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Quadrilateral & Polygon Questions for CDS, SSC & Railways Exams

Quadrilateral & Polygon Quiz 4

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

1. Measure of each interior angle of a regular polygon can never be :

- A. 150° B. 105° C. 108° D. 144°

2. The sum of all interior angles of a regular polygon is twice the sum of all its exterior angles. The number of sides of the polygon is

- A. 10 B. 8 C. 12 D. 6

3. The ratio between the number of sides of two regular polygons is 1 : 2 and the ratio between their interior angles is 2 : 3. The number of sides of these polygons is respectively

- A. 6, 12 B. 5, 10 C. 4, 8 D. 7, 14

4. There are two regular polygons with number of sides equal to $(n - 1)$ and $(n + 2)$. Their exterior angles differ by 6° . The value of n is

- A. 14 B. 12 C. 13 D. 11

5. If each interior angle of a regular polygon is 150° , the number of sides of the polygon is

- A. 8 B. 10 C. 15 D. None of these

6. The sum of interior angles of a regular polygon is 1440° . The number of sides of the polygon is

- A. 10 B. 12 C. 6 D. 8

7. Among the angles 30° , 36° , 45° , 50° one angle cannot be an exterior angle of a regular polygon. The angle is

A. 30°

B. 36°

C. 45°

D. 50°

8. If the sum of interior angles of a regular polygon is equal to two times the sum of exterior angles of that polygon, then the number of sides of that polygon is

A. 5

B. 6

C. 7

D. 8

9. An interior angle of a regular polygon is 5 times its exterior angle. Then the number of sides of the polygon is

A. 14

B. 16

C. 12

D. 18

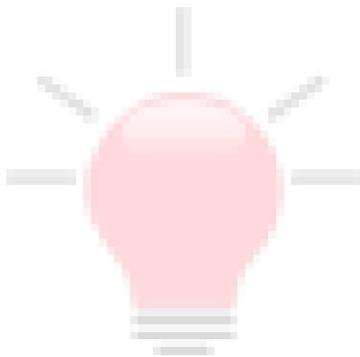
10. In a regular polygon if one of its internal angle is greater than the external angle by 132° , then the number of sides of the polygon is

A. 14

B. 12

C. 15

D. 16



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Correct Answers:

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

Explanations:

1.

Check through the options, each interior angle = $\frac{180^\circ - 360^\circ}{n}$

If measure of each angle = 105° , then

$$180^\circ - \frac{360^\circ}{n} = 105^\circ$$

$$180^\circ \times n - 360^\circ = 105^\circ \times n$$

$$75^\circ \times n = 360^\circ$$

$$n = \frac{24}{5}$$

which is impossible

Hence, option B is correct.

2.

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

$$\text{Sum of interior angles} = (2n - 4) \times 90^\circ$$

$$\text{Sum of exterior angles} = 360^\circ$$

$$\therefore (2n - 4) \times 90^\circ = 2 \times 360^\circ$$

$$2n - 4 = 8 \Rightarrow 2n = 12$$

$$n = 6$$

Hence, option D is correct.



3.

Let the number of sides of two regular polygons be x and $2x$ respectively. Then,

$$\left(180^\circ - \frac{360^\circ}{x}\right) : \left(180^\circ - \frac{360^\circ}{2x}\right) = 2 : 3$$

$$\frac{180^\circ(x-2)}{x} \times \frac{x}{180^\circ(x-1)} = \frac{2}{3}$$

$$3x - 6 = 2x - 2$$

$$x = 4$$

$$\therefore \text{Number of sides} = x = 4 \quad \text{and} \quad 2x = 2 \times 4 = 8$$

Hence, option C is correct.

4.

$$\frac{360^\circ}{n-1} - \frac{360^\circ}{n+2} = 6^\circ$$

$$360^\circ \left(\frac{n+2-n+1}{(n-1)(n+2)} \right) = 6^\circ$$

$$(n-1)(n+2) = 180$$

$$n^2 + n - 2 = 180$$

$$n^2 + n - 182 = 0$$

$$n^2 + 14n - 13n - 182 = 0$$

$$n(n+14) - 13(n+14) = 0$$

$$(n-13)(n+14) = 0$$

$$n = 13, -14 \quad [\because n \neq -14]$$

Hence, option C is correct.

5.

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

$$180^\circ - \frac{360^\circ}{n} = 150^\circ$$

$$180^\circ \times n - 360^\circ = 150^\circ \times n$$

$$30^\circ \times n = 360^\circ$$

$$n = 12$$

Hence, option D is correct.

6.

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

$$\text{Sum of interior angles} = 1440^\circ$$

$$(2n - 4) \times 90^\circ = 1440^\circ$$

$$2n - 4 = 16$$

$$2n = 20$$

$$n = 10$$

Hence, option A is correct.

7.

$$\text{Sum of exterior angles of a regular polygon} = 360^\circ$$

$$\text{But, } \frac{360^\circ}{50^\circ} = 7.2 \neq \text{a whole number}$$

Clearly, the angle 50° doesn't completely divide 360° which means we can't get a total of 360° by adding 50° to n times.

On the other hand the rest of the angles satisfy the condition.

For instance:

$$30^\circ + 30^\circ + \dots + 12 \text{ times} = 360^\circ$$

$$36^\circ + 36^\circ + \dots + 10 \text{ times} = 360^\circ$$

$$45^\circ + 45^\circ + \dots + 8 \text{ times} = 360^\circ$$

Therefore, it's clear that 50° can't be an angle of a regular polygon.

Hence, option D is correct.

8.

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

$$\text{Sum of interior angles} = (2n - 4) \times 90^\circ$$

$$\text{Sum of exterior angles} = 360^\circ$$

$$\therefore (2n - 4) \times 90^\circ = 2 \times 360^\circ$$

$$2n - 4 = 8$$

$$2n = 12$$

$$n = 6$$

Hence, option B is correct.

9.

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

Then,

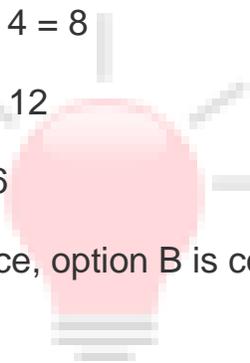
$$180^\circ - \frac{360^\circ}{n} = 5 \times \frac{360^\circ}{n}$$

$$180^\circ \times n - 360^\circ = 1800^\circ$$

$$180^\circ \times n = 2160^\circ$$

$$n = 12$$

Hence, option C is correct.



10.

Let number of sides of a regular polygon = n

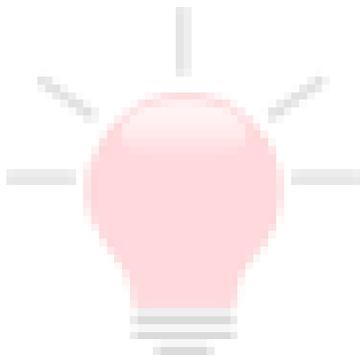
$$\therefore 180^\circ - \frac{360^\circ}{n} - \frac{360^\circ}{n} = 132^\circ$$

$$180^\circ \times n - 720^\circ = 132^\circ \times n$$

$$48^\circ \times n = 720^\circ$$

$$n = 15$$

Hence, option C is correct.



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