30	4
30-40	6
40-50	6
50-60	5
60-70	2
70-80	4
80-90	4
Total	35

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10. Two customers are visiting a particular shop in the same week (Monday to Saturday). Each is equally likely to visit the shop on any one day as on another. What is the probability that both will visit the shop on: (i) the same day? (ii) different days? (ii) consecutive days?

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11. Two customers are visiting a particular shop in the same week (Monday to Saturday). Each is equally likely to visit the shop on any one day as

on another. What is the probability that both will visit the shop on: (i) the same day? (ii) different days? (ii) consecutive days?

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12. Two customers are visiting a particular shop in the same week (Monday to Saturday). Each is equally likely to visit the shop on any one day as on another. What is the probability that both will visit the shop on: (i) the same day? (ii) different days? (ii) consecutive days?

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Part B Section V

1. State the basic proportionality theorem.

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2. D and E are points on the sides CA and CB respectively of a triangle ABC right angled at C. Prove that $AE^2 + BD^2 = AB^2 + DE^2$.

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3. The angles of depression of the top and bottom of a building 50 metres high as observedfrom the top of a tower are 30° and 60°, respectively. Find the height of the tower and also the horizontal distance between the building and the tower.

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4. Vijay had some bananas and he divided them into two lots A and B. He sold the first lot at the rate of RS. 2 for 3 bananas and the second lot at the rate of Rs 1 per banana and got a total of Rs. 400. If he had sold the first lot at the rate of Rs. 1

per banana and the second lot at the rate of Rs. for 5 bananas , his total collection would have been Rs 460. Find the total number of bananas he had.

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Section A

1. The values of m, n respectively, if $108 = 2^m \times 3^3 \times 5^n$, are:

A. $2, 0$

B. $3, 1$

C. $0, 1$

D. $2, 2$

Answer: A

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2. If in two triangles ABC and PQR, $\frac{AB}{QR} = \frac{BC}{PR}$, then which of the following is true?

A. $\Delta BCA \sim \Delta PQR$

B. $\Delta PQR \sim \Delta CAB$

C. $\Delta PQR \sim \Delta ABC$

D. $\Delta CBA \sim \Delta POR$

Answer: B

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3. Evaluate :

$\cot 10^\circ . \cot 20^\circ . \cot 30^\circ . \cot 40^\circ ..... \cot 90^\circ$

A. 1

B. -1

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

D. 0

Answer: D

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

A. $2:1$

B. $3:4$

C. $4:3$

D. $1:2$

Answer: D

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5. The area of a semicircle is 308 cm^2. Calculate its perimeter (in cm).

A. 36 cm

B. 14 cm

C. 88 cm

D. 72 cm

Answer: D

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6. A card is drawn from a pack of 52 cards. Find the probability of getting a face card

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

B. $\frac{3}{13}$

C. $\frac{1}{26}$

D. $\frac{4}{13}$

Answer: B

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7. In a ΔABC, right-angled at B, if $AB = \frac{x}{2}, BC = x + 2$ and $AC = x + 3$, then the quadratic equation, formed in x, is :

A. $x^2 - 8x - 20 = 0$

B. $x^2 - 2x + 5 = 0$

C. $x^2 + 8x + 20 = 0$

D. $x^2 + 2x + 5 = 0$

Answer: A

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8. Write the distance between the points $A(10\cos\theta,\ 0)$ and $B(0,\ 10\sin\theta)$.

A. 15 units

B. 10 units

C. 20 units

D. 1 unit

Answer: B

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9. What is the value of k, if one of the zeroes of the quadratic polynomial $(k-1)x^2 + kx + 1$ is -3 ?

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

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

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

D. $\frac{5}{7}$

Answer: A

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10. Evaluate the value of $2\tan^2\theta + \cos^2\theta - 2$,

where θ is an acute angle and $\sin\theta = \cos\theta$.

A. 1

B. $\frac{1}{2}$

C. $-\frac{3}{2}$

D. 0

Answer: B

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11. What is the perimeter of a square which is circumscribing a circle of radius x cm?

A. 8x

B. 4x

C. 6x

D. 2x

Answer: A

Watch Video Solution

12. If the probability of raining tomorrow is 0.75, then the probability that it will not rain tomorrow, is:

A. $\frac{1}{4}$

B. $\frac{3}{4}$

C. $\frac{1}{2}$

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

Answer: A

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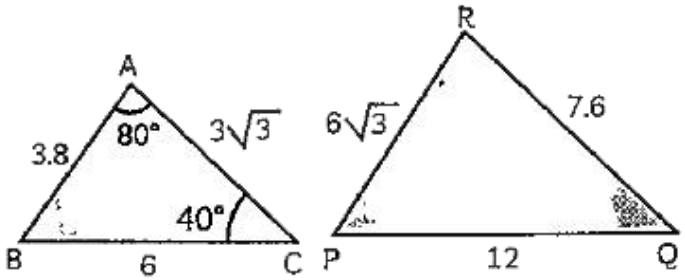
13. What is measure of $\angle P$, in the given figure?



A. 70°

B. 60°

C. 80°

D. 40°

Answer: D

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14. What is the ratio of the areas of ΔABC and ΔBDE , if ΔABC and ΔBDE are two equilateral triangles such that D is the mid-point of BC.

A. $1:2$

B. $2:1$

C. $1:4$

D. $4:1$

Answer: D

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15. For what value of k, the system of equations 8x + 5y = 9 and kx + 10y = 18 has infinitely many solutions?

A. $k = 10$

B. $k = 16$

C. $k = 8$

D. $k = 15$

Answer: B

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16. If $\sin A = \frac{3}{5}$, then the value of sec A is:

A. $\frac{4}{5}$

B. $\frac{3}{4}$

C. $\frac{4}{3}$

D. $\frac{5}{4}$

Answer: D

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17. If $p(x) = ax^2 + bx + c$, then $-\frac{b}{a}$ is equal to :

A. 0

B. 1

C. product of zeroes

D. sum of zeroes

Answer: D

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18. If (-1) is a zero of the polynomial $p(x) = x^2 - 7x - 8$, then the other zero is:

A. -8

B. -7

C. 1

D. 8

Answer: D

19. 8 chairs and 5 tables cost Rs 10500, while 5 chairs and 3 tables cost Rs 6450. The cost of each chair will be:

A. Rs 750

B. Rs 600

C. Rs 850

D. Rs 900

Answer: A

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20. What is the value of $(\tan\theta \cos ec\theta)^2 - (\sin\theta \sec\theta)^2$?

A. -1

B. 0

C. 1

D. 2

Answer: C

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Section B

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

.

Find the value of pq.

A. 5

B. 6

C. 7

D. 8

Answer: D

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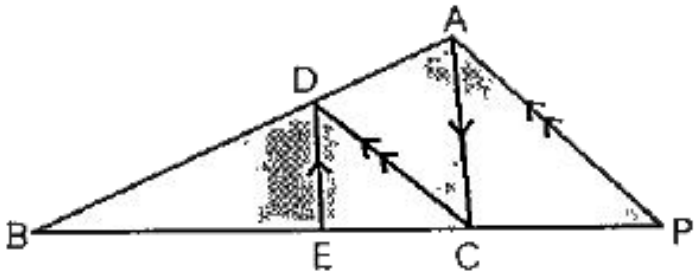
2. In the figure below , DE || AC and DC || AP. Find BE

: EC if BC = 4 cm and BP = 6 cm.



A. $1:1$

B. $1:2$

C. $2:1$

D. $1:3$

Answer: C

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3. Find the smallest number which when increased by 17 is exactly divisible by both 468 and 520.

A. 4680

B. 4663

C. 4581

D. 4682

Answer: B

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4. If the sum of zeroes of the polynomial $p(x) = 3x^2 - kx + 6$ is 3, then the value of k is :

A. 6

B. 9

C. 12

D. 3

Answer: B

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5. Which type of lines are represented by the pair of linear equations $3x + 8y = 13$ and $21x + 56y = 5$?

A. Coincident

B. Intersecting at exactly one point

C. Parallel

D. Intersecting at two points

Answer: C

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6. A circular park has a path of uniform width around it. The difference between the outer and inner circumferences of the circular path is 132 m. Its width is (a) 20 m (b) 21 m (c) 22 m (d) 24 m

A. 7 m

B. 21 m

C. 42 m

D. 32 m

Answer: B

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7. A bag contains tickets numbered 11, 12, 13, ..., 30. A ticket is taken out from the bag at random. Find the probability that the number on the drawn ticket (i) is a multiple of 7 (ii) is greater than 15 and a multiple of 5.

A. $\frac{1}{21}$

B. $\frac{1}{7}$

C. $\frac{7}{20}$

D. $\frac{3}{20}$

Answer: D

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8. What is the value of $m^2 - n^2$, where $m = \tan\theta + \sin\theta$ and $n = \tan\theta - \sin\theta$?

A. $\sqrt{\frac{m}{n}}$

B. $4\sqrt{mn}$

C. $\sqrt{mn}$

D. $4\sqrt{\frac{m}{n}}$

Answer: B

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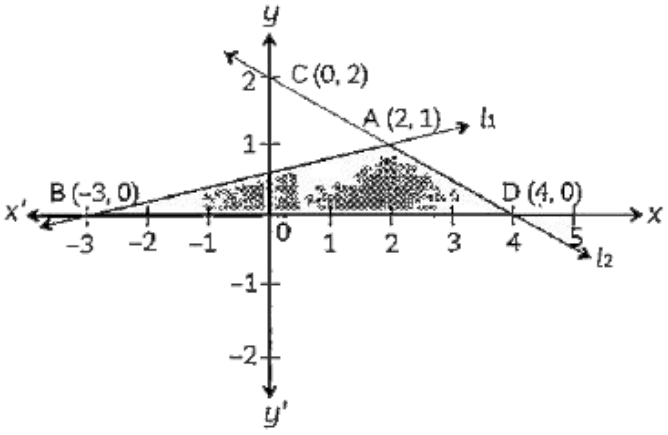
9. The area of triangle formed by the lines l_1 and l_2 and the x-axis is:



A. 7 sq. units

B. $\frac{9}{2}$ sq.units

C. $\frac{7}{2}$ sq.units

D. 4 sq. units

Answer: C

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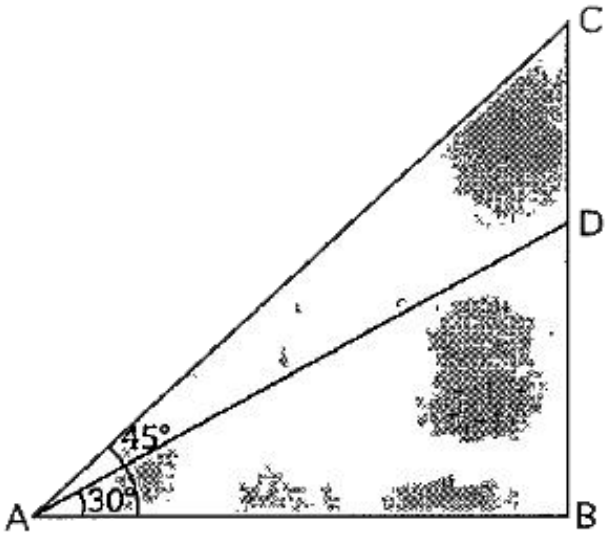
10. In the figure, the value of $\frac{AB}{BC} + \frac{BD}{AD}$ is



A. $\frac{1}{2}$

B. 1

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

D. 2

Answer: C

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11. In the given figure, diameter AB is 12 cm long. AB is trisected at points P and Q. Find the area of shaded region

A. $14\pi cm^2$

B. $12\pi cm^2$

C. $22\pi cm^2$

D. $13\pi cm^2$

Answer: B

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12. In a ΔPQR, S in a point on side PQ and T is a point on side PR such that ST II QR $\frac{PS}{SQ} = \frac{3}{5}$ and PR = 28 cm. What is the value of PT?

A. 12.5 cm

B. 17.5 cm

C. 10.5 cm

D. 13.5 cm

Answer: C

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13. The zeroes of the polynomial $\sqrt{3}x^2 - 8x + 4\sqrt{3}$ are:

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

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

C. $6\sqrt{2}, 3$

D. $3\sqrt{2}, 6$

Answer: A

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14. A box contains 40 pens out of which x are non-defective. If one pen is drawn at random, the probability of drawing a non defective pen is y. If we replace the pen drawn and then add 20 more non-defective pens in this bag, the probability of drawing a non-defective pen is 4y. Then, evaluate the value of x.

A. 4

B. 7

C. 6

D. 2

Answer: A

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15. Write the number of solutions of the following pair of linear equations:

$x + 2y - 8 = 0, \quad 2x + 4y = 16$

A. Unique

B. Infinite

C. No solution

D. Two solutions

Answer: B

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16. If the vertices of ΔABC are A(-1, -3) , B(2, 1) and C(8, -4), then the coordinates of its centroid are :

A. (3, 2)

B. (3,-2)

C. (-3,2)

D. (-3,-2)

Answer: B

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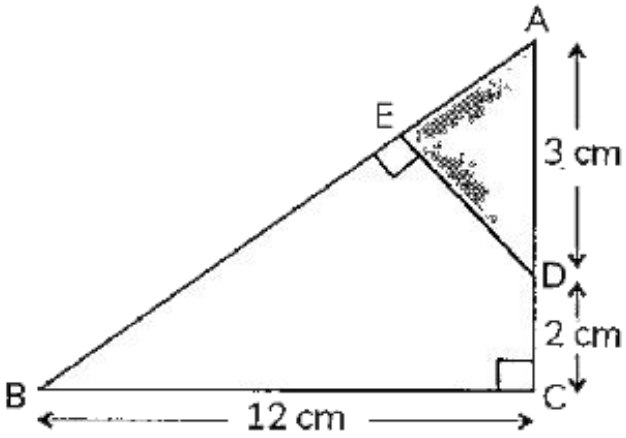
17. In the given figure, if $\Delta ABC \sim \Delta ADE$, then the length of DE is:



A. $\frac{15}{13}cm$

B. $\frac{13}{12}cm$

C. $\frac{36}{13}cm$

D. $\frac{12}{13}cm$

Answer: C

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18. In a ΔABC, right angled at B, find the value of

$2 \sin A \cot A$

if $\tan A = \sqrt{3}$

A. $\frac{1}{\sqrt{2}}$

B. 1

C. -1

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

Answer: B

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19. What is the point of intersection of the lines $x - 3 = 0$ and y- 5 = 0?

A. (-3,5)

B. (-3,-5)

C. (3,5)

D. (3,-5)

Answer: C

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20. If one zero of the polynomial is 7 and product of zeroes is -35, then polynomial is:

A. $x^2 + 12x - 35$

B. $x^2 - 12x - 35$

C. $-x^2 + 12x - 35$

D. $x^2 + 12x - 35$

Answer: C

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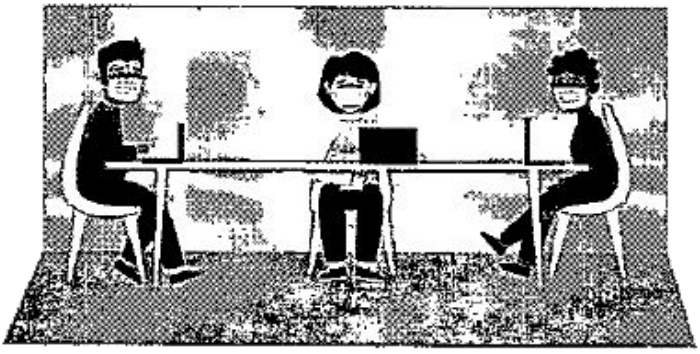
Section C

1. Due to corona pandemic, we need to follow certain rules i.e. social distancing, washing of hands etc. Three friends namely, Pratima, Qasim and Rajni went to a park to discuss something. They decided to maintain the social distancing due to CORONAVIRUS pandemic and sat at the points P, Q and R respectively.



If the coordinates of P, Q and R are (14 , - 3), (7, 3) and (8, 5) repsectively, then answer the following:

How far are points P and Q ?

A. $\sqrt{85}$ units

B. $\sqrt{5}$ units

C. $4\sqrt{5}$ units

D. $5\sqrt{2}$ units

Answer: A

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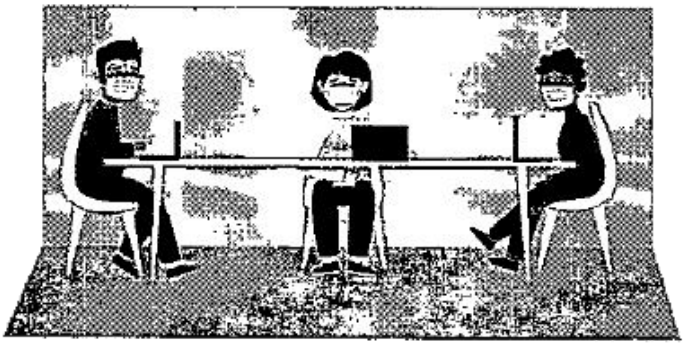
2. Due to corona pandemic, we need to follow certain rules i.e. social distancing, washing of hands etc. Three friends namely, Pratima, Qasim and Rajni went to a park to discuss something. They decided to maintain the social distancing due to CORONAVIRUS pandemic and sat at the points P, Q and R respectively.



If the coordinates of P, Q and R are (14 - 3), (7, 3) and (8, 5) repsectively, then answer the following:

If a tree is at the point X, which is on the straight line joining Q and R such that it divides the distance between them in the ratio of 1:2, then, the coordinates of X are:

A. $(9, 1)$

B. (6,1)

C. $\left(\frac{23}{3}, \frac{13}{3}\right)$

D. $\left(\frac{22}{3}, \frac{11}{3}\right)$

Answer: D

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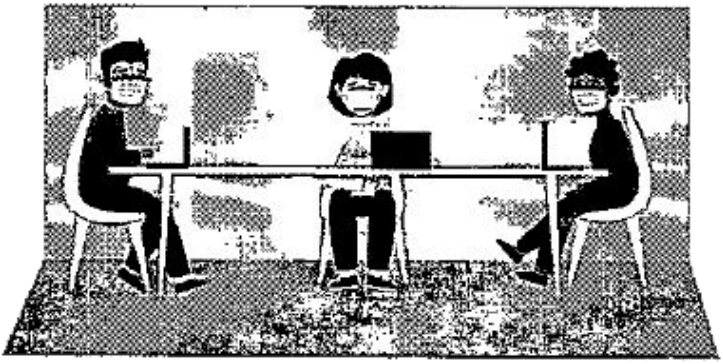
3. Due to corona pandemic, we need to follow certain rules i.e. social distancing, washing of hands etc. Three friends namely, Pratima, Qasim and Rajni went to a park to discuss something. They decided to maintain the social distancing due to CORONAVIRUS pandemic and sat at the points P, Q and R respectively.



If the coordinates of P, Q and R are (14, - 3), (7, 3)

and (8, 5) respectively, then answer the following:

What is the mid-point of the line segment QR?

A. $\left(\frac{11}{2}, 0\right)$

B. $\left(\frac{15}{2}, 4\right)$

C. $(6, 1)$

D. $(8, 5)$

Answer: B

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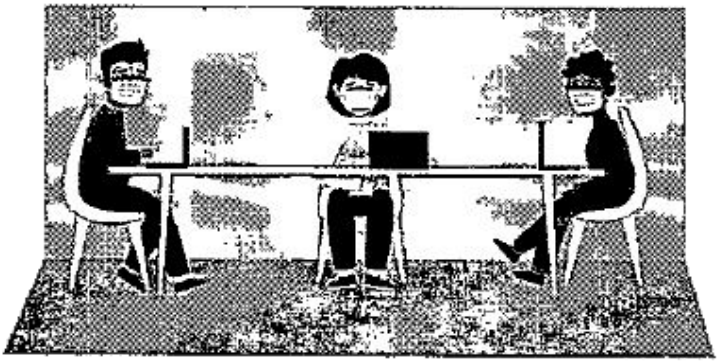
4. Due to corona pandemic, we need to follow certain rules i.e. social distancing, washing of hands etc. Three friends namely, Pratima, Qasim and Rajni went to a park to discuss something. They decided to maintain the social distancing due to CORONAVIRUS pandemic and sat at the points P, Q and R respectively.



If the coordinates of P, Q and Rare 14 - 3), (7, 3) and (8, 5) repsectively, then answer the following:

As point lies between the points P and R, so the ratio in which divides the line segment joining P and R is:

A. $1:2$

B. $2:1$

C. $3:1$

D. $1:3$

Answer: C

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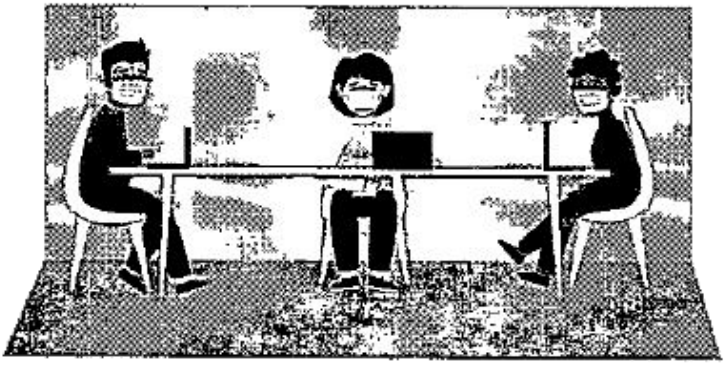
5. Due to corona pandemic, we need to follow certain rules i.e. social distancing, washing of hands etc. Three friends namely, Pratima, Qasim and Rajni went to a park to discuss something. They decided to maintain the social distancing due to CORONAVIRUS pandemic and sat at the points P, Q and R respectively.



If the coordinates of P, Q and Rare 14 - 3), (7, 3) and

(8, 5) repsectively, then answer the following:

The points P, Q and R together makes:

A. an isosceles triangle

B. an equilateral triangle

C. a scalene triangle

D. a straight line

Answer: D

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6. The value of $ab + bc + ca$ if $a^2 + b^2 + c^2 = 30$ and $a + b + c = 6$ is

A. 1

B. 8

C. 3

D. 2

Answer: C

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7. Solve for x & y and find the value of $9x + 3y$:

$2x + 5y = 13$

$7x - y = 27$

A. 39

B. 78

C. 156

D. 312

Answer: A

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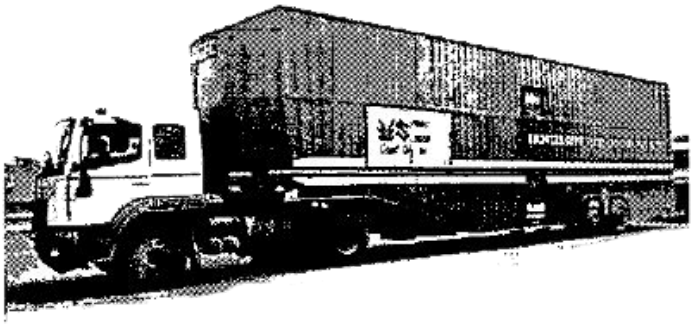
8. A trailer is a large vehicles for hauling vehicles from one place to another or from the factory to the car showrooms. A leading manufacturer of cars in India has its factory located in Gurugram in Haryana. On a particular weekend, there was a surge in demand for cars. Two models of cars to be transported to various locations across the country. There were 792 cars of model A and 612 cars of model B.



The LCM of 792 and 612 is:

A. 1224

B. 1584

C. 6732

D. 13464

Answer: D

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9. A trailer is a large vehicle for hauling vehicles from one place to another or from the factory to the car showrooms. A leading manufacturer of cars in India has its factory located in Gurugram in Haryana. On a particular weekend, there was a surge in demand for cars. Two models of cars to be transported to various locations across the country. There were 792 cars of model A and 612 cars of model B.

The power of 2 in the prime factorization of 792 is:

A. 1

B. 2

C. 3

D. 4

Answer: C

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10. The LCM of the smallest multiple of 4 and smallest multiple of 6 is:

A. 6

B. 12

C. 24

D. 48

Answer: B

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