



MATHS

BOOKS - EDUCART PUBLICATION

SAMPLE PAPER 01

Part A Section I

1. If $xy = 340$ and $HCF(x, y) = 20$, then find the $LCM(x, y)$.



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2. If $xy=180$ and $\text{HCF}(x,y)=3$, then find the $\text{LCM}(x,y)$.

The decimal representation of $\frac{14587}{2^1 \times 5^4}$ will terminate after how many places?



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3. If the sum of the zeroes of the quadratic polynomial $3x^2 - kx + 6$ is 3, then find the value of k .



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4. For what value of k , the pair of linear equations $3x+y=3$ and $6x+ky=8$ does not have solution.



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5. If 3 chairs and 1 table costs Rs. 1500 and 6 chairs and 1 table costs Rs.2400. Form linear equations to represent this situation.



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6. Which term of the A.P. 27, 24, 21,.....is zero?



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7. In an AP, if $d = -4$, $n = 7$ and $a_n = 4$, then a is equal to



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8. If the equation $9x^2 + 6kx + 4 = 0$ has equal roots then $k=?$



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9. Find the roots of the equation

$$x^2 + 2x - 143 = 0$$



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10. For what values of p the quadratic equation $3x^2 + 12x + 4p = 0$ has equal roots?



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11. If two tangents inclined at an angle of 60° are drawn to a circle of radius 3cm then the length of each tangent is



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12. PQ is a tangent to a circle with centre O at the point P . If $\triangle OPQ$ is an isosceles triangle, then $\angle OQP$ is equal to



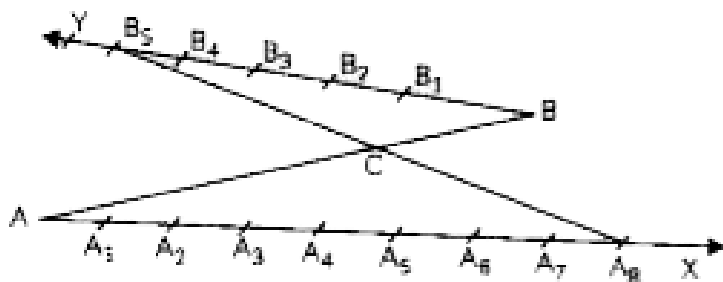
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13. In the $\triangle ABC$, D and E are points on side AB and AC respectively such that $DE \parallel BC$. If $AE=2\text{cm}$, $AD=3\text{cm}$ and $BD=4.5\text{cm}$, then find CE .



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14. In the figure, if $B_1, B_2, B_3,$ and A_1, A_2, A_3, \dots have been marked at equal distances. In what ratio C divides AB ?



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15. $\sin A + \cos B = 1$, $A = 30^\circ$ and B is an acute angle, then find the value of B .

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16. If $x = 2 \sin^2 \theta$ and $y = 2 \cos^2 \theta + 1$, then find

$$x + y$$



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17. In a circle of diameter 42 cm, if an arc subtends an angle of 60° at the centre where

$$\pi = \frac{22}{7} \text{ then what will be the length of arc?}$$



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18. 12 solid spheres of the same radii are made by melting a solid metallic cylinder of base diameter 2cm and height 16cm. Find the diameter of the each sphere.



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19. Find the probability of getting a doublet in a throw of a pair of dice.

OR

Find the probability of getting a black queen

when a card is drawn at random from a well-shuffled pack of 52 cards



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20. Find the probability of getting a doublet in a throw of a pair of dice.

OR

Find the probability of getting a black queen when a card is drawn at random from a well-shuffled pack of 52 cards



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Part A Section Ii

1. SUN ROOM

The diagrams show the plans for a sun room.

It will be built onto the wall of a house. The

four walls of the sunroom are square clear

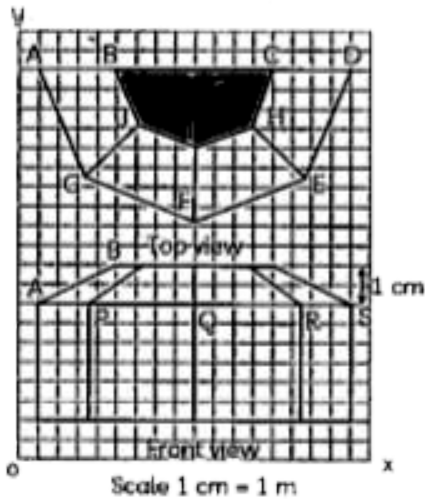
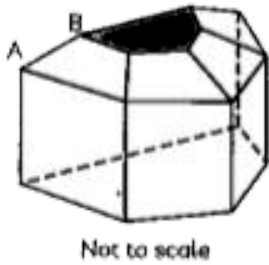
glass panels. The roof is made using four clear

glass panels, trapezium in shape, all the same

size

One tinted glass panel, half a regular octagon

in shape



Refer to Top View

Find the mid-point of the segment joining the points J (6, 17) and I (9, 16).

A. $\left(\frac{33}{2}, \frac{15}{2}\right)$

B. $\left(\frac{3}{2}, \frac{1}{2}\right)$

C. $\left(\frac{15}{2}, \frac{33}{2}\right)$

D. $\left(\frac{1}{2}, \frac{3}{2}\right)$

Answer:



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2. Case Study based-1

SUN ROOM

The diagrams show the plans for a sun room.

It will be built onto the wall of a house. The

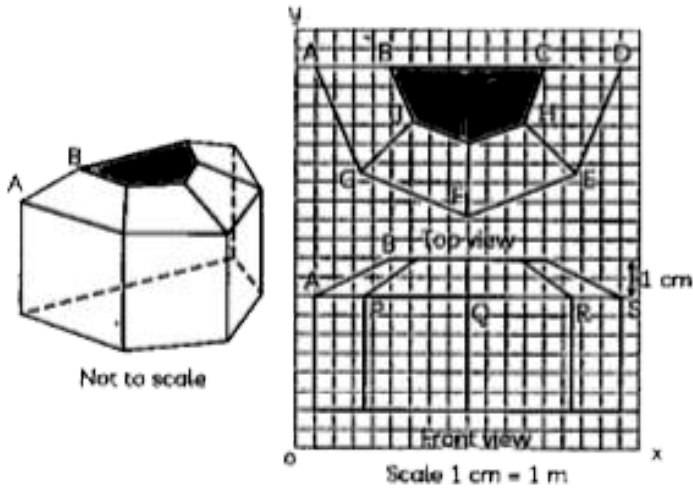
four walls of the sunroom are square clear

glass panels. The roof is made using four clear

glass panels, trapezium in shape, all the same

size

One tinted glass panel, half a regular octagon in shape



Refer to Top View

The distance of the point P from the y-axis is

- A. 4
- B. 15
- C. 19

D. 25

Answer:



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3. SUN ROOM

The diagrams show the plans for a sun room.

It will be built onto the wall of a house. The

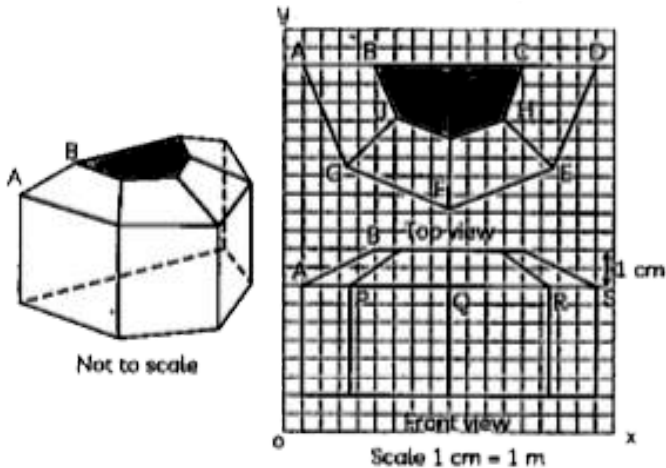
four walls of the sunroom are square clear

glass panels. The roof is made using four clear

glass panels, trapezium in shape, all the same

size

One tinted glass panel, half a regular octagon
in shape



Refer to Top View

If a point (x, y) is equidistant from the $Q(9, 8)$
and $S(17, 8)$, then

A. $x+y=13$

B. $x-13 = 0$

C. $y-13=0$

D. $x - y = 13$

Answer:



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4. A scale drawing of an object is the same shape as the object but a different size. The scale of a drawing is a comparison of the length used on a drawing to the length it

represents. The scale is written as a ratio. The ratio of two corresponding sides in similar figures is called the scale factor.

Scale factor = length in image / corresponding length in object.

If one shape can become another using resizing, then the shapes are similar. Hence, two shapes are similar when one can become the other after a resize, flip, slide or turn. In the photograph below showing the side view of a train engine. Scale factor is 1:200.



This means that a length of 1 cm on the photograph above corresponds to a length of 200cm or 2 m, of the actual engine. The scale can also be written as the ratio of two lengths.

If two similar triangles have a scale factor 5:3 which statement regarding the two triangles is true?

A. 24 m

B. 3 m

C. 6 m

D. 10 m

Answer:



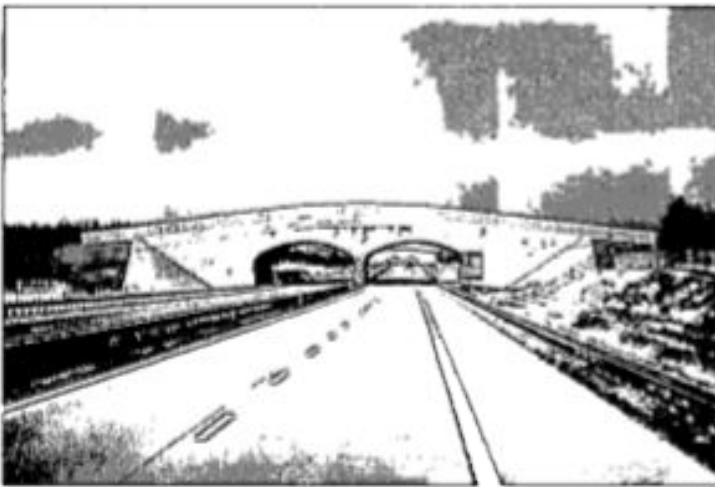
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5. Case Study Based- 3

Applications of Parabolas-Highway

Overpasses/Underpasses A highway underpass

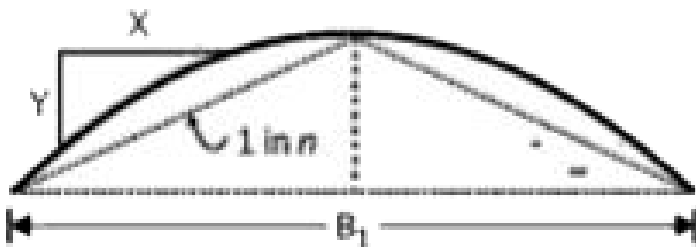
is parabolic in shape.



Parabola

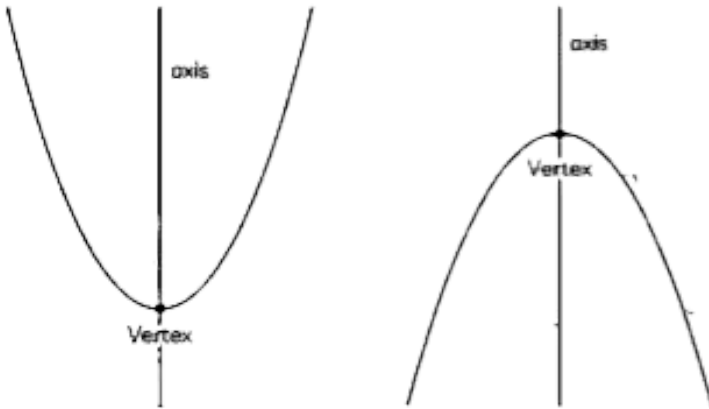
A parabola is the graph that results from

$$p(x) = ax^2 + bx + c$$



Parabolas are symmetric about a vertical line known as the Axis of Symmetry. The Axis of

Symmetry runs through the maximum or minimum point of the parabola which is called the Vertex.



If the highway overpass is represented by $x^2 - 2x - 8$. Then its zeroes are

- A. (2,-4)
- B. (4,-2)
- C. (-2,-2)

D. $(-4,-4)$

Answer:



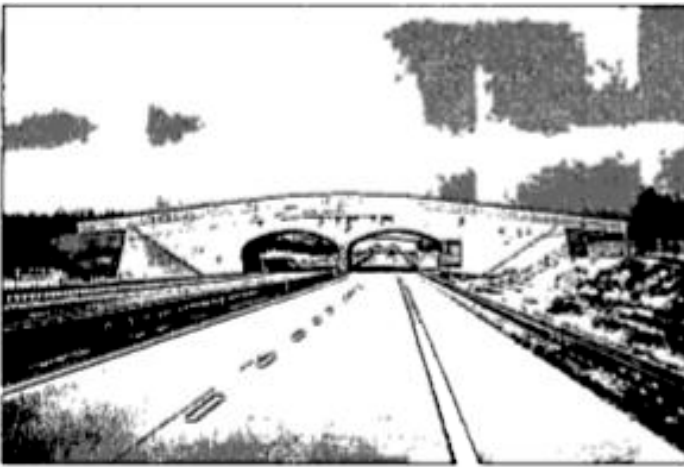
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6. Case Study Based- 3

Applications of Parabolas-Highway

Overpasses/Underpasses A highway underpass

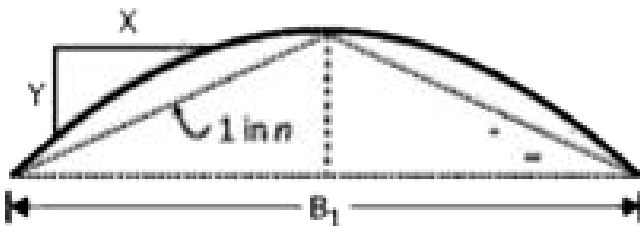
is parabolic in shape.



Parabola

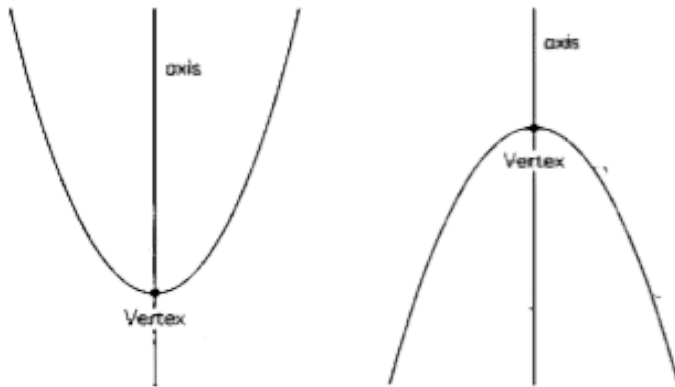
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$$p(x) = ax^2 + bx + c$$



Parabolas are symmetric about a vertical line known as the Axis of Symmetry. The Axis of Symmetry runs through the maximum or

minimum point of the parabola which is called the Vertex.



The highway overpass is represented graphically. Zeroes of a polynomial can be expressed graphically. Number of zeroes of polynomial is equal to number of points where the graph of polynomial

A. Intersects x-axis

B. Intersects y-axis

C. Intersects y-axis or x-axis

D. None of these

Answer:



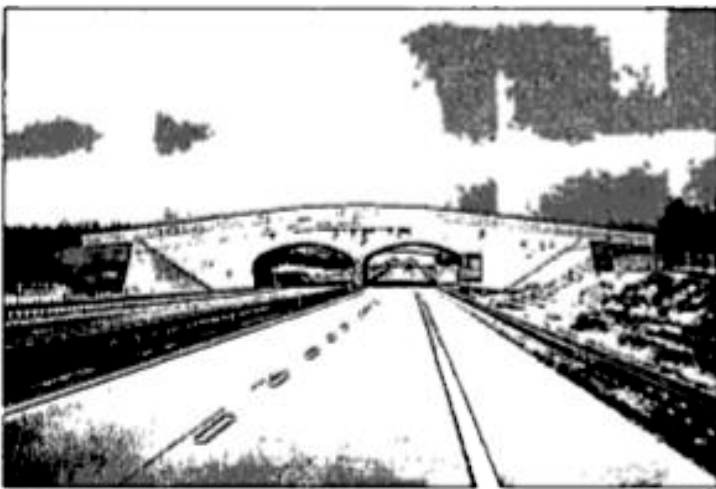
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7. Case Study Based- 3

Applications of Parabolas-Highway

Overpasses/Underpasses A highway underpass

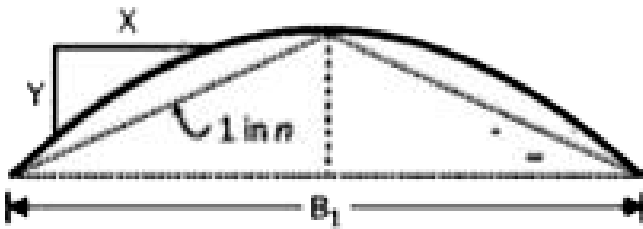
is parabolic in shape.



Parabola

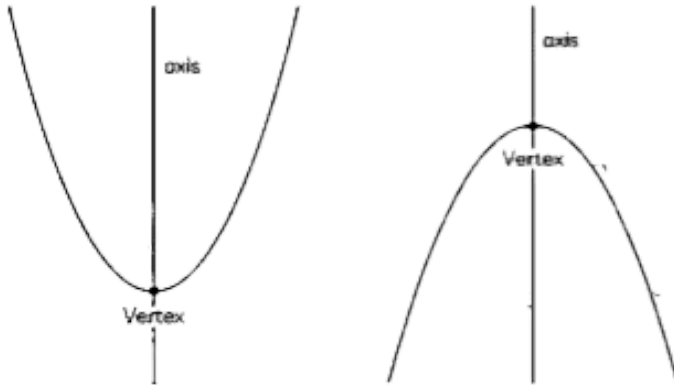
A parabola is the graph that results from

$$p(x) = ax^2 + bx + c$$



Parabolas are symmetric about a vertical line known as the Axis of Symmetry. The Axis of Symmetry runs through the maximum or

minimum point of the parabola which is called the Vertex.



Graph of a quadratic polynomial is a

- A. straight line
- B. circle
- C. parabola
- D. ellipse

Answer:



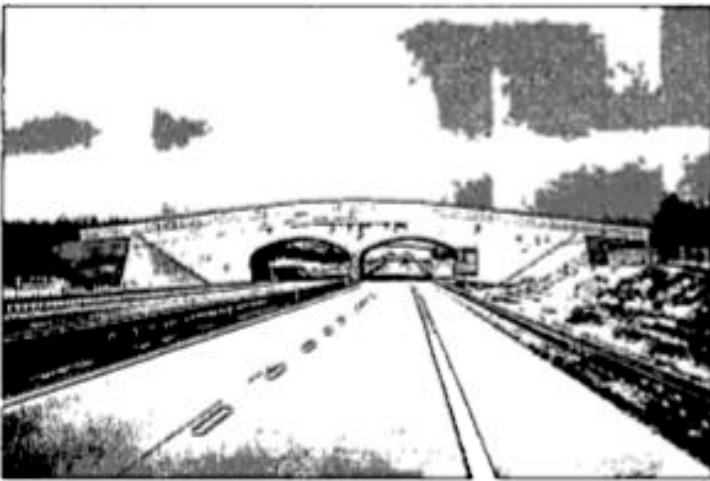
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8. Case Study Based- 3

Applications of Parabolas-Highway

Overpasses/Underpasses A highway underpass

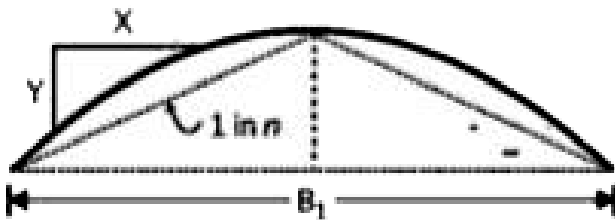
is parabolic in shape.



Parabola

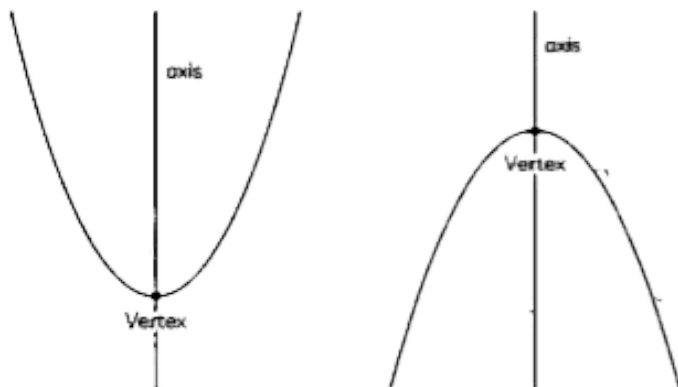
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Parabolas are symmetric about a vertical line known as the Axis of Symmetry. The Axis of Symmetry runs through the maximum or

minimum point of the parabola which is called the Vertex.



The representation of Highway Underpass whose one zero is 6 and sum of the zeroes is 0, is

A. $x^2 - 6x + 2$

B. $x^2 - 36$

C. $x^2 - 6$

D. $x^2 - 3$

Answer:



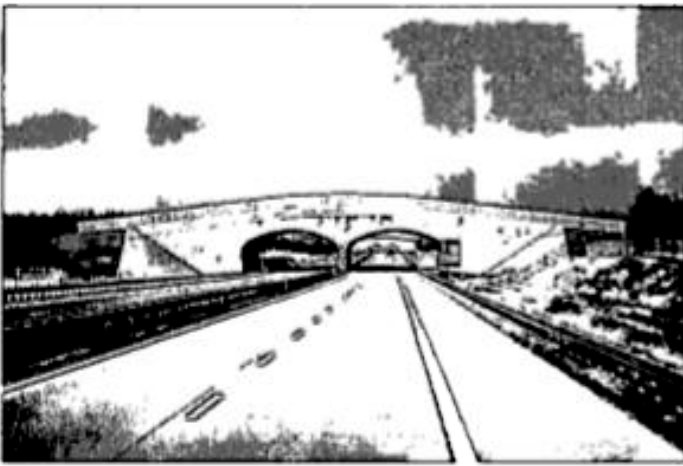
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9. Case Study Based- 3

Applications of Parabolas-Highway

Overpasses/Underpasses A highway underpass

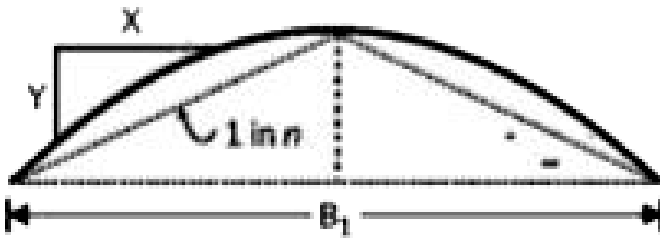
is parabolic in shape.



Parabola

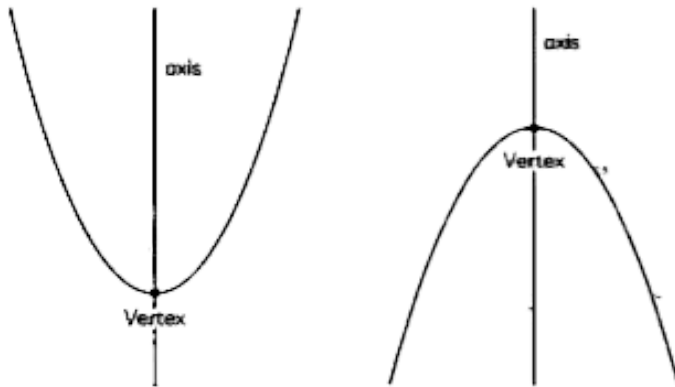
A parabola is the graph that results from

$$p(x) = ax^2 + bx + c$$



Parabolas are symmetric about a vertical line known as the Axis of Symmetry. The Axis of Symmetry runs through the maximum or

minimum point of the parabola which is called the Vertex.



The number of zeroes that polynomial

$f(x) = (x - 2)^2 + 4$ can have is:

- A. 1
- B. 2
- C. 0

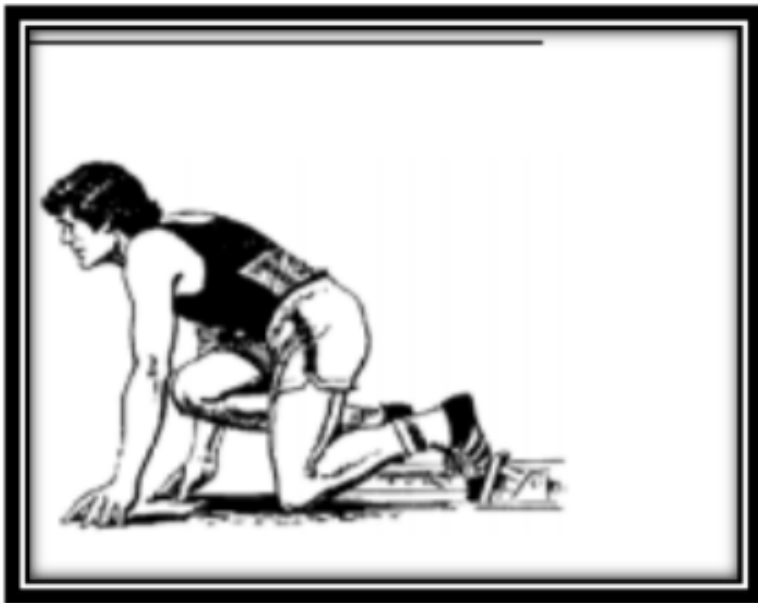
D. 3

Answer:



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10. Case Study Based- 4



100m

RACE A stopwatch was used to find the time that it took a group of students to run 100 m.

Time (in sec)	0-20	20-40	40-60	60-80	80-100
No. of students	8	10	13	6	3

Estimate the mean time taken by a student to

finish the race.

(i)54

(ii)63

(iii)43

(iv)50

A. 54

B. 63

C. 43

D. 50

Answer:



11. Case Study Based- 4

100m RACE

A stopwatch was used to find the time that it took a group of students to run 100 m.



Time (in sec)	0-20	20-40	40-60	60-80	80-100
No. of students	8	10	13	6	3

What will be the upper limit of the modal class?

A. 20

B. 40

C. 60

D. 80

Answer:



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12. Case Study Based- 4

100m RACE

A stopwatch was used to find the time that it took a group of students to run 100 m.



Time (in sec)	0-20	20-40	40-60	60-80	80-100
No. of students	8	10	13	6	3

The construction of cumulative frequency table is useful in determining the

- A. Mean
- B. Median
- C. Mode
- D. All of these

Answer:



13. Case Study Based- 4

100m RACE

A stopwatch was used to find the time that it took a group of students to run 100 m.



Time (in sec)	0-20	20-40	40-60	60-80	80-100
No. of students	8	10	13	6	3

The sum of lower limits of median class and modal class is

A. 60

B. 100

C. 80

D. 140

Answer:



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14. Case Study Based- 4

100m RACE

A stopwatch was used to find the time that it took a group of students to run 100 m.



Time (in sec)	0-20	20-40	40-60	60-80	80-100
No. of students	8	10	13	6	3

How many students finished the race within 1 minute?

A. 18

B. 37

C. 31

D. 8

Answer:





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Part B Section Iii

1. 3 bells ring at an interval of 4,7 and 14 minutes. All three bell rang at 6 am, when the three balls will the ring together next?



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2. Find the point on x-axis which is equidistant from the points $(2,-2)$ and $(-4,2)$.



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3. P(-3, 7) and Q(1, 9) are two points. Find the point R on PQ such that $PR:QR = 1:1$.



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4. Find a quadratic polynomial whose zeroes are $5-3\sqrt{2}$ and $5+3\sqrt{2}$.



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5. Draw a line segment AB of length 9cm. With A and B as centres, draw circles of radius 5cm and 3cm respectively. Construct tangents to each circle from the centre of the other circle.



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6. If $\tan A = \frac{3}{4}$, find the value of $\frac{1}{\sin A} + \frac{1}{\cos A}$



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7. If $\sqrt{3}\sec\theta - 2\tan\theta = 0$ and $0^\circ < \theta < 90^\circ$

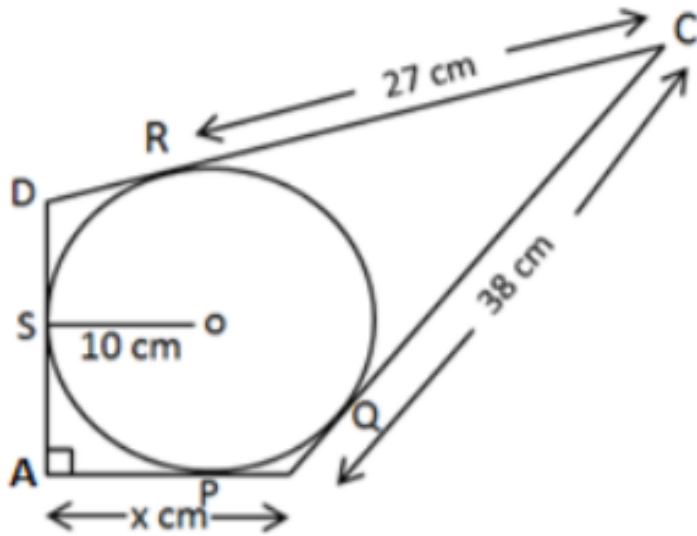
find the value of θ



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8. In the figure, quadrilateral ABCD is circumscribing a circle with centre O and $AD \perp AB$. If radius of incircle is 10cm, then

the value of x is



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Part B Section Iv

1. Prove that $2-\sqrt{3}$ is irrational, given that $\sqrt{3}$ is irrational



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2. If one root of the quadratic equation $x^2 + 6x + 2 = 0$ is, $\frac{2}{3}$ then find the other root of the equation.



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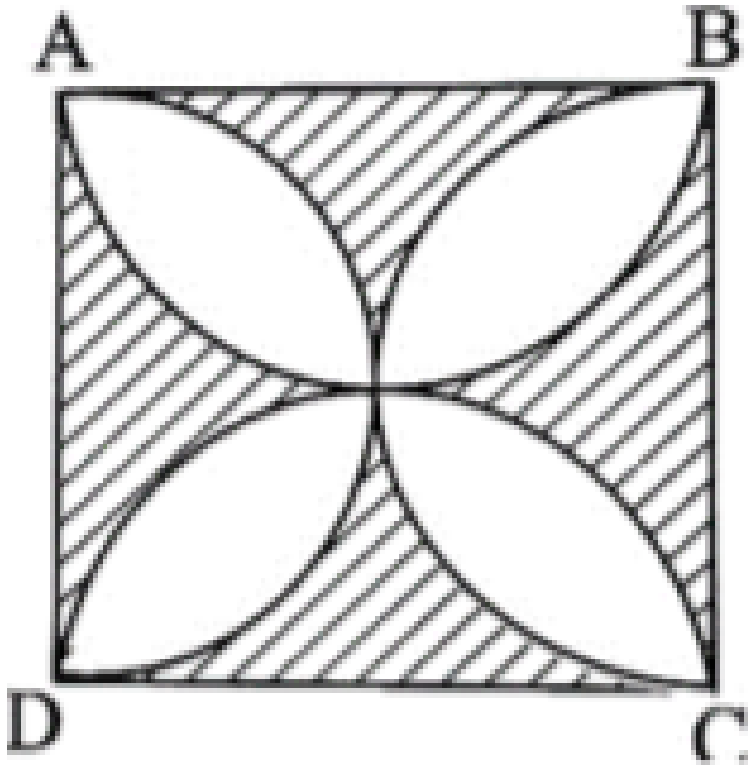
3. The roots α and β of the quadratic equation $x^2 - 5x + 3(k - 1) = 0$ are such that $\alpha - \beta = 1$. Find the value k



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4. In the figure, ABCD is a square of side 14 cm. Semi-circles are drawn with each side of square as diameter. Find the area of the

shaded region.



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5. The perimeter of two similar triangles are 24 cm and 1 cm respectively. If one side of the first triangle is 10 cm, then the corresponding side of the second triangle is



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6. In an equilateral triangle ABC, D is a point on side BC such that $BD = \frac{1}{3}BC$. Prove that $9AD^2 = 7AB^2$.



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7. The median of the following data is 16. Find the missing frequencies a and b , if the total of the frequencies is 70.

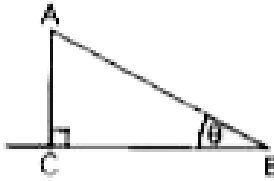
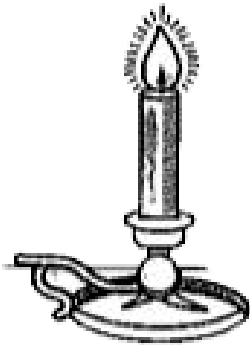
Class	0-5	5-10	10-15	15-20	20-25	25-30	30-35	35-40
Frequency	12	a	12	15	b	6	6	4



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8. If the angles of elevation of the top of the candle from two coins distant ' m ' cm and ' n ' cm ($m > n$) from its base and in the same straight line from it are 30° and 60° , then

find the height of the candle.



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9. The mode of the following data is 67. Find the missing frequency x .

Class	40-50	50-60	60-70	70-80	80-90
Frequency	5	x	15	12	7

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Part B Section V

1. Two poles of equal heights are standing opposite each other on either side of the road, which is 80 m wide. From a point between them on the road, the angles of elevation of the top of the poles are 60° and 30° , respectively. Find the height of the poles.



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2. The angles of depression of the top and bottom of a building 50 metres high as observed from 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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3. Water flows through a circular pipe whose internal diameter is 2 cm, at the rate of 0.7 m

per second into a cylindrical tank, the radius of whose base is 40 cm. By how much will the level of water rise in the tank in half an hour ?



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4. A boat covers a distance of 14 km upstream and 16 km downstream in 9 hours. It covers a distance of 12 km upstream and 40 km downstream in 11 hours. What is the speed (in km/hr) of the boat in still water?



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Part A Section I

1. Express 156 as the product of primes.



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2. Write a quadratic polynomial, sum of whose zeroes is 2 and product is -8



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3. Given that HCF (96,404) is 4, find the LCM (96,404)



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4. Fundamental Theorem of Arithmetic



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5. On comparing the ratios of the coefficients, find out whether the pair of equations $x - 2y$

$=0$ and $3x + 4y - 20 = 0$ is consistent or inconsistent.



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6. If a and b are co-prime numbers, then find the HCF (a, b)



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7. Find the area of a sector of a circle with radius 6 cm if angle of the sector is 60°



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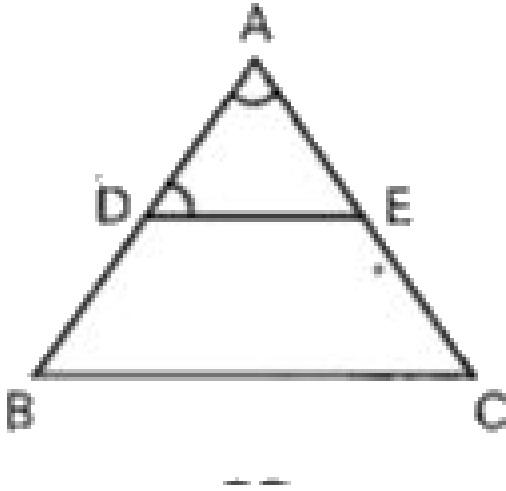
8. A horse tied to a pole with 28m long rope. Find the perimeter of the field where the horse can graze. (take $\pi = 22/7$)



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9. In the given fig
 $DE \parallel BC$, $\angle ADE = 70^\circ$ and $\angle BAC = 60^\circ$

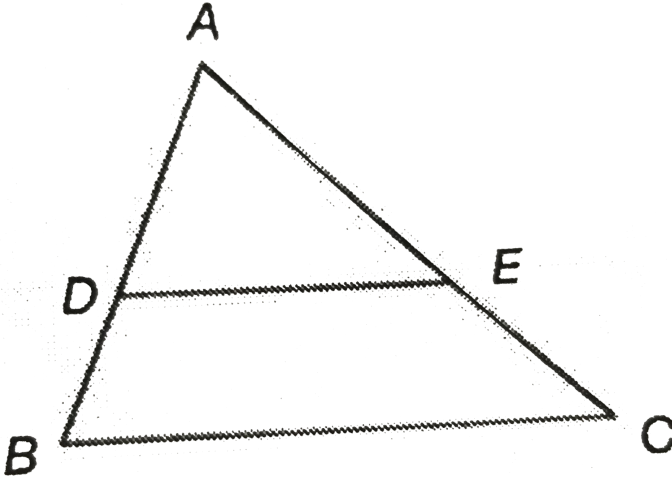
then $\angle BCA = \dots\dots\dots$



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10. In the following figure, $AD = 5.6$ cm, $AE = (x + 1)$ cm, $AB = 8.4$ cm and $EC = (x - 1)$ cm, find AC. Given that

$DE \parallel BC$.



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11. The cost of fencing a circular field at the rate of Rs.24 per metre is Rs. 5280. Find the radius of the field.



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12. A tree breaks due to storm and the broken part bends so that the top of the tree touches the ground where it makes an angle 30° . The distance between the foot of the tree to the point where the top touches the ground is 8m. Find the height of the tree from where it is broken.



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13. If the perimeter and the area of a circle are numerically equal, then find the radius of the circle



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14. Write the empirical relation between mean, mode and median.



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15. To divide a line segment BC internally in the ratio 3 : 5, we draw a ray BX such that $\angle CBX$ is an acute angle. What will be the minimum number of points to be located at equal distances, on ray BX?



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16. For what values of p does the pair of equations $4x + p y + 8 = 0$ and $2x + 2y + 2 = 0$ has unique solution?





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17. Solve: $2x - 3y = 3$ and $4x - 5y = 7$



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18. A bag contains 3 red balls and 5 black balls.

A ball is drawn at random from the bag. What

is the probability that the ball drawn is: red (b)

black



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19. A die is thrown once. What is the probability of getting a prime number?



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20. A tower stands vertically on the ground. From a point on the ground, which is $15m$ away from the foot of the tower, the angle of elevation of the top of the tower is found to be 60° . Find the height of the tower.



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21. Probability of an event E + probability of the event not E is equal to



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Part A Section Ii



1.

Mathematics teacher of a school took her 10th standard students to show Red fort. It was a part of their Educational trip. The teacher had interest in history as well. She narrated the facts of Red fort to students. Then the teacher said in this monument one can find combination of solid figures. There are 2 pillars which are cylindrical in shape. Also 2

domes at the corners which are hemispherical. 7 smaller domes at the centre. Flag hoisting ceremony on Independence Day takes place near these domes.

How much cloth material will be required to cover 2 big domes each of radius 2.5 metres?

A. $75m^2$

B. $78.57m^2$

C. $87.47m^2$

D. $25.8m^2$

Answer: B



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2.

Mathematics teacher of a school took her 10th standard students to show Red fort. It was a part of their Educational trip. The teacher had interest in history as well. She narrated the facts of Red fort to students. Then the teacher said in this monument one can find

combination of solid figures. There are 2 pillars which are cylindrical in shape. Also 2 domes at the corners which are hemispherical. 7 smaller domes at the centre. Flag hoisting ceremony on Independence Day takes place near these domes.

How much is the volume of a hemisphere if the radius of the base is 3.5m?

A. $\pi r^2 h$

B. $\pi r l$

C. $\pi r(l + r)$

D. $2\pi r$

Answer: A

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3.

Mathematics teacher of a school took her 10th standard students to show Red fort. It was a part of their Educational trip. The teacher had

interest in history as well. She narrated the facts of Red fort to students. Then the teacher said in this monument one can find combination of solid figures. There are 2 pillars which are cylindrical in shape. Also 2 domes at the corners which are hemispherical. 7 smaller domes at the centre. Flag hoisting ceremony on Independence Day takes place near these domes.

Find the lateral surface area of two pillars if height of the pillar is 7m and radius of the base is 1.4m.

A. 112.2cm^2

B. 123.2m^2

C. 90m^2

D. 345.2cm^2

Answer: B



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4.

Mathematics teacher of a school took her 10th standard students to show Red fort. It was a part of their Educational trip. The teacher had interest in history as well. She narrated the facts of Red fort to students. Then the teacher said in this monument one can find combination of solid figures. There are 2 pillars which are cylindrical in shape. Also 2

domes at the corners which are hemispherical. 7 smaller domes at the centre.

Flag hoisting ceremony on Independence Day takes place near these domes.

How much is the volume of a hemisphere if the radius of the base is 3.5m?

A. $85.9m^3$

B. $80m^3$

C. $98m^3$

D. $89.83m^3$

Answer: D



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5.

Mathematics teacher of a school took her 10th standard students to show Red fort. It was a part of their Educational trip. The teacher had interest in history as well. She narrated the facts of Red fort to students. Then the teacher said in this monument one can find

combination of solid figures. There are 2 pillars which are cylindrical in shape. Also 2 domes at the corners which are hemispherical. 7 smaller domes at the centre. Flag hoisting ceremony on Independence Day takes place near these domes.

What is the ratio of sum of volumes of two hemispheres of radius 1cm each to the volume of a sphere of radius 2 cm?

A. 1 : 1

B. 1 : 8

C. 8 : 1

D. 1 : 16

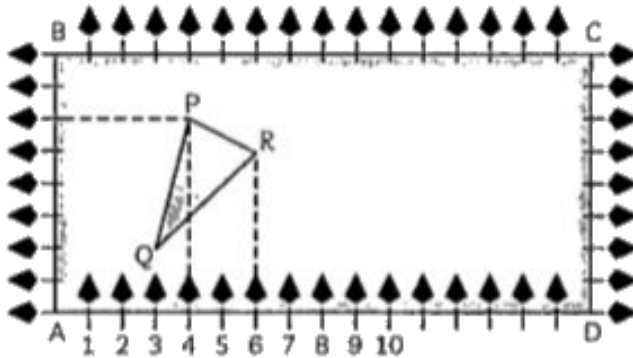
Answer: B



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6. Class X students of a secondary school in Krishnagar have been allotted a rectangular plot of a land for gardening activity. Saplings of Gulmohar are planted on the boundary at a distance of 1m from each other. There is a traingular grassy lawn in the plot as shown in

the fig. The students are to sow seeds of flowering plants on the remaining area of the plot



considering A as the origin what are the coordinates of A

A. (0,1)

B. (1,0)

C. (0,0)

D. (-1,-1)

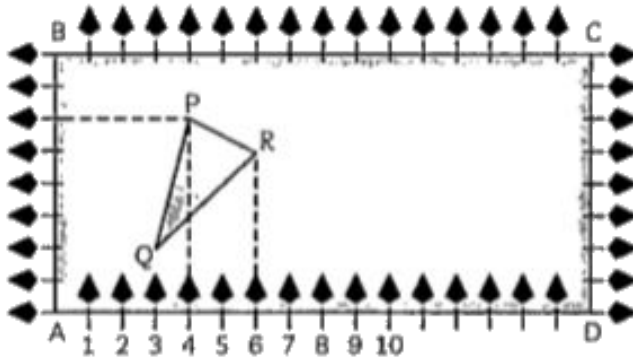
Answer:



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7. Class X students of a secondary school in Krishnagar have been allotted a rectangular plot of a land for gardening activity. Saplings of Gulmohar are planted on the boundary at a distance of 1m from each other. There is a traingular grassy lawn in the plot as shown in

the fig. The students are to sow seeds of flowering plants on the remaining area of the plot



What are the coordinates of P

- A. (4,6)
- B. (6,4)
- C. (4,5)

D. (5,4)

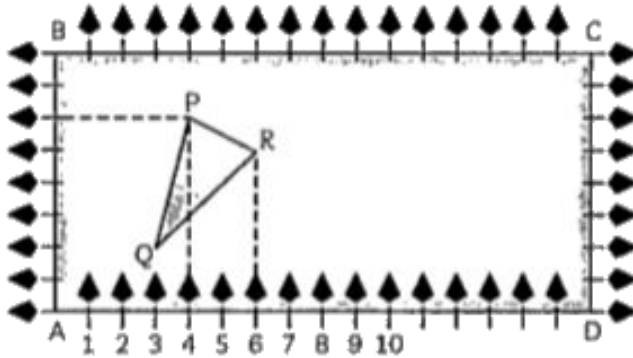
Answer: D



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8. Class X students of a secondary school in Krishnagar have been allotted a rectangular plot of a land for gardening activity. Saplings of Gulmohar are planted on the boundary at a distance of 1m from each other. There is a traingular grassy lawn in the plot as shown in

the fig. The students are to sow seeds of flowering plants on the remaining area of the plot



What are the coordinates of R

- A. (6,5)
- B. (5,6)
- C. (6,0)

D. (5,4)

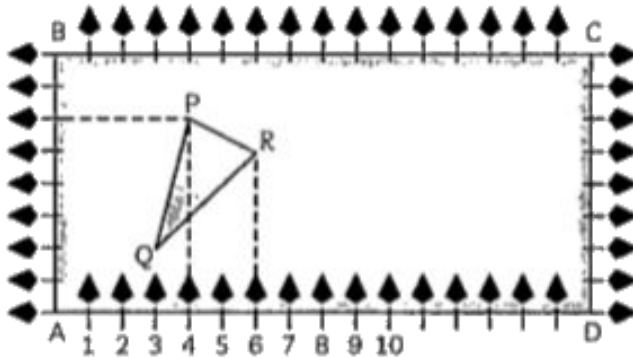
Answer:



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9. Class X students of a secondary school in Krishnagar have been allotted a rectangular plot of a land for gardening activity. Saplings of Gulmohar are planted on the boundary at a distance of 1m from each other. There is a traingular grassy lawn in the plot as shown in

the fig. The students are to sow seeds of flowering plants on the remaining area of the plot



What are the coordinates of D

- A. (16,0)
- B. (0,0)
- C. (0,16)

D. (16,1)

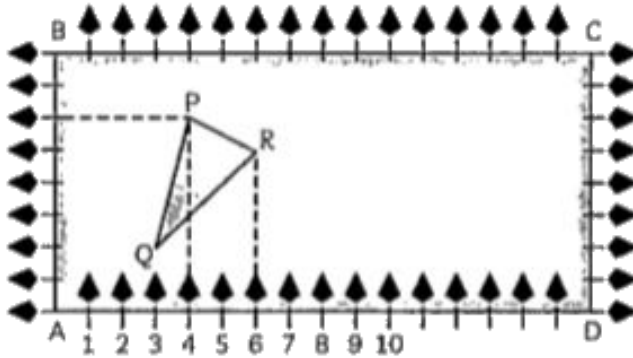
Answer: A



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10. Class IX students of a secondary school in ganganagar have been allotted a rectangular plot of a land for gardening activity. Saplings of peepal are planted on the boundary at a distance of 1m from each other. There is a triangular grassy lawn in the plot as shown in

the fig.



Write down the coordinates of P in case of D is assumed as origin

A. (12,2)

B. (-12,6)

C. (12,3)

D. (6,10)

Answer: A::B



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11.

Rahul is studying in X Standard. He is making a kite to fly it on a Sunday. Few questions came

to his mind while making the kite. Give answers to his questions by looking at the figure

Rahul tied the sticks at what angles to each other?

A. 30°

B. 60°

C. 90°

D. 60°

Answer: C





12.

Rahul is studying in X Standard. He is making a kite to fly it on a Sunday. Few questions came to his mind while making the kite. Give answers to his questions by looking at the

figure

Which is the correct similarity criteria applicable for smaller triangles at the upper part of this kite?

A. RHS

B. SAS

C. SSA

D. AAS

Answer: B



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13.

Rahul is studying in X Standard. He is making a kite to fly it on a Sunday. Few questions came to his mind while making the kite. Give answers to his questions by looking at the figure

Sides of two similar triangles are in the ratio 4:9. Corresponding medians of these triangles are in the ratio,

A. 2:3

B. 4:9

C. 81:19

D. 16:81

Answer: B



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14.

Rahul is studying in X Standard. He is making a kite to fly it on a Sunday. Few questions came to his mind while making the kite. Give answers to his questions by looking at the figure

In a triangle, if square of one side is equal to

the sum of the squares of the other two sides, then the angle opposite the first side is a right angle. This theorem is called as,

A. Pythagoras theorem

B. Thales theorem

C. converse of Thales theorem

D. Converse of pythagoras theorem

Answer: D



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15.

Rahul is studying in X Standard. He is making a kite to fly it on a Sunday. Few questions came to his mind while making the kite. Give answers to his questions by looking at the figure

What is the area of the kite, formed by two perpendicular sticks of length 6 cm and 8 cm?

A. 48cm^2

B. 14cm^2

C. 24cm^2

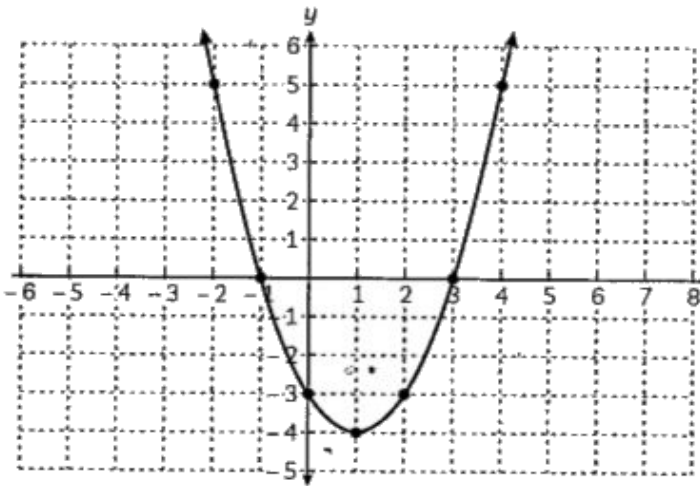
D. 96cm^2

Answer: A



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16. Due to heavy storm a electric wire got bent as shown in the figure. It followed a mathematical shape . Answer the following questions below:



Shape of wire is :

A. Spiral

B. Ellipse

C. Linear

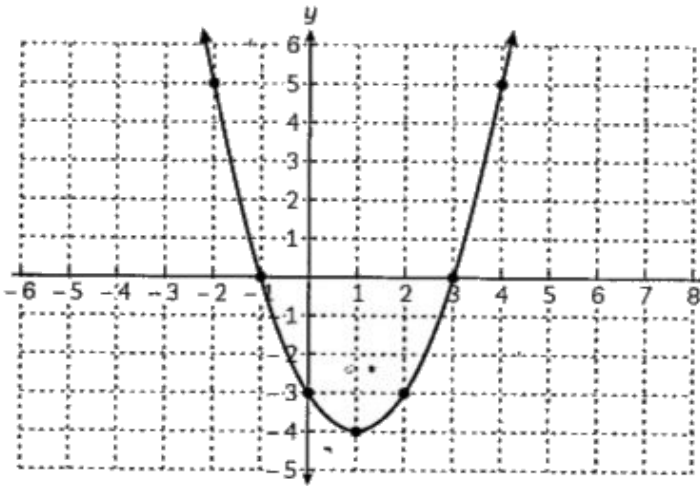
D. Parabola

Answer: D



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17. Due to heavy storm a electric wire got bent as shown in the figure. It followed a mathematical shape . Answer the following questions below:



How many zeroes are there for the polynomial

A. 2

B. 3

C. 1

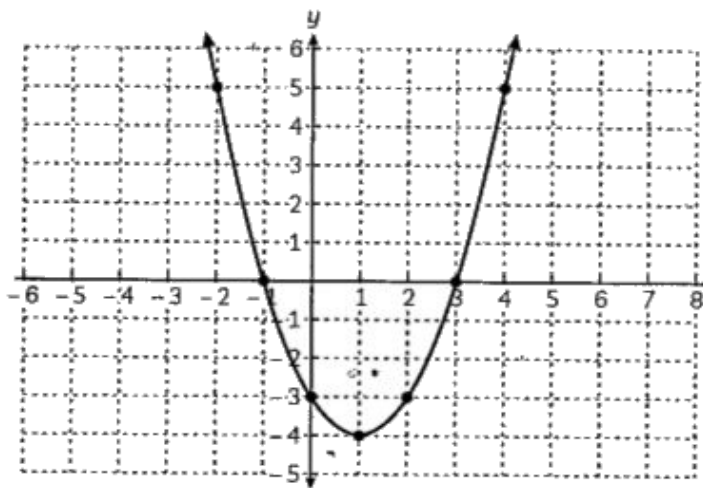
D. 0

Answer: A



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18. Due to heavy storm a electric wire got bent as shown in the figure. It followed a mathematical shape . Answer the following questions below:



The zeroes of the polynomial are

A. $-1, 5$

B. $-1, 3$

C. $3, 5$

D. $-4, 2$

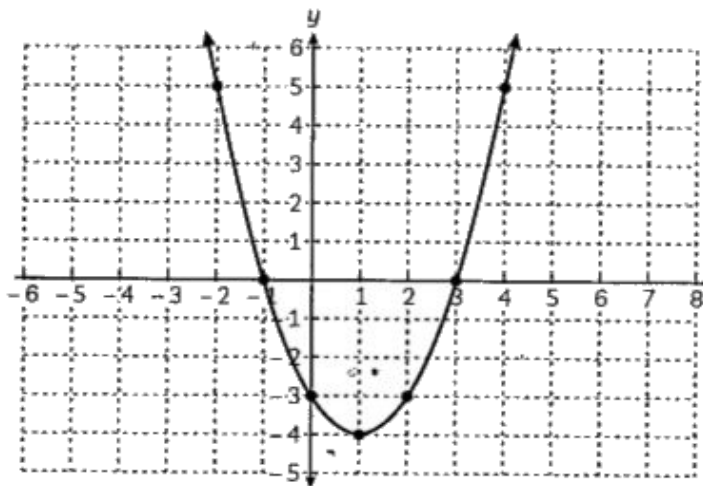
Answer: B



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19. Due to heavy storm a electric wire got bent as shown in the figure. It followed a mathematical shape . Answer the following

questions below:



What will be the expression of the polynomial

A. $x^2 + 2x - 3$

B. $x^2 - 2x + 3$

C. $x^2 - 2x - 3$

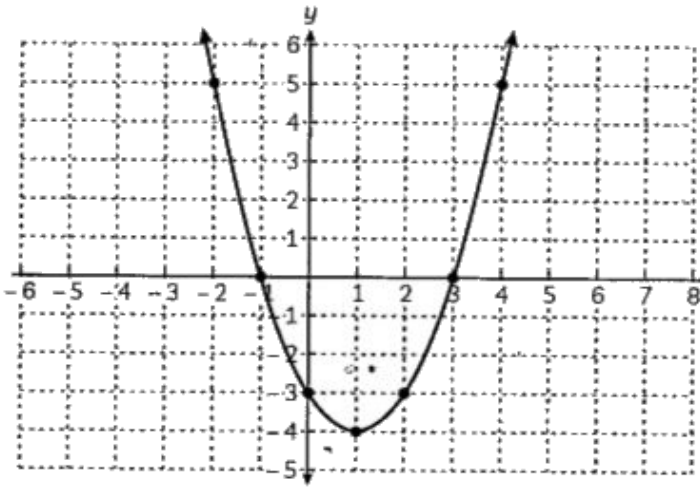
D. $x^2 + 2x + 3$

Answer: C



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20. Due to heavy storm a electric wire got bent as shown in the figure. It followed a mathematical shape . Answer the following questions below:



What is the value of the polynomial if $x=-1$

- A. 6
- B. -18
- C. 18
- D. 0

Answer: D



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Part B Section Iii

1. Find the coordinates of the point which divides the line segment joining the points $(4, -3)$ and $(8,5)$ in the ratio $3:1$ internally.

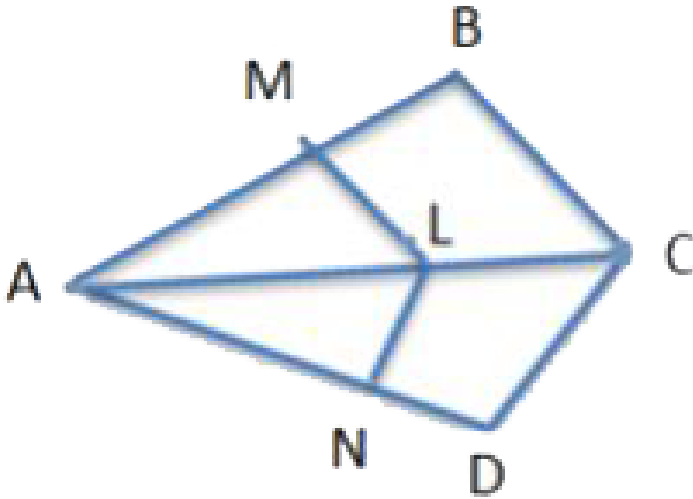


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2. Find a relation between x and y such that the point (x, y) is equidistant from the points $(7, 1)$ and $(3, 5)$.



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3.

In the fig. if $LM \parallel CB$ and $LN \parallel CD$, prove that

$$\frac{AM}{AB} = \frac{AN}{AD}$$



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4. A quadrilateral ABCD is drawn to circumscribe a circle. Prove that

$$AB + CD = AD + BC$$



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5. Draw a line segment of length 7.8 cm and divide it in the ratio 5:8. Measure the two parts.



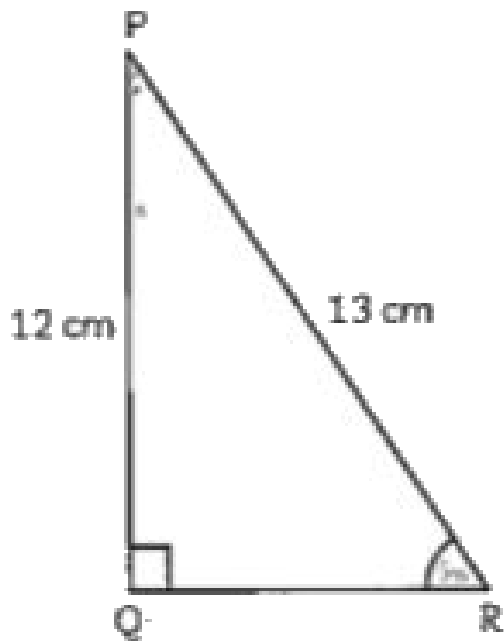
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6. Given $15 \cot A = 8$, find $\sin A$ and $\sec A$.



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7. Find $\tan P - \cot R$





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8. How many terms of the A.P. 9, 17, 25,must be taken to give a sum of 636 ?



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Part B Section Iv

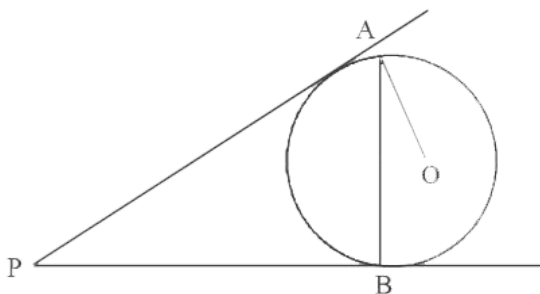
1. Prove that $\sqrt{3}$ is an irrational number



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2. Two tangents PA and PB are drawn to a circle with centre O from an external point P.

Prove that $\angle APB = 2\angle OAB$



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3. Meena went to a bank to withdraw Rs 2000.

She asked the cashier to give her Rs 50 and Rs

100 notes only. Meena got 25 notes in all. Find how many notes Rs 50 and Rs 100 she received.



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4. A box contains 90 discs which are numbered from 1 to 90. If one disc is drawn at random from the box, find the probability that it bears (i) a two-digit number, (ii) a number divisible by 5.



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5. A box contains 90 discs which are numbered from 1 to 90. If one disc is drawn at random from the box, find the probability that it bears (i) a two-digit number, (ii) a number divisible by 5.



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6. A box contains 90 discs which are numbered from 1 to 90. If one disc is drawn at random from the box, find the probability that it bears

(i) a two-digit number, (ii) a number divisible by 5.



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7. One card is drawn from a well shuffled deck of cards . Find the probability of getting a king of red colour .



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8. One card is drawn from a well shuffled deck of 52 cards. Find the probability of getting

A spade



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9. One card is drawn from a well - shuffled deck of cards . Find the probability of getting the queen of diamonds.



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



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11. Prove that

$$\frac{\sin A - \cos A + 1}{\sin A + \cos A - 1} = \frac{1}{\sec A - \tan A}$$



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12. A motor boat whose speed in still water is 18 km/h, takes 1 hour more to go 24 km upstream than to return downstream to the same spot. Find the speed of the stream.



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13. Find two consecutive odd positive integers, sum of whose squares is 290



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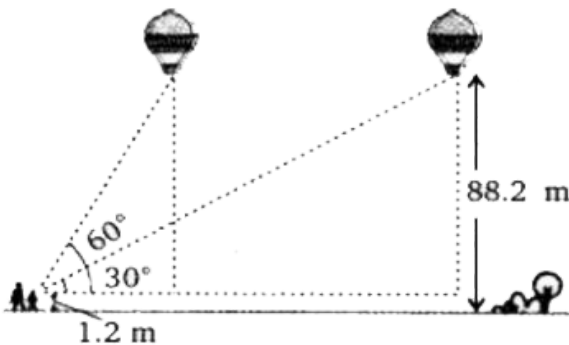
Part B Section V

1. The angles of depression of the top and bottom of a 8m tall building from the top of a multi storied building are 30° and 45° , respectively. Find the height of the multi storied building and the distance between the two buildings.



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2. A 1.2m tall girl spots a balloon moving with the wind in a horizontal line at a height 88.2 m from the ground. The angle of elevation of the balloon from the eyes of the girl at any instant is 60° . After sometime, the angle of elevation reduces 30° . Find the distance travelled by the balloon during the interval.



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3. The p th, q th and r th terms of an A.P. are a , b and c respectively. Show that $a(q - r) + b(r - p) + c(p - q) = 0$



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4. A survey regarding the heights in (cm) of 51 girls of class X of a school was conducted and the following data was obtained. Find the median height and the mean using the

formulae

Height (in cm)	Number of Girls
Less than 140	4
Less than 145	11
Less than 150	29
Less than 155	40
Less than 160	46
Less than 165	51



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