



**Assignment – 3**

**Subject: Mathematics**

**Class: X**

**OCTOBER' 2026**

**Chapter: Areas Related To Circles**

Q1. The area of the sector of a circle of radius 12 cm is  $60\pi \text{ cm}^2$ . The central angle of this sector is:

- a)  $60^\circ$                       b)  $150^\circ$                       c)  $75^\circ$                       d)  $120^\circ$

Q2) The difference of the areas of a minor sector of angle  $120^\circ$  and its corresponding major sector of a circle of radius 21 cm, is

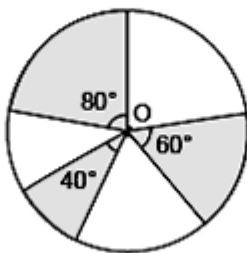
- a)  $346.5 \text{ cm}^2$                       b)  $231 \text{ cm}^2$                       c)  $462 \text{ cm}^2$                       d)  $693 \text{ cm}^2$

Q3) The perimeter of the sector of a circle of radius 14 cm and angle  $45^\circ$  is

- a) 11 cm                      b) 25 cm                      c) 28 cm                      d) 39 cm

Q4)

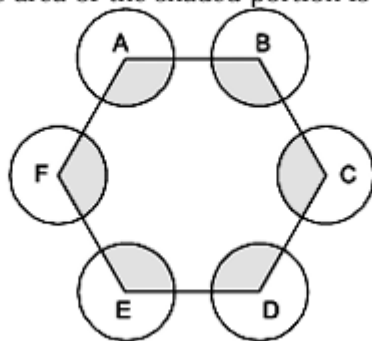
In the given figure, three sectors of a circle of radius 7 cm, making angles of  $60^\circ$ ,  $80^\circ$  and  $40^\circ$  at the centre are shaded. The area of the shaded region (in  $\text{cm}^2$ ) is [Use  $\pi = \frac{22}{7}$ ]



- (a) 77                      (b) 154                      (c) 44                      (d) 22

Q5)

ABCDEF is any hexagon with different vertices A, B, C, D, E and F as the centres of circles with same radius  $r$  are drawn. The area of the shaded portion is



- (a)  $\pi r^2$                       (b)  $2\pi r^2$                       (c)  $3\pi r^2$                       (d)  $4\pi r^2$

Q6)

If the sum of the circumferences of two circles with radii  $R_1$  and  $R_2$  is equal to the circumference of a circle of radius  $R$ , then

- (a)  $R_1 + R_2 = R$                       (b)  $R_1 + R_2 > R$                       (c)  $R_1 + R_2 < R$   
 (d) nothing definite can be said about the relation among  $R_1$ ,  $R_2$  and  $R$ .

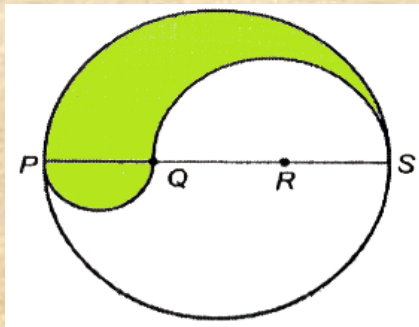
Q7)

**Assertion (A):** The length of the minute hand of a clock is 7 cm. Then the area swept by the minute hand in 5 minute is  $77/6 \text{ cm}^2$ .

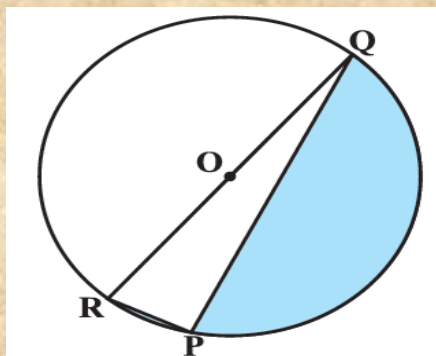
**Reason (R):** The length of an arc of a sector of angle  $\theta$  and radius  $r$  is given by  $l = \frac{\theta}{360^\circ} \times 2\pi r$

Q8) The long and short hands of a clock are 6 cm and 4 cm long respectively. Find the sum of distances travelled by their tips in 24 hours. (use  $\pi = 3.14$ ).

Q9) PQRS is a diameter of a circle of radius 6 cm. The lengths PQ, QR and RS are equal. Semi-circles are drawn on PQ and QS as diameters as shown in below figure. Find the perimeter and area of the shaded region.



Q10) Find the area of the shaded region, if  $PQ = 24 \text{ cm}$ ,  $PR = 7 \text{ cm}$  and  $O$  is the centre of the Circle



## STATISTICS

### Q1

For the following distribution :

|                    |        |         |         |         |         |
|--------------------|--------|---------|---------|---------|---------|
| <i>Class :</i>     | 0 – 10 | 10 – 20 | 20 – 30 | 30 – 40 | 40 – 50 |
| <i>Frequency :</i> | 14     | 19      | 16      | 24      | 13      |

the sum of lower limits of modal class and median class is :

- (A) 40 (B) 50  
(C) 60 (D) 70

### Q2

Consider the frequency distribution of 45 observations.

|           |      |       |       |       |       |
|-----------|------|-------|-------|-------|-------|
| Class     | 0-10 | 10-20 | 20-30 | 30-40 | 40-50 |
| Frequency | 5    | 9     | 15    | 10    | 6     |

The upper limit of median class is

- A) 20 B) 10 C) 30 D) 40

### Q3

The following distribution shows the marks distribution of 80 students.

|                 |          |          |          |          |          |          |
|-----------------|----------|----------|----------|----------|----------|----------|
| Marks           | Below 10 | Below 20 | Below 30 | Below 40 | Below 50 | Below 60 |
| No. of students | 2        | 12       | 28       | 56       | 76       | 80       |

The median class is

- (A) 20-30 (B) 40-50 (C) 30-40 (D) 10-20

Q4

*Assertion (A) :* Consider the following data :

| <i>Class</i> | <i>Frequency</i> |
|--------------|------------------|
| 65 – 85      | 4                |
| 85 – 105     | 5                |
| 105 – 125    | 13               |
| 125 – 145    | 20               |
| 145 – 165    | 14               |
| 165 – 185    | 7                |
| 185 – 205    | 4                |

The difference of the upper limit of the median class and the lower limit of the modal class is 20.

*Reason (R) :* The median class and modal class of grouped data are always different.

Q5

Find the mean and median of the following data:

| Class     | 85-90 | 90-95 | 95-100 | 100-105 | 105-110 | 110-115 |
|-----------|-------|-------|--------|---------|---------|---------|
| frequency | 15    | 22    | 20     | 18      | 20      | 25      |

Q6

The monthly expenditure on milk in 200 families of a Housing Society is given below

| Monthly Expenditure (in Rs.) | 1000-1500 | 1500-2000 | 2000-2500 | 2500-3000 | 3000-3500 | 3500-4000 | 4000-4500 | 4500-5000 |
|------------------------------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|
| Number of families           | 24        | 40        | 33        | x         | 30        | 22        | 16        | 7         |

Find the value of x and also find the mean expenditure

Q7

The mean of the following distribution is 18 and the sum of frequencies is 48. Find  $x$  and  $y$  and hence find the mode of the frequency distribution.

|                    |         |         |         |         |         |         |         |
|--------------------|---------|---------|---------|---------|---------|---------|---------|
| <i>Class :</i>     | 11 – 13 | 13 – 15 | 15 – 17 | 17 – 19 | 19 – 21 | 21 – 23 | 23 – 25 |
| <i>Frequency :</i> | 3       | 6       | $x$     | 13      | $y$     | 5       | 4       |

Q8

Compute the median for the following data:

| Marks         | No. of students |
|---------------|-----------------|
| More than 150 | 0               |
| More than 140 | 12              |
| More than 130 | 27              |
| More than 120 | 60              |
| More than 110 | 105             |
| More than 100 | 124             |
| More than 90  | 141             |
| More than 80  | 150             |

**Q9**

**Compute the median for the following data:**

| <b>Marks</b>  | <b>No. of students</b> |
|---------------|------------------------|
| Less than 10  | 0                      |
| Less than 30  | 10                     |
| Less than 50  | 25                     |
| Less than 70  | 43                     |
| Less than 90  | 65                     |
| Less than 110 | 87                     |
| Less than 130 | 96                     |
| Less than 150 | 100                    |

**Ans: 76.36**

**Q10**

**1. Find missing frequency from the following data**

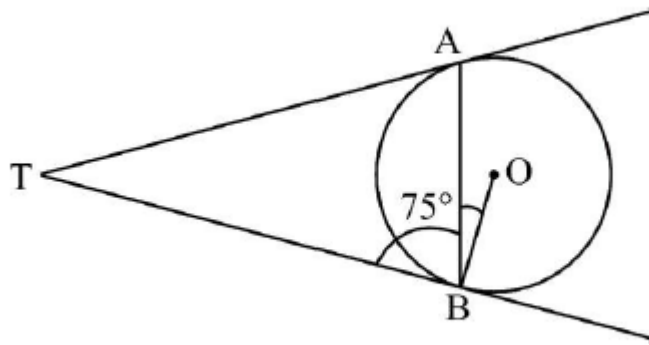
| <b>Class</b> | <b>Frequency</b> |
|--------------|------------------|
| 40 - 59      | 50               |
| 60 - 79      | ?                |
| 80 - 99      | 500              |
| 100 - 119    | ?                |
| 120 - 139    | 50               |

**Total Frequency (N) = 1000 and median = 87.50**

## CIRCLES

Q1

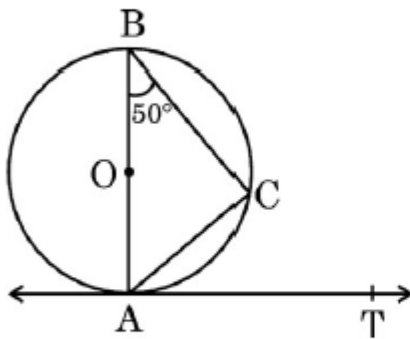
*Assertion (A) :* TA and TB are two tangents drawn from an external point T to a circle with centre 'O'. If  $\angle TBA = 75^\circ$  then  $\angle ABO = 25^\circ$ .



*Reason (R) :* The tangent drawn at any point of a circle is perpendicular to the radius through the point of contact.

Q2

In the given figure, AT is a tangent to a circle centred at O. If  $\angle ABC = 50^\circ$ , then  $\angle CAT$  is equal to :



(A)  $70^\circ$

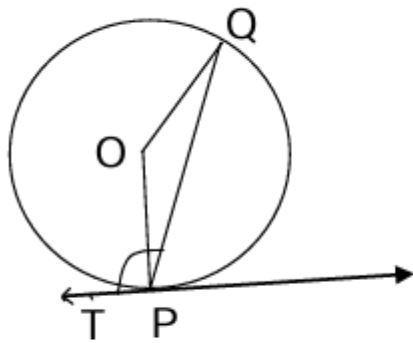
(B)  $50^\circ$

(C)  $65^\circ$

(D)  $40^\circ$

Q3

In the given figure, a tangent has been drawn at a point P on the circle centred at O.



If  $\angle TPQ = 110^\circ$  then  $\angle POQ$  is equal to

A)  $110^\circ$

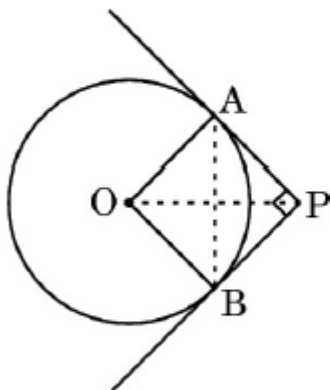
B)  $70^\circ$

C)  $140^\circ$

D)  $55^\circ$

Q4

In the given figure, tangents PA and PB to the circle centred at O, from an external point P are perpendicular to each other. If  $AB = 5\sqrt{2}$  cm, then the length of PA is equal to :



(A) 5 cm

(B)  $5\sqrt{2}$  cm

(C)  $2\sqrt{5}$  cm

(D) 10 cm

Q5

If radii of the two concentric circles are 15cm and 17cm, then the length of each chord of one circle which is tangent to other is

- |          |          |
|----------|----------|
| (A) 8cm  | (B) 16cm |
| (C) 30cm | (D) 17cm |

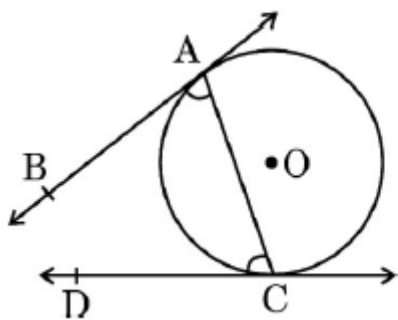
Q6

Two tangents making an angle of  $120^\circ$  with each other, are drawn to a circle of radius 6cm, then the length of each tangent is equal to

- |                   |                    |
|-------------------|--------------------|
| (A) $\sqrt{3}$ cm | (B) $6\sqrt{3}$ cm |
| (C) $\sqrt{2}$ cm | (D) $2\sqrt{3}$ cm |

Q7

In the given figure, AB and CD are tangents to a circle centred at O. Is  $\angle BAC = \angle DCA$  ? Justify your answer.



**Q8**

PQ and PR are the tangents drawn from an external point P to a circle with centre O and radius 3 cm. If the length of PQ is 4 cm, then the area of quadrilateral PQOR is :

- |                        |                        |
|------------------------|------------------------|
| (A) 24 cm <sup>2</sup> | (B) 12 cm <sup>2</sup> |
| (C) 6 cm <sup>2</sup>  | (D) 15 cm <sup>2</sup> |

**Q9**

The length of tangent from an external point P on a circle with centre O is :

- (A) always greater than OP
- (B) equal to OP
- (C) always less than OP
- (D) always half of OP

**Q10**

In a right-angled  $\Delta ABC$ , right-angled at B,  $BC = 15$  cm and  $AB = 8$  cm. Find the radius of a circle inscribed in the triangle.