



The National
Orthodox School
Shmaisani

Key answer

Name:

worksheet (4) Math

Date:

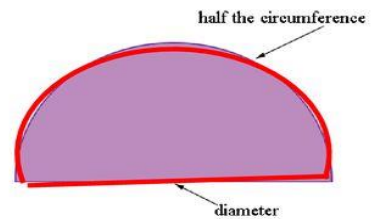
Grade-Section:7 (A)

Objectives: 1) Find the perimeter and the area of a semicircle.

2) Find the area of the shaded region between two circles .

Perimeter of Semicircle

In a semi circle, the perimeter is made up of half the circumference (arc) of the circle and the diameter of the circle



$$\begin{aligned}\text{Perimeter} &= \frac{1}{2} \times (\text{circumference of circle}) + d \\ &= \frac{1}{2} \times (2\pi r) + d\end{aligned}$$

$$\text{Perimeter} = \pi r + d$$

$$\text{Perimeter} = \pi r + 2r \quad (\because d = 2r)$$

$$\text{Perimeter of semicircle} = r(\pi + 2)$$

Accredited by



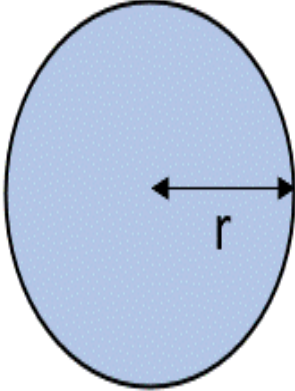
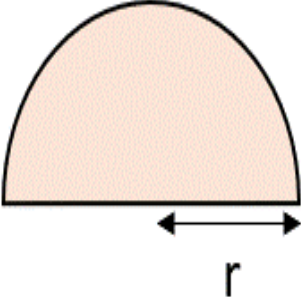
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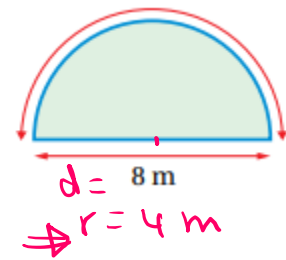


معتمدة من

| Area of a circle | Area of a Semicircle |
|---|--|
|  |  |
| Area = πr^2 | Area = $\frac{1}{2} \pi r^2$ |

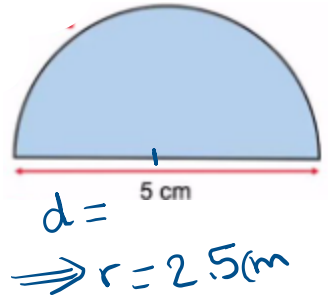
Exercise (1) : Find the perimeter and area of the following semicircles :(in terms of π)

$$\begin{aligned}
 P_{\text{Semi}} &= \frac{2\pi r}{2} + d \\
 &= \pi(4) + 8 \\
 &= \boxed{4\pi + 8} \text{ m}
 \end{aligned}$$



$$\begin{aligned}
 A_{\text{Semi}} &= \frac{\pi r^2}{2} = \frac{\pi(4)^2}{2} = \frac{16\pi}{2} = \boxed{8\pi} \text{ m}^2
 \end{aligned}$$

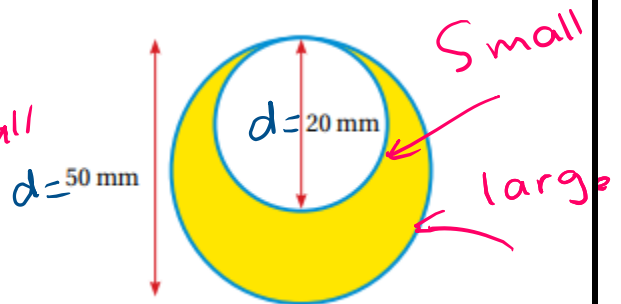
$$\begin{aligned}
 P &= \frac{2\pi r}{2} + d \\
 &= \pi(2.5) + 5 \\
 &= \boxed{2.5\pi + 5} \text{ cm}
 \end{aligned}$$

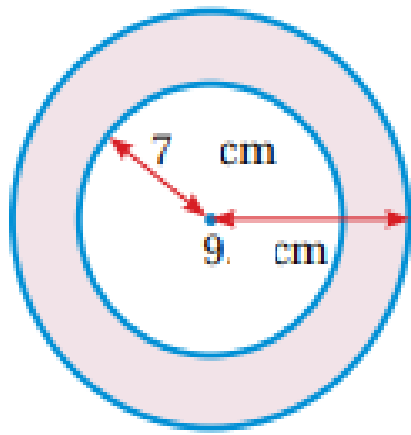


$$\begin{aligned}
 A &= \frac{\pi r^2}{2} = \frac{\pi(2.5)^2}{2} = \frac{\pi(6.25)}{2} \\
 &= \pi(3.125) \\
 &= \boxed{3.125\pi} \text{ cm}^2
 \end{aligned}$$

Exercise (2): Find the area of the shaded region of the following shapes :
(in terms of π)

$$\begin{aligned}
 A &= A_{\text{large}} - A_{\text{small}} \\
 &= (\pi r^2)_{\text{large}} - (\pi r^2)_{\text{small}} \\
 &= \pi(25)^2 - \pi(10)^2 \\
 &= 625\pi - 100\pi \\
 &= \boxed{525\pi} \text{ mm}^2
 \end{aligned}$$





$$\begin{aligned} A &= A_{\text{large}} - A_{\text{small}} \\ &= (\pi r^2)_{\text{large}} - (\pi r^2)_{\text{small}} \\ &= \pi(9)^2 - \pi(7)^2 \\ &= 81\pi - 49\pi \\ &= \boxed{32\pi} \text{ cm}^2 \end{aligned}$$