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Circle Questions for SSC Exam.

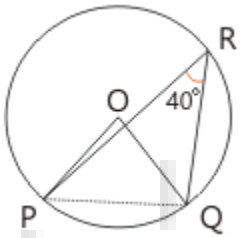
Circle Quiz 7

Directions: Kindly study the following Questions carefully and choose the right answer:

1. A tangent YZ is drawn at any point Y of a circle of radius 3.5 cm. YX_1 and YX_2 are the two chords of this circle. If $\angle ZYX_2 = 45°$ and O is the centre of the circle, then the length of arc YX_2 is (assume $\pi = 22/7$)

A. 6.5 cm B. 7 cm C. 6 cm D. 5.5 cm

2. In the given figure, O is the centre of the circle. If $\angle PRQ = 40°$, then what is $\angle OPQ$?



A. 30° B. 40° C. 150° D. 50°

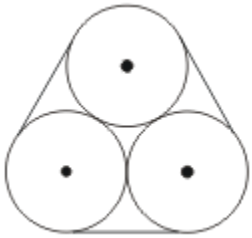
3. If a circle is provided with measure of 19° on centre, is it possible to divide the circle into 360 equal parts?

A. Never B. Possible when one more measure of 20 is given
C. Always D. Possible if one more measure of 21 is given

4. The distance between two parallel chords of length 6 cm each in a circle of diameter 10 cm is

A. 8 cm B. 7 cm C. 6 cm D. 5.5 cm

5. Three circles of diameter 10 cm each, are bound together by a rubber band, as shown in the figure. The length of the rubber band, in cm, if it is stretched as shown, is



A. 30 B. 30 + 10π C. 10π D. 60 + 20π

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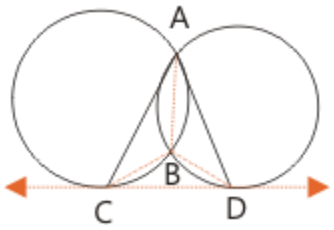
6. CD is a direct common tangent to two circles intersecting each other at A and B. Then, ∠CAD + ∠CBD = ?



A. 90° B. 180° C. 360° D. 120°

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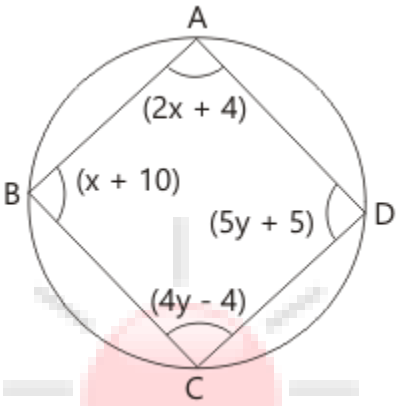
7. The values in x and y in the given figure are measure of angles. The value of x + y is equal to



A. 90° B. 85° C. 75° D. 65°

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8. The chord AB of a circle of centre O subtends an angle Θ with tangent at A to the circle. ∠ABO is

A. Θ B. 90° – Θ C. 90° + Θ D. 2(π – Θ)

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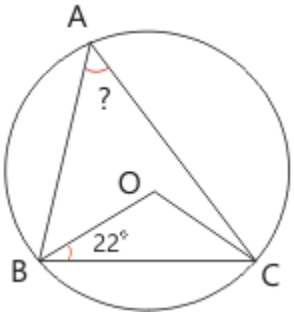
9. ABC is a triangle and O is the centre of its circumcircle and ∠OBC = 22°, then ∠BAC will be



A. 22° B. 44° C. 68° D. 46°

---

10. A well of diameter 3m is dug 14 m deep. The earth taken out of it has been spread evenly all around it in the shape of a circular ring of the width 4m to form an embankment. Find the height of the embankment.

A. 4.25 m B. 2.25 m C. 1.125 m D. 1.750 m

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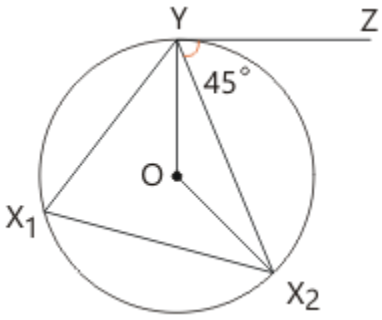
Correct Answers:

1	2	3	4	5	6	7	8	9	10
D	D	C	A	B	B	D	B	C	C

Explanations:

1. YZ is the tangent of a circle drawn at point Y.



$\angle ZYX_2 = 45°$
$\therefore \quad \angle YX_1X_2 = 45°$ (Property of a circle)
$\angle YOX_2 = 2\angle YX_1X_2 = 2 \times 45 = 90°$
Length of arc YX_2

$= \frac{90}{360} \times 2\pi r$ (where r is the radius of circle)

$= \frac{1}{4} \times 2 \times \frac{22}{7} \times 3.5 = 5.5$ cm

Hence, option D is correct.

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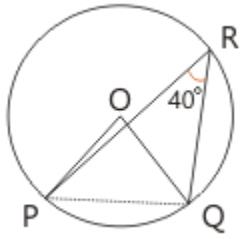
2. Given that, $\angle PRQ = 40°$, then what is $\angle POQ = 80°$



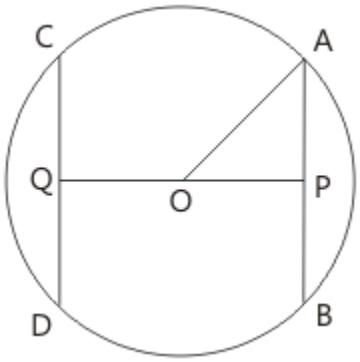
(∴ The angle subtended by an arc at the centre is double the angle subtended by the same arc at a point on the remaining circle). In triangle OPQ, OP = OQ (radii)

∴ ∠OPQ = ∠OQP (∵ Angles opposite to equal sides)
∠OPQ + ∠OQP + 80 = 180° ⇒ ∠OPQ = 50°
Hence, option D is correct.

3. Since, we are given a measure of a 19° angle, if we use the measure 19 times, we would be able to measure 361° and hence, we can measure 361 – 360 = 1°.

Hence, it would be possible to divide the circle into 360 equal parts.
Hence, option C is correct.

4.



AB = CD
OP = OQ
From ΔOAP

$OP = \quad OA^2 - AP^2 = \sqrt{5^2 - 3^2} = \sqrt{25 - 9} = \sqrt{16} = 4$ cm

∴ QP = 2 × OP = 8 cm
Hence, option A is correct.

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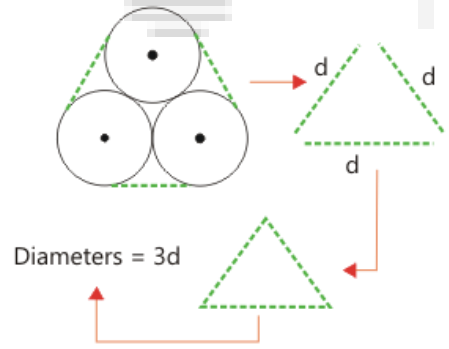
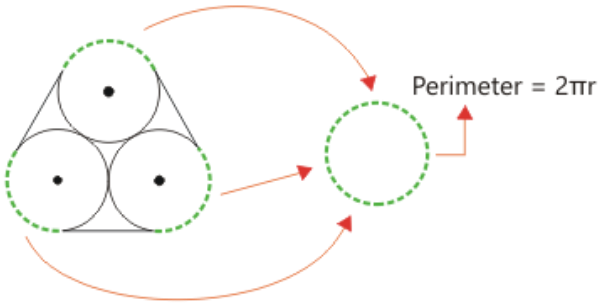
5. **Perimeter of diameters:**



Perimeter of circumference:



Hence, the length of the rubber band = 3d + 2πr = (30 + 10π) cm
Hence, option B is correct.

6. Joint AB then, ∠CAB = ∠BCD (∠ s in alternate segments)
And, ∠DAB = ∠CDB (∠ s in alternate segments)

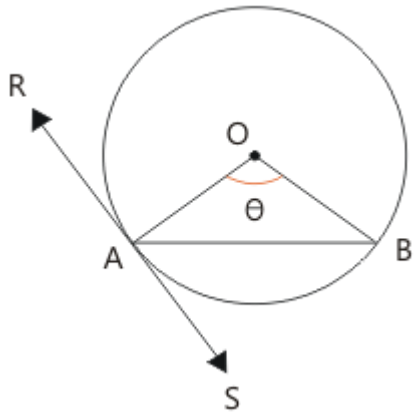
∠CAD = ∠CAB + ∠DAB = ∠BCD + ∠CDB

⇒ ∠CAD + ∠CBD = ∠BCD + ∠CDB + ∠CBD = 180° (∠ s of a Δ)

Hence, option B is correct.

7. As ∠B + ∠D = 180°
and ∠A + ∠C = 180°
So, x + 10 + 5y + 5 = 180°
or, x + 5y = 165° ....(i)
And 2x + 4 + 4y – 4 = 180°
or, 2x + 4y = 180° ....(ii)
Solving (i) and (ii), we get
x = 40° and y = 25°
Hence, x + y = 40° + 25° = 65°
Hence, option D is correct.

8.



∠BAS = ∠AOB = Θ
(angles in alternate segments)
∠OAB = 90° – ∠BAS
∠OAB = 90° – Θ
∠OAB = ∠ABO
[∵ OA = OB]
∠ABO = 90° – Θ

Hence, option B is correct.

9. OB = OC = radius ⇒ ∠OCB = ∠OBC = 22°

⇒ ∠BOC = 180° – (∠OBC + ∠OCB)

= 180° – (22° + 22°)

= 180° – 44°

= 136°

$\Rightarrow \angle BAC = \frac{1}{12} \angle BOC$

[Angle made on circumference by Chord = 1/2 angle made on centre]

$= \frac{1}{2} \times 136° = 68°$

Hence, option C is correct.

10. Let the radius and height of the well be r and h respectively.

Volume of the earth dug out = Volume of the embarkment

$\pi r^2 h$ = Area of the earth spread all around the well x height of the embarkment = $\pi \{(r + 4)^2 - r^2\}$ x height of the embarkment

Height of embankment $= \frac{r^2 h}{\{(r + 4)^2 - r^2\}}$

$= \frac{1.5 \times 1.5 \times 14}{(5.5)^2 - (1.5)^2} = \frac{1.5 \times 1.5 \times 14}{7 \times 4} = 1.125$ m

Hence, option C is correct.

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