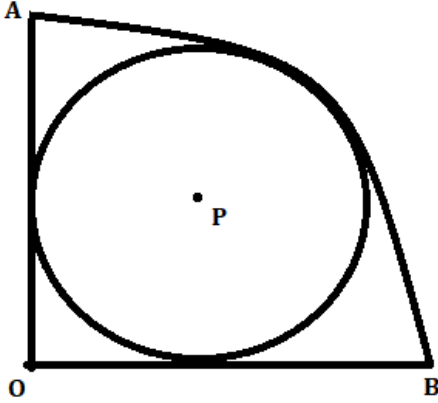


**Vidhigya Challenger Series**  
**Daily Practice Sheet 7**  
**Quantitative Techniques**

**Directions (1-5):** Read the following information carefully and answer the questions that follow.  
 Given 'AOB' is a quadrant with centre 'O' and radius 'OA' and 'OB'. The radius of this quadrant is 1cm. There is another circle with centre 'P' inscribed in this quadrant as shown in the figure.



1. Find the perimeter of the quadrant 'AOB'.  
 (a)  $2 + \pi$  (b)  $2 + \pi/2$  (c)  $2 + \pi/4$  (d)  $4 + \pi/4$
2. What is the area of the quadrant 'AOB'?  
 (a)  $\pi/2$  (b)  $\pi/4$  (c)  $2\pi/8$  (d) Both (b) and (c)
3. Find the radius of the circle with centre 'P'.  
 (a)  $3 + 2\sqrt{2}$  (b)  $\sqrt{2} + 1$  (c)  $\sqrt{2} - 1$  (d)  $3 - 2\sqrt{2}$
4. What is the perimeter of the circle with centre 'P'?  
 (a)  $(6 + 4\sqrt{2})\pi$  (b)  $(2\sqrt{2} + 2)\pi$  (c)  $(2\sqrt{2} - 2)\pi$  (d)  $(6 - 4\sqrt{2})\pi$
5. What is the area of the circle with centre 'P'?  
 (a)  $(3 - 2\sqrt{2})\pi$  (b)  $(17 + 12\sqrt{2})\pi$  (c)  $(17 - 12\sqrt{2})\pi$  (d)  $(3 + 2\sqrt{2})\pi$

### Answers & Explanations

1. Ans. b

Sol. COMMON EXPLANATION

Area of a Quadrant =  $\pi r^2/4$  and Perimeter of Quadrant =  $\pi r/2 + 2r$

Putting  $r = 1$

Perimeter =  $\pi/2 + 2$

Hence, option (b) is correct.

2. Ans. d

Sol. Following the COMMON EXPLANATION

Area of a Quadrant =  $\pi r^2/4$

Putting  $r = 1$

Area =  $\pi/4$

But, as options (b) and (c) are same.

Hence, option (d) is correct.

3. Ans. c

Sol. Following the COMMON EXPLANATION

Let us take the radius as 'r' then,

$$r + r\sqrt{2} = 1$$

$$r(\sqrt{2} + 1) = 1$$

$$r = \frac{1}{\sqrt{2}+1} = (\sqrt{2} - 1)$$

Hence, option (c) is correct.

4. Ans. c

Sol. Following the COMMON EXPLANATION

Perimeter =  $2\pi r$

We have already calculated 'r' in the previous question

So, perimeter =  $2\pi(\sqrt{2} - 1) = (2\sqrt{2} - 2)\pi$

Hence, option (c) is correct.

5. Ans. a

Sol. Following the COMMON EXPLANATION

We have already calculated 'r' in the previous question

Area =  $\pi r^2$

$$\text{Area} = \pi[(\sqrt{2} - 1)]^2$$

$$\text{Area} = (3 - 2\sqrt{2})\pi$$

Hence, option (a) is correct.