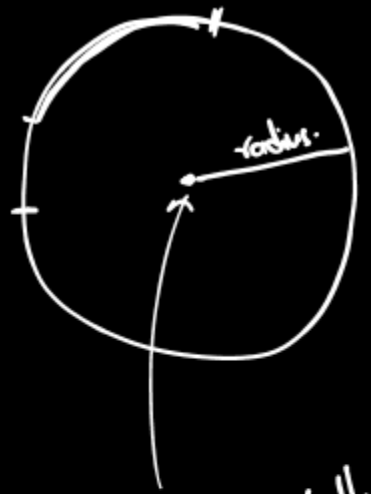
# Circle

Grade 4: Geometry

# Circle

**Arc**: Small portion of the circle.

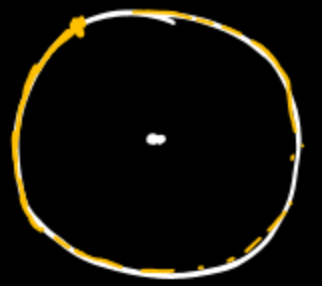



Circumference

Length of the line which makes the circle.

~~Perimeter~~

Perimeter ⇒ length of the boundary.



Perimeter of circle is called circumference.

⇒ It is difficult to measure the length of curve using a straight scale. ∴ we use a formula to measure the circumference (length of the curve)


A circle of radius 'r' units

**Circumference of circle = $2 \times \pi \times r$**

$\pi \Rightarrow$ Pie $\Rightarrow$ constant

$$\pi \approx \frac{22}{7} \approx 3.14$$

Q Find the circumference of a circle of radius 14 cm. • Use $\pi = \frac{22}{7}$

Sol: Circumference $= 2\pi r$

$= (2) \times (\pi) \times (14)$

$= 28\pi$ cm ✓ Best

$= 28 \times 3.14$

$= 87.92$ cm ✓

$$\begin{array}{r} 30 \\ 3 \\ \hline 90 \end{array}$$

$$\begin{array}{r} 3.14 \\ \times\ 14 \\ \hline 1256 \\ 3140 \\ \hline 4396 \end{array}$$

$\pi \approx 3.14$ ✓

$\approx \frac{22}{7}$ ✓

$$\begin{array}{r} 1\ 3 \\ 3.14 \\ \times\ 28 \\ \hline 2512 \\ 6280 \\ \hline 87.92 \end{array}$$

$2\pi r$

$\Rightarrow \frac{2}{1} \times \frac{22}{7} \times \frac{14}{1}$

$= \frac{2 \times 22 \times 14^{2}}{\cancel{7}_{1}}$

$= 2 \times 22 \times 2$

$= 88$ cm ✓

Q. Find the circumference of a circle of diameter 28 cm.
Use $\pi = 3.14$

**Circumference = $2\pi r$**


Sol: ∴ Diameter = 28cm.

$$\text{Radius} = \frac{28}{2} = 14\text{cm}.$$

$$C = 2 \times 3.14 \times 14$$

$$= 87.92 \text{ cm}.$$

Diameter = 2 x radius.

Radius = $\frac{1}{2}$ of diameter

$= \frac{1}{2} \times$ Diameter

$= \frac{\text{Diameter}}{2}$

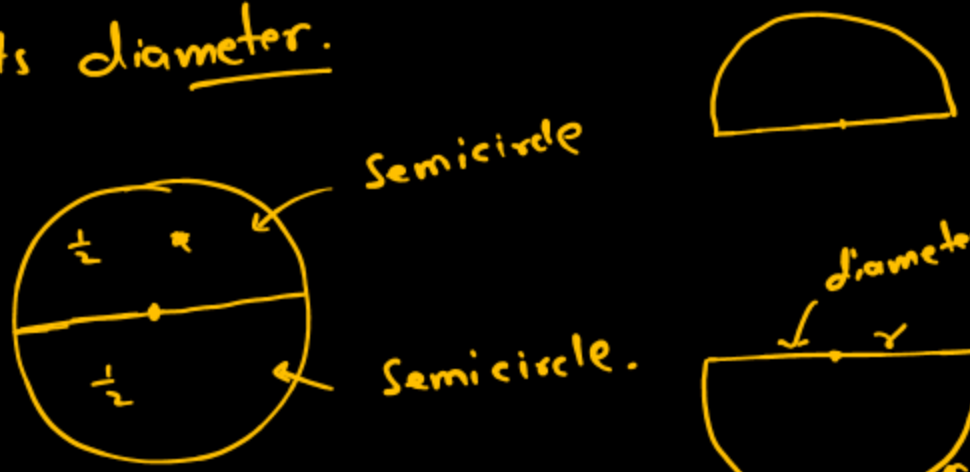
Circumference $= 2 \times \pi \times r$ units

$= \pi \times 2 \times r$

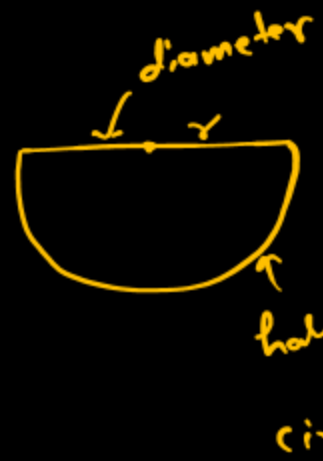
Circumference $= \pi \times d$ $d \Rightarrow$ diameter of circle

# Semi-circle

- Half of a circle
- by cutting a circle along its diameter.





Q. Find the circumference and half of circumference of a circle of radius 28 cm. ( $\pi = 3.14$)

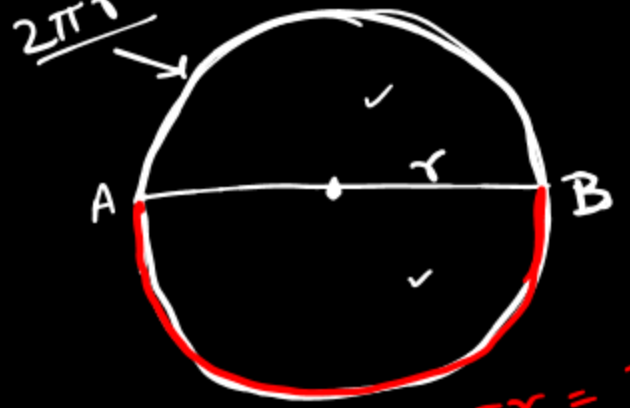
Sol: Given radius = 28cm.

$$\text{Circumference} = 2\pi r$$
$$= 2 \times \pi \times 28$$
$$= 56\pi \text{ cm.}$$

$$\text{Half of circumference} = \frac{1}{2} \times 56 \times \pi$$
$$= 28\pi \text{ cm.}$$

Perimeter of semi-circle :

$= 2r + \pi r$




$\frac{1}{2} \times 2\pi r$

$\frac{1}{2}$ of $2\pi r = \pi r$


curved (half of circumference)

length of curve ($\pi r$)

Find the perimeter of a semicircle, whose radius is 14 cm.

$\pi = \frac{22}{7}$

Perimeter = diameter + half of circumference.

$= 28 + \frac{2\pi r}{2}$

$= 28 + \pi r$

$= 28 + \frac{22}{7} \times 14^{2}$

$= 28 + \left(\frac{22 \times 2}{1}\right)$

$= 28 + 44$

$= 72$ cm


$\frac{14}{7} = 2$

# End of the chapter