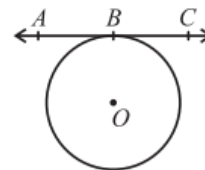


REVIEW EXERCISE 10

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

- (i) In the adjacent figure, $\overleftrightarrow{ABC}$ is:
 (a) a chord (b) an arc
 (c) a tangent (d) a secant
- (ii) There are _____ types of arcs.
 (a) 2 (b) 3
 (c) 4 (d) 5



- (iii) Right bisector of the chord of a circle always passes through the:
 (a) diameter (b) non-collinear points (c) radius (d) centre
- (iv) A circle has only one:
 (a) chord (b) centre (c) diameter (d) secant
- (v) The point where two tangents meet outside a circle forms:
 (a) a semicircle (b) a diameter (c) a radius (d) an angle
- (vi) Two equal tangents from a point to a circle can be drawn when the point is _____ the circle.
 (a) on (b) inside (c) outside (d) at centre of
- (vii) Tangents drawn from a single external point to a circle are:
 (a) unequal in length (b) perpendicular to each other
 (c) equal in length (d) inside the circle
- (viii) At least how many chords are needed to locate the centre of the circle?
 (a) 1 (b) 2 (c) 3 (d) 4
- (ix) To draw a tangent at middle point of an arc, first step is to:
 (a) join endpoints of an arc
 (b) draw radius
 (c) draw a line perpendicular to chord
 (d) draw an angle
- (x) The angle between the radius and a tangent at the point of contact is:
 (a) 30° (b) 60° (c) 90° (d) 120°
2. Draw a circle of radius 1.4 cm and draw a tangent at point P , when P lies on its circumference.
3. Draw a circle of radius 1.2 cm and draw a tangent at point P , when P is at a distance of 5 cm from the centre.
4. Draw a circle of radius 1.7 cm. Draw two tangents that meet an angle of 30° .
5. Take a part of the circular track, use chords and perpendicular bisectors to complete a circular track.
6. Two decorative fences touch the circular flower bed of radius 2.1 cm and meet outside it at an angle of 30° to form an entrance arch. Draw two tangents to the flower bed from the point where the fences meet at an angle of 30° .

REVIEW EXERCISE 10 - Multiple Choice Questions

Question 1(i)

In the adjacent figure, $\overleftrightarrow{ABC}$ is:

Solution:

From the diagram:

- A , B , and C are points on the circle
- The notation $\overline{ABC}$ represents a continuous portion of the circumference from A to C passing through B

This is an **arc** of the circle.

Definitions:

- **Chord:** A line segment joining two points on the circumference
- **Arc:** A part of the circumference of a circle
- **Tangent:** A line that touches the circle at exactly one point
- **Secant:** A line that intersects the circle at two points

Answer: (b) an arc

Question 1(ii)

There are _____ types of arcs.

Solution:

There are **two** types of arcs:

1. **Minor Arc** - The shorter arc between two points (less than 180°)
2. **Major Arc** - The longer arc between two points (greater than 180°)

Answer: (a) 2

Summary Table

	Option
(i) an arc	(b)
(ii) 2	(a)

Key Concepts Summary**Types of Arcs:**

Type	Description	Measure
Minor Arc	Shorter arc between two points	$< 180^\circ$
Major Arc	Longer arc between two points	$> 180^\circ$
Semicircle	Exactly half the circle	$= 180^\circ$

Parts of a Circle:

text

A

/ \

/ \

/ \

B-----C

\ /

\ /

\ /

O

Term	Definition
Arc ABC	Part of circumference from A to C passing through B
Chord BC	Line segment joining two points on circle
Radius OA	Distance from centre to any point on circle
Diameter	Chord passing through centre
Tangent	Line touching circle at one point
Secant	Line intersecting circle at two points

Arc Notation:

- $\widehat{ABC}$ or $\overrightarrow{ABC}$ represents an arc
- The order of letters indicates the direction along the circle

REVIEW EXERCISE 10 (Continued) - Complete Solutions

Part 1: Multiple Choice Questions (Continued)

Question 1(iii)

Right bisector of the chord of a circle always passes through the:

Solution:

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

Answer: (d) centre

Question 1(iv)

A circle has only one:

Solution:

A circle has:

- Many chords
- **One centre**
- Many diameters
- Many secants

Answer: (b) centre

Question 1(v)

The point where two tangents meet outside a circle forms:

Solution:

When two tangents meet outside a circle, they form an **angle** at the point of intersection.

Answer: (d) an angle

Question 1(vi)

Two equal tangents from a point to a circle can be drawn when the point is _____ the circle.

Solution:

Two equal tangents can be drawn from a point only when the point is **outside** the circle.

Answer: (c) outside

Question 1(vii)

Tangents drawn from a single external point to a circle are:

Solution:

Tangents drawn from the same external point to a circle are **equal in length**.

Answer: (c) equal in length

Question 1(viii)

At least how many chords are needed to locate the centre of the circle?

Solution:

To locate the centre of a circle, we need **2 chords**. Their perpendicular bisectors intersect at the centre.

Answer: (b) 2

Question 1(ix)

To draw a tangent at middle point of an arc, first step is to:

Solution:

To draw a tangent at the middle point of an arc, first draw the **radius** to that point. The tangent is perpendicular to the radius.

Answer: (b) draw radius

Question 1(x)

The angle between the radius and a tangent at the point of contact is:

Solution:

The radius at the point of contact is **perpendicular** to the tangent. Therefore, the angle between them is **90°**.

Answer: (c) 90°

Question 2: Draw a Circle of Radius 1.4 cm and Draw a Tangent at Point P (P on Circumference)

Construction Steps:

Step 1: Mark centre O.

Step 2: Set compass to 1.4 cm and draw the circle.

Step 3: Mark point P on the circumference.

Step 4: Draw radius OP.

Step 5: Draw a line perpendicular to OP at P.

Step 6: This perpendicular line is the required tangent.

Diagram:

text

P

/ \

/ | \

/ | \

O---P--- (Tangent line)

|

|

- $OP = 1.4$ cm (radius)
- Tangent is perpendicular to OP

Question 3: Draw a Circle of Radius 1.2 cm and Draw a Tangent from Point P at 5 cm from Centre

Construction Steps:

Step 1: Mark centre O.

Step 2: Draw circle with radius 1.2 cm.

Step 3: Mark point P such that $OP = 5$ cm.

Step 4: Find midpoint M of OP.

Step 5: Draw a circle with centre M and radius MP.

Step 6: Let this circle intersect the original circle at T_1 and T_2 .

Step 7: Join P to T_1 and P to T_2 .

Step 8: PT_1 and PT_2 are the required tangents.

Diagram:

text

T

/ \

/ \

/ \

O---M---P

\ /

\ /

\ /

T

- $OP = 5$ cm
- $OT_1 = OT_2 = 1.2$ cm (radius)
- PT_1 and PT_2 are tangents

Question 4: Draw a Circle of Radius 1.7 cm and Two Tangents Meeting at 30°

Construction Steps:

Step 1: Mark centre O.

Step 2: Draw circle with radius 1.7 cm.

Step 3: Draw radius OA.

Step 4: At O, construct angle $\angle AOB = 180^\circ - 30^\circ = 150^\circ$.

Step 5: Draw radius OB.

Step 6: At A and B, draw perpendiculars to OA and OB respectively.

Step 7: Let these perpendiculars meet at P.

Step 8: PA and PB are the tangents meeting at 30° .

Diagram:

text

A

/ \

/ \

/ \

O-----P

\ /

\ /

\ /

B

- $\angle APB = 30^\circ$
- OA $\perp$ PA, OB $\perp$ PB

Question 5: Take a Part of the Circular Track and Complete the Circular Track

Construction Steps:

Step 1: Take the given part of the circular track (arc).

Step 2: Mark any three points A, B, C on the arc.

Step 3: Draw chords AB and BC.

Step 4: Draw perpendicular bisectors of AB and BC.

Step 5: The intersection point O is the centre of the circle.

Step 6: Set compass to radius OA.

Step 7: Draw the full circle to complete the track.

Diagram:

text

A

/ \

/ \

/ \

B-----C

\ /

\ /

\ /

O (Centre found)

- Perpendicular bisectors of chords meet at O
- Full circle can now be drawn

Question 6: Two Decorative Fences Touching Circular Flower Bed ($r = 2.1$ cm) Meeting at 30°

Construction Steps:

Step 1: Mark centre O.

Step 2: Draw circle with radius 2.1 cm.

Step 3: Draw radius OA.

Step 4: At O, construct angle $\angle AOB = 180^\circ - 30^\circ = 150^\circ$.

Step 5: Draw radius OB.

Step 6: At A and B, draw perpendiculars to OA and OB respectively.

Step 7: Let these perpendiculars meet at P.

Step 8: PA and PB are the two fences (tangents) meeting at 30° .

Diagram:

text

A (Tangency point)

/ \

/ \

/ \

O-----P (Fences meet here)

\ /

\ /

\ /

B (Tangency point)

- $\angle APB = 30^\circ$ (angle between fences)
- OA $\perp$ PA, OB $\perp$ PB
- OA = OB = 2.1 cm (radius of flower bed)
- PA and PB are the decorative fences

Summary Table

MCQs:

		Option
(iii)	centre	(d)
(iv)	centre	(b)
(v)	an angle	(d)
(vi)	outside	(c)
(vii)	equal in length	(c)
(viii)	2	(b)
(ix)	draw radius	(b)
(x)	90°	(c)

Construction Questions:

	Given	Answer/Construction
2	r = 1.4 cm, P on circle	Draw radius OP → Perpendicular at P
3	r = 1.2 cm, OP = 5 cm	External point method → Two tangents
4	r = 1.7 cm, angle = 30°	Radii at 150° → Perpendiculars
5	Part of circular track	Three points → Chords → Perpendicular bisectors → Centre
6	r = 2.1 cm, angle = 30°	Radii at 150° → Perpendiculars → Tangents

Key Theorems Summary

1. **Perpendicular Bisector of Chord:** Passes through the centre.
2. **Tangents from External Point:** Equal in length.
3. **Radius-Tangent Relationship:** Radius is perpendicular to tangent at point of contact.
4. **Angle Between Tangents:** If tangents meet at P, then:

$$\angle APB = 180^\circ - \angle AOB$$

5. **Centre Location:** Two chords are sufficient to locate the centre using their perpendicular bisectors.

Construction Summary

Construction	Method
Tangent at point on circle	Draw radius → Perpendicular at point
Tangent from external point	Join OP → Midpoint → Circle → Tangents
Two tangents meeting at angle	Draw radii at (180° -) → Perpendiculars
Locate centre of circle	Two chords → Perpendicular bisectors → Intersection
Complete circle from arc	Three points → Chords → Perpendicular bisectors → Centre