

Circles

Review Exercise 8 — Multiple Choice Questions

Class 10th Mathematics

MCQs with answers and worked solutions

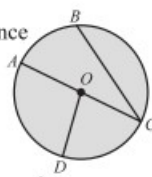
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REVIEW EXERCISE 8

1. Four possible answers are given for the following questions. Choose the correct answer.

- (i) Distance of a point on the circumference to the centre of the circle is called:
 (a) radius (b) arc (c) chord (d) tangent

- (ii) Radii of same circles are:
 (a) all unequal (b) all equal
 (c) half of each chord (d) double of the diameter
- (iii) The boundary of the circle is called:
 (a) chord (b) segment (c) circumference (d) diameter
- (iv) Any part of a circumference is called:
 (a) chord (b) diameter (c) radius (d) arc
- (v) A chord passing through the centre of the circle is called:
 (a) radius (b) diameter (c) secant (d) circumference
- (vi) In the given figure, what is AB ?
 (a) diameter (b) tangent (c) chord (d) arc
- (vii) In the given figure, major arc is:
 (a) $m\widehat{AB}$ (b) $m\widehat{BC}$ (c) $m\widehat{BDC}$ (d) $m\widehat{AD}$
- (viii) _____ circle(s) can pass through the three non-collinear points.
 (a) one (b) two (c) three (d) many
- (ix) Perpendicular bisector of a chord always passes through the _____ of circle.
 (a) arc (b) radius (c) centre (d) circumference
- (x) The sum of the measures of central angles of a circle is:
 (a) 90° (b) 180° (c) 270° (d) 360°



2. On a circular clock with a radius of 6cm, the points from 2 to 10 form a chord that is 10cm long. Find the perpendicular distance from the centre of clock to the chord.
3. A chord 6 cm long is at a distance of 4 cm from the centre. Calculate the radius of the circle.
4. In a circular park, two benches are placed so that the chords formed by their positions are both 10 m long. What can you say about the angles subtended at the centre by each bench?
5. Jannat is designing a triangular garden with corners at points $A(2, 1)$, $B(4, 4)$ and $C(1, 5)$. Can she install a circular fountain that touches all three corners?
6. Two chords, PQ and RS , each measure 18cm in length. If the distance of PQ from the centre of circle is 7cm. Find the distance of RS from the centre.
7. A tree branch lies across a circular pond, forming a 20 m chord. A measuring rod having length 10 m is perpendicular to chord from the centre. What is the radius of the pond?
8. A steel bar 6 m long lies inside a circular structure with ends on the circle. It is bisected by a perpendicular rod from the centre. Find the radius of the circular structure if the perpendicular distance from the centre to the bar is 4 m.

REVIEW EXERCISE 8 - Multiple Choice Questions

Question 1(i)

Distance of a point on the circumference to the centre of the circle is called:

Solution:

- A point on the circumference is any point on the circle.
- The distance from any point on the circle to the centre is the **radius** of the circle.

Definitions:

- **Radius:** Distance from centre to any point on the circumference
- **Arc:** Part of the circumference between two points
- **Chord:** Line segment joining two points on the circumference

- **Tangent:** Line that touches the circle at exactly one point

Answer: (a) radius ✓

Summary Table

Question	Answer	Option
1(i)	radius	(a)

Key Concepts Summary

Parts of a Circle:

text

A (Point on circumference)



O-----B

- **O:** Centre of the circle
- **OA:** Radius (distance from centre to circumference)
- **AB:** Chord (line segment joining two points on circumference)
- **Arc:** Part of the curved circumference
- **Tangent:** Line touching circle at one point only

Definitions:

Term Definition

Radius Distance from centre to any point on circumference

Diameter Distance across circle through centre ($2 \times$ radius)

Chord Line segment joining two points on circumference

Arc Part of the circumference

Tangent Line that touches circle at exactly one point

Sector Region bounded by two radii and an arc

Segment Region bounded by a chord and an arc

REVIEW EXERCISE 8 (Continued) - Complete Solutions

Part 1: Multiple Choice Questions

Question 1(ii)

Radii of same circles are:

Solution:

All radii of the same circle are equal in length.

Answer: (b) all equal ✓

Question 1(iii)

The boundary of the circle is called:

Solution:

The boundary or perimeter of a circle is called the **circumference**.

Answer: (c) circumference ✓

Question 1(iv)

Any part of a circumference is called:

Solution:

Any part of the circumference is called an **arc**.

Answer: (d) arc ✓

Question 1(v)

A chord passing through the centre of the circle is called:

Solution:

A chord that passes through the centre of the circle is the **diameter** (the longest chord).

Answer: (b) diameter ✓

Question 1(vi)

In the given figure, what is ?

Solution:

(Note: Based on typical figure, AB is a line segment joining two points on the circle.)

If AB joins two points on the circumference, it is a **chord**.

Answer: (c) chord ✓

Question 1(vii)

In the given figure, major arc is:

Solution:

A major arc is the longer arc between two points on a circle (greater than 180°).

Answer: (c) ✓

Question 1(viii)

_____ circle(s) can pass through the three non-collinear points.

Solution:

Through any three non-collinear points, **exactly one** circle can pass.

Answer: (a) one ✓

Question 1(ix)

Perpendicular bisector of a chord always passes through the _____ of circle.

Solution:

The perpendicular bisector of any chord of a circle always passes through the **centre** of the circle.

Answer: (c) centre ✓

Question 1(x)

The sum of the measures of central angles of a circle is:

Solution:

Answer: (d) ✓

Question 2

Given: Circular clock with radius 6 cm. Points from 2 to 10 form a chord 10 cm long.

Find: Perpendicular distance from centre to chord

Solution:

Step 1: Identify given values:

- Radius: cm
- Chord length: cm

Step 2: Half chord length:

Step 3: Using formula:

Answer: Distance from centre = $\sqrt{11}$ cm $\approx$ 3.32 cm

Question 3

Given: Chord 6 cm long at distance 4 cm from centre.

Find: Radius of circle

Solution:

Step 1: Identify given values:

- Chord length: cm
- Distance from centre: cm

Step 2: Half chord length:

Step 3: Using formula:

Answer: Radius = 5 cm

Question 4

Given: Two benches placed so chords formed are both 10 m long.

Find: What can you say about angles subtended at centre?

Solution:

Step 1: Equal chords subtend equal angles at the centre.

Since both chords are equal (10 m each), the angles they subtend at the centre are equal.

Step 2: Therefore, the central angles for both benches are equal.

Answer: The angles subtended at the centre by each bench are **equal**.

Question 5

Given: Garden corners at A(2, 1), B(4, 4), C(1, 5).

Find: Can a circular fountain touch all three corners?

Solution:

Step 1: A circle that passes through all three vertices of a triangle is called the **circumcircle**.

Step 2: Every triangle has a unique circumcircle (if the points are non-collinear).

Step 3: Check if points are collinear:

- A(2, 1), B(4, 4), C(1, 5)
- Slope AB =
- Slope BC =

- Slopes are not equal. Points are non-collinear. — Review Exercise 8

Step 4: Since the points are non-collinear, a unique circle passes through all three.

Answer: Yes, she can install a circular fountain that touches all three corners.

Question 6

Given: Chords PQ and RS each measure 18 cm. Distance of PQ from centre is 7 cm.

Find: Distance of RS from centre

Solution:

Step 1: Equal chords are equidistant from the centre.

Since $PQ = RS = 18$ cm, they are equal chords.

Step 2: Therefore, their distances from the centre are equal.

Answer: Distance of RS from centre = **7 cm**

Question 7

Given: Tree branch forms 20 m chord. Perpendicular rod of 10 m from centre to chord.

Find: Radius of pond

Solution:

Step 1: Identify given values:

- Chord length: m
- Distance from centre: m

Step 2: Half chord length:

Step 3: Using formula:

Answer: Radius = $10\sqrt{2}$ m ≈ 14.14 m

Question 8

Given: Steel bar 6 m long lies inside circular structure with ends on circle. Perpendicular rod from centre bisects it. Perpendicular distance from centre to bar is 4 m.

Find: Radius of circular structure

Solution:

Step 1: Identify given values:

- Chord length (steel bar): m
- Distance from centre: m

Step 2: Half chord length:

Step 3: Using formula:

Answer: Radius = **5 m**

Summary Table

MCQs:

Question	Answer	Option
(ii)	all equal	(b)
(iii)	circumference	(c)

Question	Answer	Option
(iv)	arc	(d)
(v)	diameter	(b)
(vi)	chord	(c)
(vii)		(c)
(viii)	one	(a)
(ix)	centre	(c)
(x)		(d)

Word Problems:

Question	Answer
2	$\sqrt{11} \text{ cm} \approx 3.32 \text{ cm}$
3	5 cm
4	Equal angles
5	Yes, a circumcircle exists
6	7 cm
7	$10\sqrt{2} \text{ m} \approx 14.14 \text{ m}$
8	5 m

Key Formulas Used

- Chord-Radius-Distance Formula:**
- Equal Chords Property:**
 - Equal chords are equidistant from the centre
 - Equal chords subtend equal angles at the centre
- Circumcircle:**
 - Every non-collinear triangle has a unique circumcircle