



MATHS

BOOKS - EDUCART PUBLICATION

SAMPLE PAPER 12

Part A Section I

1. A dice is thrown twice. What is the probability that 2 will not come up either time?



[Watch Video Solution](#)

2. A bag contains 5 red, 8 green and 7 white balls. One ball is drawn at random from the bag. Find the probability of getting neither a green ball nor a red ball.

 [Watch Video Solution](#)

3. Find the curved surface area of a right circular cone of height 15 cm and base diameter 16 cm (in πcm^2).

 [Watch Video Solution](#)

4. The outer and inner diameters of a circular ring are 34 cm and 32 cm respectively. Find the area of the ring.

 [Watch Video Solution](#)

5. If $2 \sin 2\theta = \sqrt{3}$, then find the value of θ

 [Watch Video Solution](#)

6. If $\sin A = \frac{1}{2}$, $\cos B = 1$, $0 < A, B \leq \frac{\pi}{2}$ then find the value of $(A + B)$.

 [Watch Video Solution](#)

7. Calculate the perimeter of a triangle XOY with vertices X(3, 4), (0, 0) and Y(6.0).

 [Watch Video Solution](#)

8. If $r = 3$ is a root of quadratic equation $kr^2 - kr - 3 = 0$ then find the value of k

 [Watch Video Solution](#)

9. Find the degree of the polynomial $(x + 1)(x^2 - x + x^4 - 1)$

 [Watch Video Solution](#)

10. Can two numbers have 18 as their HCF and 380 as their LCM? Give reason to explain your answer.

 [Watch Video Solution](#)

11. Write the exponent of 3 in the prime factorisation of 1944

 [Watch Video Solution](#)

12. Find the value of k for which the equation $kx(x - 2) + 6 = 0$ has equal roots.

 [Watch Video Solution](#)

13. Solve the quadratic equation for x : $(2x + 3)^2 = 25$

 [Watch Video Solution](#)

14. Find the value of k for which the pair of linear equations $kx + 3y = k-3$, $12x + ky = k$ has no solution.

 [Watch Video Solution](#)

15. How many multiples of 4 lie between 10 and 205?

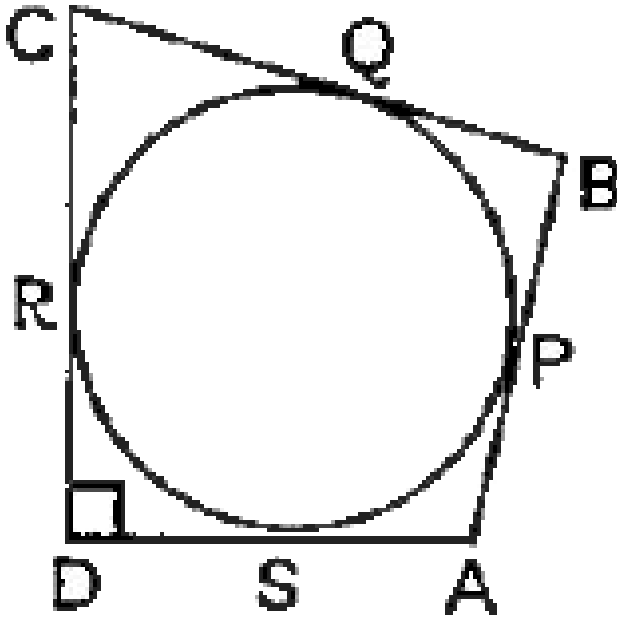
 [Watch Video Solution](#)

16. Find the zeros of the polynomial $x^2 - 3x - m(m + 3)$

 [Watch Video Solution](#)

17. In the figure

$\angle ADC = 90^\circ$, $BC = 38\text{cm}$, $CD = 28\text{cm}$ and $BP = 25\text{cm}$



Find the radius of the circle.

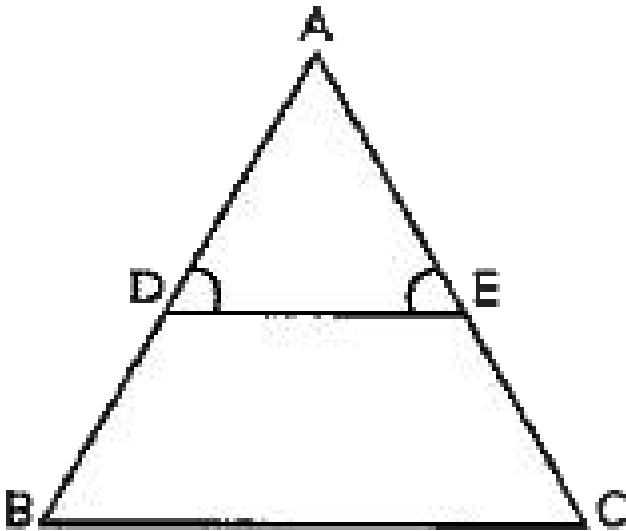


Watch Video Solution

18. For a rhombus $ABCD$, prove that $4AB^2 = AC^2 + BD^2$

 Watch Video Solution

19. In the figure, $\angle D = \angle E$ and $\frac{AD}{DB} = \frac{AE}{EC}$, prove that $\triangle BAC$ is an isosceles triangle



 [Watch Video Solution](#)

20. Find the class marks of the classes 15 - 35 and 45 - 60.

 [Watch Video Solution](#)

Part A Section II

1. Solve for x: $2^{2x^2 - 1} \div 8 = 2^{x^2}$

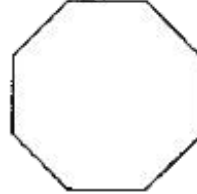
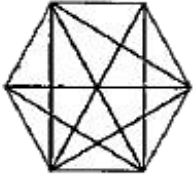
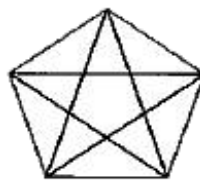
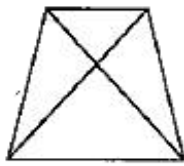
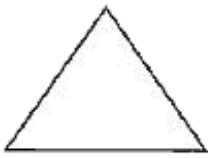
 [Watch Video Solution](#)

2. A stop sign is an example of a Polygon, in the image, you can see examples of diagonals in geometry in the

stop sign. Hence, there are various numbers of diagonals possible in a Polygon.



The number of diagonals (d) that can be drawn in polygons with a given number of sides (n) is being investigated.



Number of sides (n)	3	4	5	6	7	8
Number of diagonals (d)	0	2	5	9	p	q

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

By considering the pattern, the value of q is

- A. 16
- B. 18
- C. 19
- D. 20

Answer:

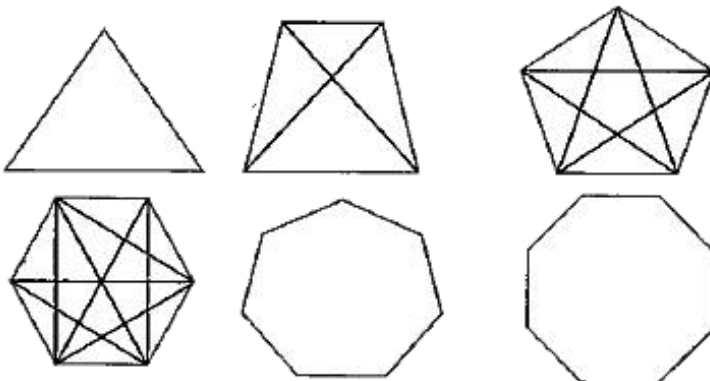


Watch Video Solution

3. A stop sign is an example of a Polygon, in the image, you can see examples of diagonals in geometry in the stop sign. Hence, there a various number of diagonals possible in a Polygon.



The number of diagonals (d) that can be drawn in polygons with a given number of sides (n) is being investigated.



Number of sides (n)	3	4	5	6	7	8
Number of diagonals (d)	0	2	5	9	p	q

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

For a polygon, d and n are related as $d = An^2 + Bn$. The relations for a triangle and a quadrilateral are

A. $3A + B = 0, 8A + 2B = 1$

B. $9A + 3B = 0, 5A + B = 1$

C. $3A + B = 0, 12A + 2B = 3$

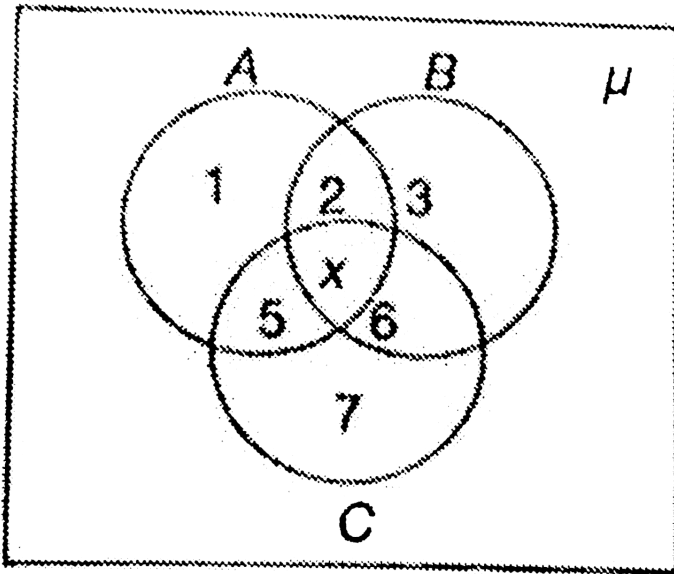
D. $3A + B = 0, 8A + 5B = 3$

Answer:



[Watch Video Solution](#)

4. In the following figure, which of the following can be the value of $(A \cup B \cup C)$? In the figure, 1, 2, 3, represents the number of elements in the respective regions.



A. $A = -\frac{1}{2}, B = \frac{3}{2}$

B. $A = \frac{1}{2}, B = -\frac{3}{2}$

C. $A = \frac{1}{2}, B = \frac{3}{2}$

$$D. A = -\frac{1}{2}, B = -\frac{3}{2}$$

Answer:



Watch Video Solution

5. In each of the following questions, two rows of numbers are given. The resultant number in each row is to be worked out separately based on the following rules and the questions below the rows of numbers are to be answered. The operations of numbers progress from the left to the right.

Rules:

(i) If an odd number is followed by another composite odd number, they are to be multiplied

(ii) If an even number is followed by an odd number, they are to be added.

(iii) If an even number is followed by a number which is the perfect square, the even number is to be subtracted from the perfect square.

(iv) If an odd number is followed by a prime odd number, the first number is to be divided by the second number.

(v) If an odd number is followed by an even number, the second one is to be subtracted from the first one.

Now work out the resultant numbers for each row in each question and answer the question below the rows of numbers.

10 15 5

14 11 p

If p is the resultant of the first row is m, what will be the resultant of the second row ?

1) 6

2) 81

3) 9

4) 24

5) None of these

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

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

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

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

Answer:



Watch Video Solution

6. In each of the following questions, two rows of numbers are given. The resultant number in each row is to be worked out separately based on the following rules and the questions below the rows of numbers are to be answered. The operations of numbers progress from the left to the right.

Rules:

- (i) If an odd number is followed by another composite odd number, they are to be multiplied
- (ii) If an even number is followed by an odd number, they are to be added.
- (iii) If an even number is followed by a number which is the perfect square, the even number is to be subtracted from the perfect square.
- (iv) If an odd number is followed by a prime odd number,

the first number is to be divided by the second number.

(v) If an odd number is followed by an even number, the second one is to be subtracted from the first one.

Now work out the resultant numbers for each row in each question and answer the question below the rows of numbers.

10 15 5

14 11 p

If p is the resultant of the first row is m, what will be the resultant of the second row ?

1) 6

2) 81

3) 9

4) 24

5) None of these

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

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

C. $\frac{1}{9}$

D. $\frac{4}{9}$

Answer:



Watch Video Solution

7. In each of the following questions, two rows of numbers are given. The resultant number in each row is to be worked out separately based on the following rules and the questions below the rows of numbers are to be answered. The operations of numbers progress from the

left to the right.

Rules:

(i) If an odd number is followed by another composite odd number, they are to be multiplied

(ii) If an even number is followed by an odd number, they are to be added.

(iii) If an even number is followed by a number which is the perfect square, the even number is to be subtracted from the perfect square.

(iv) If an odd number is followed by a prime odd number, the first number is to be divided by the second number.

(v) If an odd number is followed by an even number, the second one is to be subtracted from the first one.

Now work out the resultant numbers for each row in each question and answer the question below the rows of numbers.

10 15 5

14 11 p

If p is the resultant of the first row is m, what will be the resultant of the second row ?

1) 6

2) 81

3) 9

4) 24

5) None of these

A. 0

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

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

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

Answer:



Watch Video Solution

8. In each of the following questions, two rows of numbers are given. The resultant number in each row is to be worked out separately based on the following rules and the questions below the rows of numbers are to be answered. The operations of numbers progress from the left to the right.

Rules:

(i) If an odd number is followed by another composite odd number, they are to be multiplied

(ii) If an even number is followed by an odd number, they are to be added.

(iii) If an even number is followed by a number which is the perfect square, the even number is to be subtracted from the perfect square.

(iv) If an odd number is followed by a prime odd number, the first number is to be divided by the second number.

(v) If an odd number is followed by an even number, the second one is to be subtracted from the first one.

Now work out the resultant numbers for each row in each question and answer the question below the rows of numbers.

10 15 5

14 11 p

If p is the resultant of the first row is m, what will be the resultant of the second row ?

1) 6

2) 81

3) 9

4) 24

5) None of these

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

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

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

D. $\frac{4}{9}$

Answer:



[Watch Video Solution](#)

9. In each of the following questions, two rows of numbers are given. The resultant number in each row is

to be worked out separately based on the following rules and the questions below the rows of numbers are to be answered. The operations of numbers progress from the left to the right.

Rules:

(i) If an odd number is followed by another composite odd number, they are to be multiplied

(ii) If an even number is followed by an odd number, they are to be added.

(iii) If an even number is followed by a number which is the perfect square, the even number is to be subtracted from the perfect square.

(iv) If an odd number is followed by a prime odd number, the first number is to be divided by the second number.

(v) If an odd number is followed by an even number, the second one is to be subtracted from the first one.

Now work out the resultant numbers for each row in each question and answer the question below the rows of numbers.

10 15 5

14 11 p

If p is the resultant of the first row is m, what will be the resultant of the second row ?

1) 6

2) 81

3) 9

4) 24

5) None of these

A. $\frac{1}{9}$

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

C. $\frac{2}{9}$

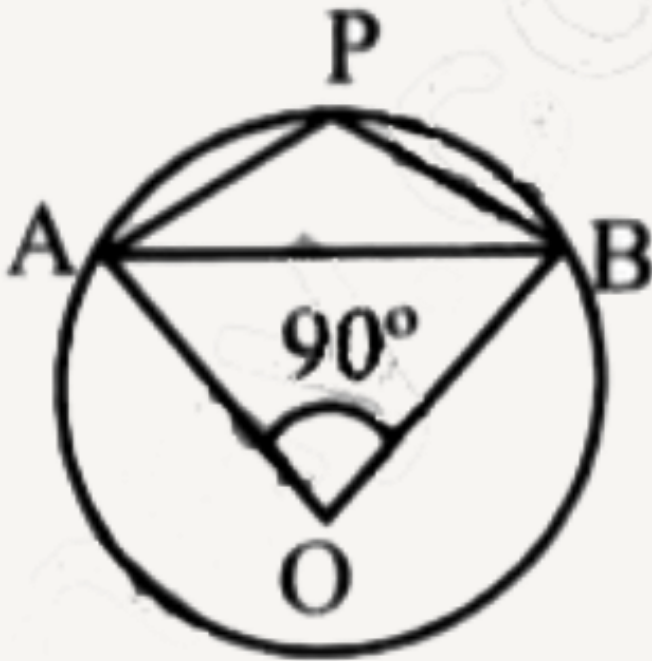
D. $\frac{5}{9}$

Answer:



Watch Video Solution

10. In the given figure, O is the centre of the circle,
 $\angle AOB = 90^\circ$. Find $\angle APB$:



A. $9250\pi \text{ cm}$

B. $10250\pi \text{ cm}$

C. $10850\pi \text{ cm}$

D. $11250\pi \text{ cm}$

Answer:



Watch Video Solution

11. A short , straight and frictinless tunnel is bored through the centre of the earth and a body is realeased from the surface into the tunnel . Show that the motion of the body in the tunnell will be simple harmoic and hence calculate the taken by the body to travel from one end of the tunnel to the other (Radius of the earth = $6.38 \times 10^6 m$ and acceleration due to gravity at the surface = $9.81 m s^2$)

A. 10 sqm

B. 12.5 sqm

C. 25 sqm

D. 15 sqm

Answer:

 [Watch Video Solution](#)

12. Fig. 15.87, shows the cross-section of railway tunnel. The radius OA of the circular part is 2 m. If $\angle AOB = 90^\circ$, calculate: (i) the height of the tunnel (ii) the perimeter of the cross-section (iii) the area of the cross-section.

A. 76

B. 75

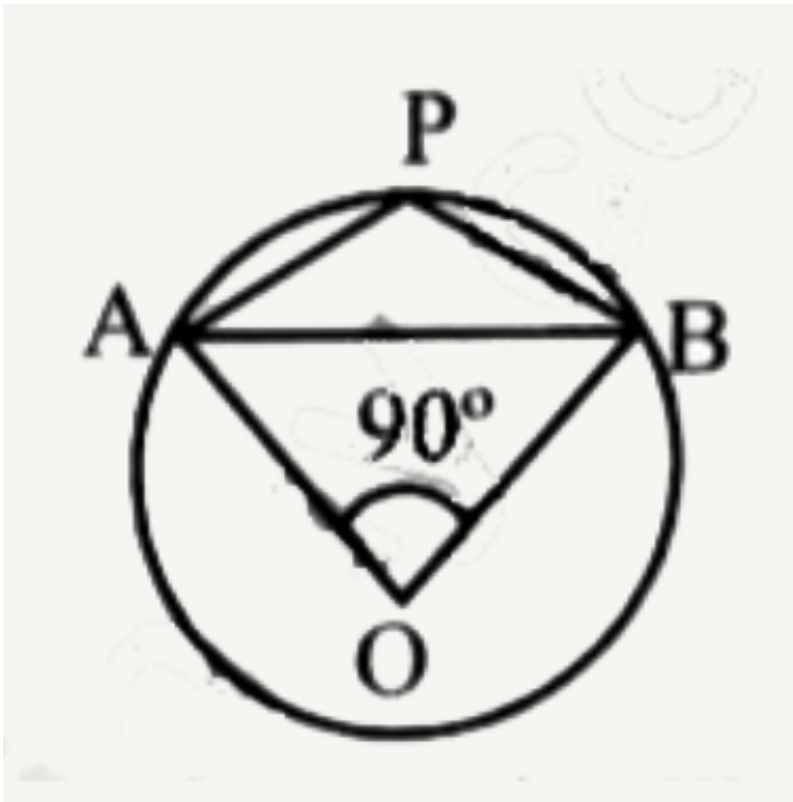
C. 74

D. 73

Answer:

[▶ Watch Video Solution](#)

13. In the given figure, O is the centre of the circle, $\angle AOB = 90^\circ$. Find $\angle APB$:



A. $12.5\pi m$

B. $10.5\pi m$

C. $7.5\pi m$

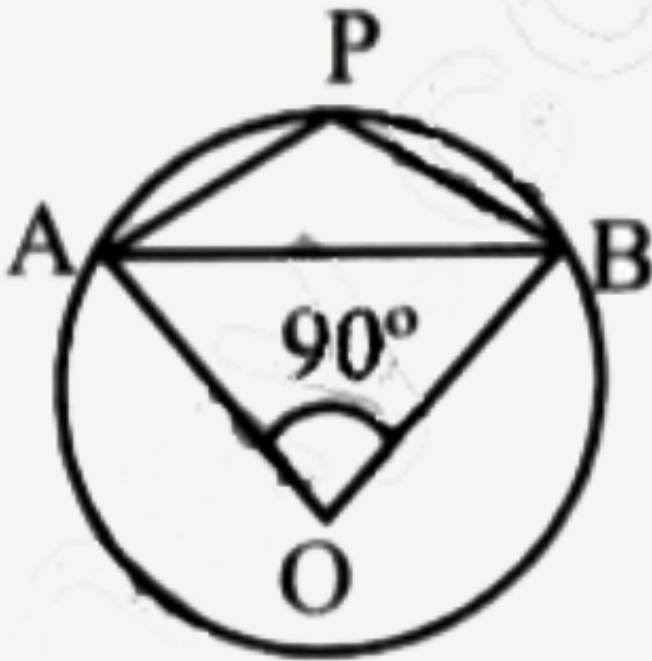
D. $5\pi m$

Answer:



Watch Video Solution

14. In the given figure, O is the centre of the circle,
 $\angle AOB = 90^\circ$. Find $\angle APB$:



A. $950\pi t$

B. $798\pi t$

C. $570\pi t$

D. $380\pi t$

Answer:



[Watch Video Solution](#)

Part B Section Iii

1. The x-coordinate of a point P is twice its y-coordinate. If P is equidistant from $Q(2, -5)$ and $R(-3, 6)$, then find the coordinates of P.



[Watch Video Solution](#)

2. Prove that the points $(2, -2)$, $(-2, 1)$ and $(5, 2)$ are the vertices of a right angled triangle. Also find the area of this triangle.



[Watch Video Solution](#)

3. If the HCF of 210 and 55 is expressible in form $210 \times 5 + 55y$, find y .

 [Watch Video Solution](#)

4. Prove that there is no natural number for which 4^n ends with the digit zero.

 [Watch Video Solution](#)

5. α, β are the zeros of the quadratic polynomial

$p(x) = x^2 - (k + 6)x + 2(2k - 1)$. Find the value of k ,

if $\alpha + \beta = \frac{1}{3}\alpha\beta$



[Watch Video Solution](#)

6. Evaluate :
$$\frac{5 \cos^2 60^\circ + 4 \sec^2 30^\circ - \tan^2 45^\circ}{\sin^2 30^\circ + \cos^2 30^\circ}$$



[Watch Video Solution](#)

7. A heap of rice is in the form of a cone of base diameter 24 m and height 3.5 m. How much canvas cloth is required to just cover the heap?



[Watch Video Solution](#)

8. All the black face cards are removed from a pack of 52 playing cards. The remaining cards are well shuffled and

then a card is drawn at random. Find the probability of getting a:
face card

 [Watch Video Solution](#)

9. All the black face cards are removed from a pack of 52 playing cards. The remaining cards are well shuffled and then a card is drawn at random. Find the probability of getting a:
red card

 [Watch Video Solution](#)

1. Find the greatest number of 6-digits exactly divisible by 15, 24 and 36.

 [Watch Video Solution](#)

2. The first term of an AP is 5, the last term is 45 and the sum is 400. Find the number of terms and the common difference.

 [Watch Video Solution](#)

3. Points $A(3, 5)$, $B(-1, 4)$ and $C(7, -6)$ are the vertices of $\triangle ABC$. Find the coordinates of the centroid of the triangle



[Watch Video Solution](#)

4. Draw a circle of radius 2.6 cm. Draw a tangent to the circle from any point on the circle.



[Watch Video Solution](#)

5. In $\triangle ABC$, $\angle B = 90^\circ$ and d is the mid - point of BC .
Prove that $AC^2 = AD^2 + 3CD^2$



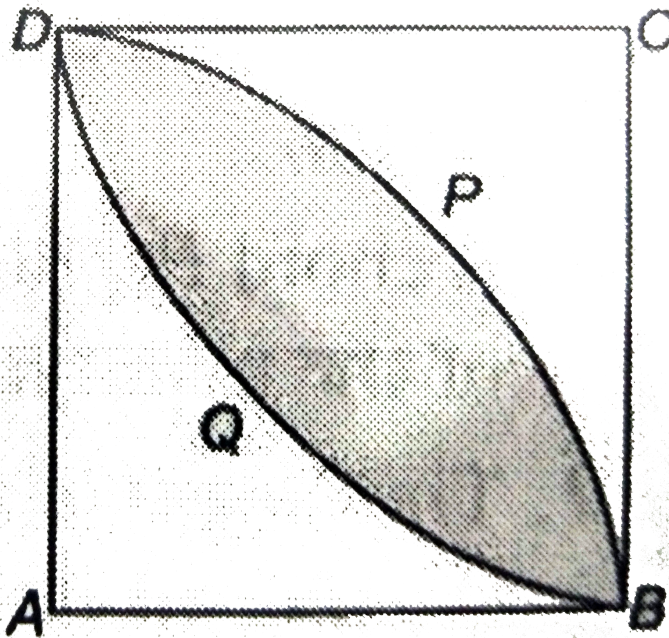
[Watch Video Solution](#)

6. Let's denote the semi-perimeter of a triangle ABC in which $BC = a$, $CA = 5$, $AB = c$. If a circle touches the side BC ,

CA, AB at D, E, F respectively, prove that $BD = S-b$.

 [Watch Video Solution](#)

7. In the given figure, ABCD is a square of side 7 cm. DPBA and DQBC are quadrants of circles each of the radius 7 cm. Find the area of the shaded region.



 [Watch Video Solution](#)

8. The rain water from a roof of dimensions $22\text{m} \times 20\text{m}$ drains into a cylindrical vessel having diameter of bases 2 m and height 3.5 m. If the rain water collected from the roof just fill the cylindrical vessel, then find the rainfall (in cm).



Watch Video Solution

9. The mean of the following frequency distribution is 57.6 and the number of observation is 50. Find the missing frequency f_1 & f_2

Class Interval	0–20	20–40	40–60	60–80	80–100	100–120
frequency	7	f_1	12	f_2	8	5



Watch Video Solution

Part B Section V

1. The lower window of a house is at a height of 2 m above the ground and its upper window is 4 m above the lower window. At certain instant, the angles of elevation of a balloon from these windows are observed to be 60° and 30° , respectively. Find the height of the balloon from the ground.

[Watch Video Solution](#)

2. The tangent at a point C of a circle and a diameter AB when extended intersect at P. If

$\angle PCA = 110^\circ$ find $\angle CBA$.



[Watch Video Solution](#)

3. ABCD is a trapezium in which $AB \parallel DC$ and P, Q are points on AD and BC respectively, such that $PQ \parallel DC$. If $PD = 18$ cm, $BQ = 35$ cm and $QC = 15$ cm, then find the length of AD.



[Watch Video Solution](#)

4. Ajay had some bananas and he divided them into two lots A and B. He sold lot A at the rate of Rs.2 for 3 bananas and lot B at the rate of Rs.1 per banana and got a total of Rs. 400. If he had sold lot A at the rate of Rs. 1 per banana and lot B at the rate of Rs. 4 for 5 bananas his total

collection would have been Rs. 460. Find the total number of bananas he had.



Watch Video Solution