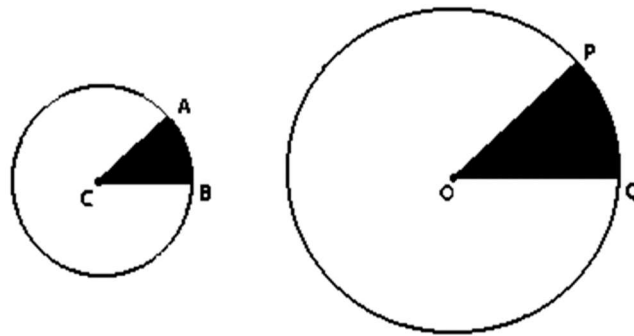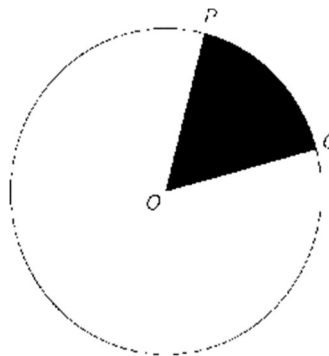# Chapter 12

Circles

1. Radius of Circle with center O is 3 times the radius of circle with center C. $\angle ACB = \angle POQ$, If the area shaded region of circle C is 2, then what is the area of shaded region of circle O.

   (A) 6
   (B) 12
   (C) 18
   (D) 36
   (E) 40

2. The circle above has center O and circumference 12π. If $\angle POQ = 30°$, what is the area of the unshaded region?


3. Line segments UV, WX, and YZ are diameters of the circles with Centres A, B, and C, respectively. If YZ = 2, then what is the area of the circle with Centre A?

(A) 4π
(B) 8π
(C) 9π
(D) 16π
(E) 64π
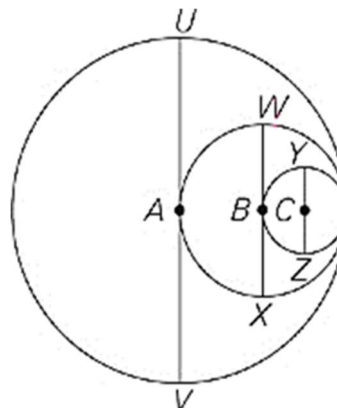
4. Triangle ACE is equilateral with side lengths of 8. Points B and D are the midpoints of line segments AC and CE respectively. Line segment BD is a diameter of the circle with Centre F. What is the area of the shaded region?
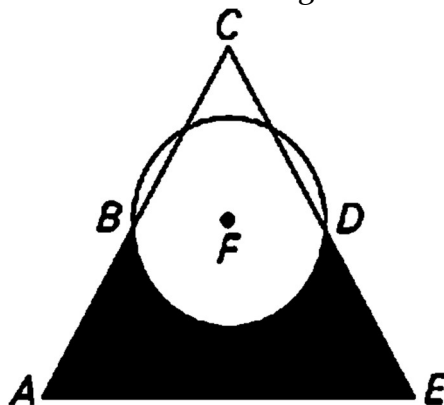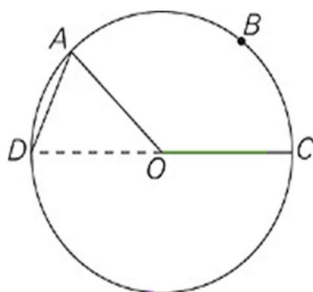

(A) $8\sqrt{2} - 4\pi$
(B) $12\sqrt{3} - 2\pi$
(C) $12\sqrt{3} - 4\pi$
(D) $16\sqrt{3} - 2\pi$
(E) $16\sqrt{2} - 4\pi$

5. A circle with a circumference of 12π is divided into three sectors with areas in a ratio of 3:4:5. What is the area of the largest sector?
   (A) 6π
   (B) 9π
   (C) 12π
   (D) 15π
   (E) 18π

6.

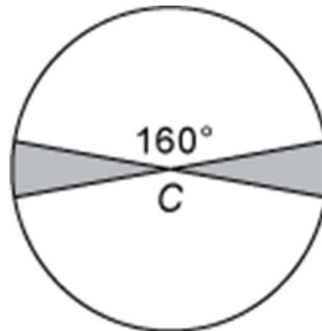No line segment with endpoints on the circle with Centre O is longer than line segment DC. OA = AD = 3

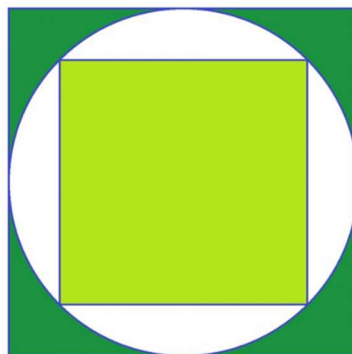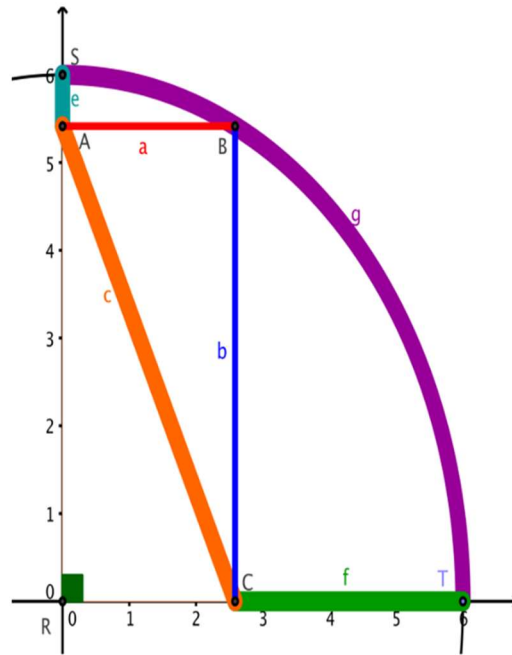| Quantity A	Quantity B
The area of sector OABC	9

7. The figure above shows a circle with Centre C and radius 6. What is the sum of the areas of the two shaded regions?

(A) 7.5π
(B) 6π
(C) 4.5π
(D) 4π
(E) 3π

8. The radius of circle O is 4 times the diameter of circle P. What is the ratio of the radius of circle O to the radius of circle P?
(A) 16:1
(B) 8:1
(C) 4:3
(D) 2:1
(E) 4:1

9. A circle is inscribed within a square. A smaller square is inscribed within this circle. What is the ratio of the area of the larger square to that of the smaller square?

10. Given that a + b = 8 and that the radius of the circle is 6, what is the perimeter of the area bounded by e, c, f and g?

11.

Circle C has a radius r such that 1 < r < 5

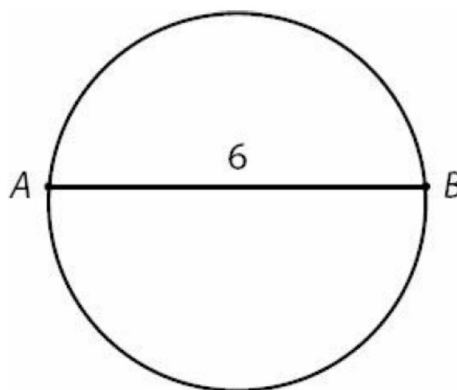| **Quantity A**	**Quantity B**
The area of Circle C	The circumference of Circle C

12.

Quantity A	**Quantity B**
The radius of a circle with area 36π	The radius of a circle with circumference 12π

13.

AB is not a diameter of the circle

Quantity A	**Quantity B**
The area of the circle	9π

14. A circle has an area of 4π. If the radius were doubled, the new area of the circle would be how many times the original area?

(A) 2
(B) 3

4

(C) 4

(D) 5

(E) It cannot be determined from the information given.
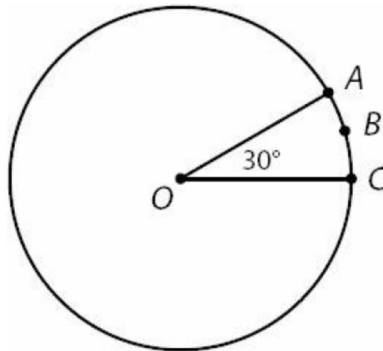
15.

The circumference of a circle is greater than 7π.

Quantity A	**Quantity B**
The area of the circle	15π

Practice Exercise

1.

The radius of the circle with center O is 6.

Quantity A	Quantity B
The length of arc ABC	3

2. A sector of a circle has an arc length of 7π. If the diameter of the circle is 14, what is the measure of the central angle of the sector, in degrees?
    (A) 45
    (B) 60
    (C) 90
    (D) 120
    (E) 180

3. A sector of a circle has a central angle of 270°. If the circle has a radius of 4, what is the area of the sector?
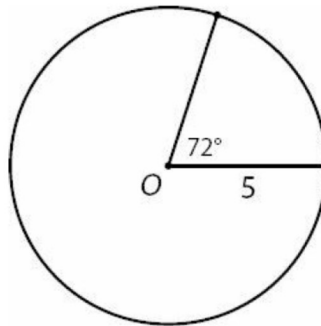   (A) 4π
    (B) 8π
    (C) 12π
    (D) 16π
    (E) 20π

4.

Within a circle with radius 12, a sector has an area of 24π.

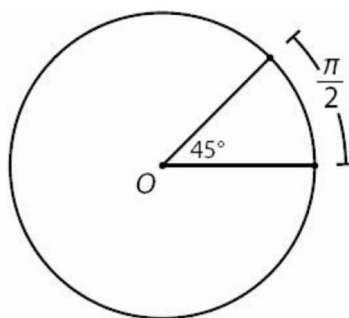| Quantity A	Quantity B
The measure of the central angle of the sector, in degrees	90

5. If O is the center of the circle, what is the perimeter of the sector with central angle 72°?

    (A) 5 + 2π
    (B) 10 + 2π
    (C) 10 + 4π
    (D) 10 + 5π
    (E) 20 + 2π

6. A sector of a circle has a radius of 8 and an area of 8π. What is the arc length of the sector?
    (A) π
    (B) 2π
    (C) 4π
    (D) 6π
    (E) 8π

7. If point O is the center of the circle in the figure above, what is the radius of the circle?

8.

Sector A and Sector B are sectors of two different circles.
Sector A has a radius of 4 and a central angle of 90°.
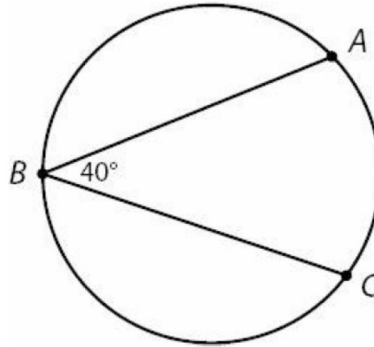Sector B has a radius of 6 and a central angle of 45°.

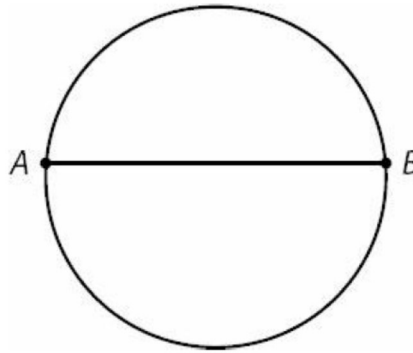| Quantity A	Quantity B
The area of Sector A	The area of Sector B

9. If the diameter of the circle is 36, what is the length of arc ABC?

(A) 8
(B) 8π
(C) 28π
(D) 32π
(E) 56π

10.

The circle above has area 25.

Quantity A	Quantity B
The length of chord AB	10

--------- **End of Chapter 12** --------