Quadrilateral & Polygon questions for CDS, SSC & Railways Exams

Quadrilateral & Polygon Quiz 2

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

1. ABCD is a cyclic trapezium such that AD || BC, if ∠ABC = 70°, then the value of ∠BCD is :

A. 60° B. 70° C. 40° D. 80°

2. ABCD is a cyclic trapezium such that AD || BC, if ∠ABC = 70°, then the value of ∠BCD is :

A. 60° B. 70° C. 40° D. 80°

3. If an exterior angle of a cyclic quadrilateral be 50°, then the interior opposite angles is :

A. 130° B. 40° C. 50° D. 90°

4. ABCD is a cyclic quadrilateral and O is the centre of the circle. If ∠COD = 140° and ∠BAC = 40°, then the value of ∠BCD is equal to

A. 70° B. 90° C. 60° D. 80°

5. If the ratio of an external angle and an internal angle of a regular polygon is 1 : 17, then the number of sides of the regular polygon is

A. 20 B. 18 C. 36 D. 12

6. ABCD is a cyclic quadrilateral. AB and DC are produced to meet at P. If ∠ADC = 70° and ∠DAB = 60°, then the ∠PBC + ∠PCB is

A. 130° B. 150° C. 155° D. 180°

7. A cyclic quadrilateral ABCD is such that AB = BC, AD = DC, AC ⊥ BD. ∠CAD = Θ. Then the angle ∠ABC =

A. Θ B. $\frac{\Theta}{2}$ C. 2Θ D. 3Θ

8. The diagonals AC and BD of a cyclic quadrilateral ABCD intersect each other at the point P. Then, it is always true that

A. BP . AB = CD . CP B. AP . CP = BP . DP C. AP . BP = CP . DP D. AP . CD = AB . CP

9. A quadrilateral ABCD circumscribes a circle and AB = 6 cm, CD = 5 cm and AD = 7 cm. The length of side BC is

A. 4 cm B. 5 cm C. 3 cm D. 6 cm

10. ABCD is a cyclic quadrilateral. The side AB is extended to E in such a way that BE = BC. If ∠ADC = 70°, ∠BAD = 95°, then ∠DCE is equal to

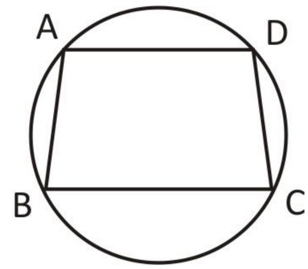
A. 140° B. 120° C. 165° D. 110°

Correct Answers:

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

Explanations:

1.



$\angle ABC + \angle CDA = 180°$

$\angle CDA = 180° – \angle ABC = 180° – 70° = 110°$

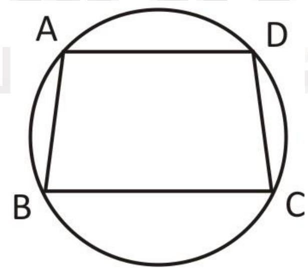
We know that,

$\angle BCD + \angle CDA = 180°$

$\therefore \angle BCD = 180° – \angle CDA = 180° – 110° = 70°$

Hence, opton B is correct.

2.



$\angle ABC + \angle CDA = 180°$

$\angle CDA = 180° – \angle ABC = 180° – 70° = 110°$

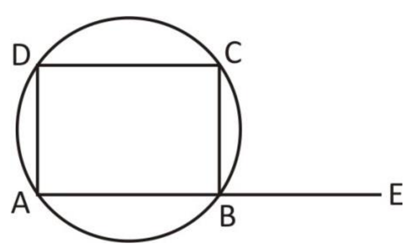
We know that,

$\angle BCD + \angle CDA = 180°$

$\therefore \angle BCD = 180° – \angle CDA = 180° – 110° = 70°$

Hence, opton B is correct.

3.



$\angle ABC + \angle ADC = 180°$

$\angle CBE = 50°$

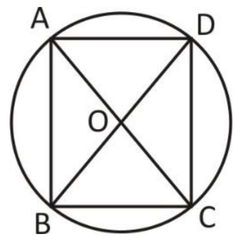
$\therefore\ \angle ABC = 180° – \angle CBE = 180° – 50° = 130°$

$\therefore\ \angle ADC = 180° - \angle ABC = 180° - 130° = 50°$

Hence, option C is correct.

4.

The angle subtended at the centre by an arc is twice to that of angle subtended at the circumference.



$\therefore\ \angle CAD = \frac{1}{2}\angle COD = 70°$

$\therefore\ \angle BAD = \angle BAC + \angle CAD = 70° + 40° = 110°$

$\therefore\ \angle BCD = 180° - \angle BAD = 180° - 110° = 70°$

Hence, option A is correct.

5.

Let the number of sides of a regular polygon be n. Then,

According to question,

Exterior angle : Interior angle = 1 : 17

$$\frac{360°}{n} : \left(180° - \frac{360°}{n}\right) = 1 : 17$$

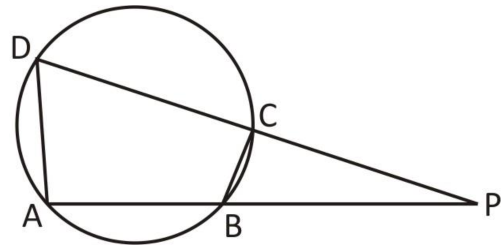
$$\frac{360°}{n} \times \frac{n}{180°\,(n-2)} = \frac{1}{17}$$

n – 2 = 34

n = 36

Hence, option C is correct.

6.



Given, ∠ADC = 70°

∠ADC + ∠ABC = 180°

∠ABC = 180° – ∠ADC = 180° – 70° = 110°

∴ ∠PBC = 180° – ∠ABC = 180° – 110° = 70°

And, ∠DAB = 60°

∠DAB + ∠DCB = 180°

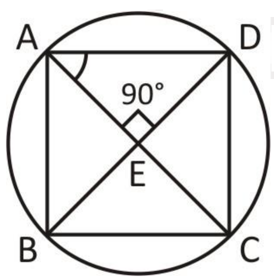
∠DCB = 180° – ∠DAB = 180° – 60° = 120°

∴ ∠PCB = 180° – ∠DCB = 180° – 120° = 60°

∴ ∠PBC + ∠PCB = 70° + 60° = 130°

Hence, option A is correct.

7.



In ΔABC,

Given, AB = BC

∠BCA = ∠BAC

And, AD = DC

∠CAD = ∠ACD

∴ ∠DAB = ∠DCB

∴ ∠DAB + ∠DCB = 180° ⇒ 2∠DAB = 180°

∴ ∠DAB = 90° = ∠DCB

In ΔADE, we know that

∴ ∠ADE = 180° – 90° – Θ = 90° – Θ

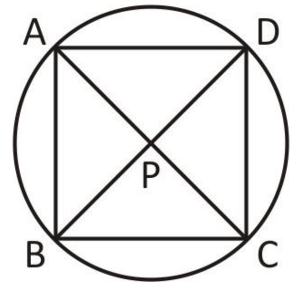
∴ ∠ADC = ∠ADE + ∠CDE = 2(90° – Θ)

$\angle ABC + \angle ADC = 180°$

$\angle ABC = 180° - \angle ADC = 180° - 2(90° - \Theta) = 2\Theta$

Hence, option C is correct.

8.



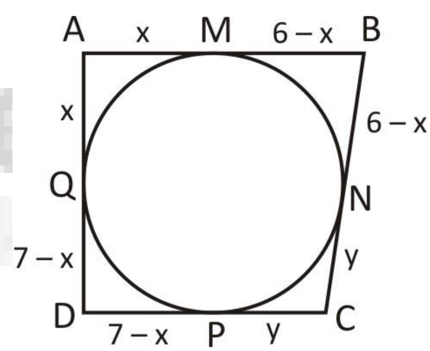
If two chords AC and BD of a circle intersect inside or outside the circle when produced at a point P, then

AP . PC = BP . DP

[∵ AC and BD are diagonals of cyclic quadrilateral and let these are chords of a circle and intersect at point P]

Hence, optjon B is correct.

9.



We know tangents drawn to a circle from same external point are equal

$AM = AQ = x$ (let)

$\therefore\ MB = 6 - x = BN$

$QD = 7 - x = DP$

$PC = y$ (let) $= CN$

Now, $CD = DP + PC = 5$

$\Rightarrow\ 7 - x + y = 5$

$\Rightarrow\ y - x = -2$

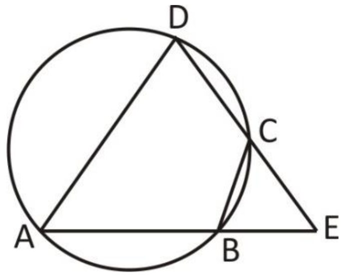
$BC = CN + BN$

$= y + 6 - x = y - x + 6 = -2 + 6 = 4$

Hence, optjon A is correct.

10.

Given, $\angle ADC = 70°$ and $\angle BAD = 95°$



$\angle ADC + \angle ABC = 180°$

$\angle ABC = 180° - \angle ADC = 180° - 70° = 110°$

$\therefore\ \angle CBE = 180° - \angle ABC = 180° - 110° = 70°$

BC = BE (given)

$\therefore\ \angle BEC = \angle BCE$

In ΔBCE, we know that

$\angle BCE + \angle BEC + \angle CBE = 180°$

$2\angle BCE = 180° - \angle CBE = 180° - 70° = 110°$

$\angle BCE = 55° = \angle BEC$

$\angle BAD + \angle BCD = 180°$

$\angle BCD = 180° - \angle BAD = 180° - 95° = 85°$

$\therefore\ \angle DCE = \angle BCD + \angle BCE = 85° + 55° = 140°$

Hence, option A is correct.