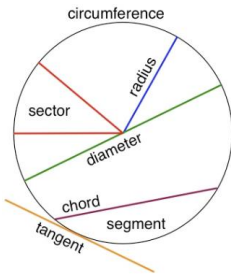


# PERIMETER AND CIRCUMFERENCE

## Key Concepts

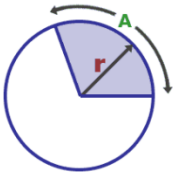
### Parts of a circle



### Circumference

of a circle is calculated by  $\pi d$  and is the distance around the circle.

**Arc length** of a sector is calculated by  $\frac{\theta}{360} \pi d$ .



Calculate:

### a) Circumference

$$C = \pi \times 4$$

$$= 4\pi$$

$$\text{or } = 12.57\text{cm}$$

### b) Diameter when the circumference is 20cm

$$C = \pi \times d$$

$$20 = \pi \times d$$

$$\frac{20}{\pi} = d$$

$$\text{Or } 6.37\text{cm}$$

## Examples

### c) Perimeter

$$P = \frac{\pi \times d}{2} + d$$

$$P = \frac{\pi \times 6}{2} + 6$$

$$P = 3\pi + 6$$

$$\text{Or } = 15.42\text{cm}$$

### d) Arc length

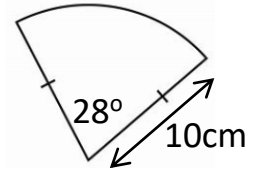
$$\text{Arc} = \frac{\theta}{360} \times \pi \times d$$

$$\text{Arc} = \frac{28}{360} \times \pi \times 2 \times 10$$

$$\text{Arc} = \frac{28}{360} \times \pi \times 20$$

$$\text{Arc} = \frac{14}{9} \pi$$

$$\text{Or } = 4.89\text{cm}$$

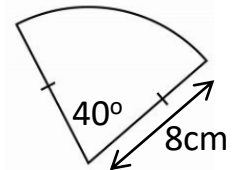


### Key Words

Circle  
Perimeter  
Circumference  
Radius  
Diameter  
Pi  
Arc

Calculate:

- 1) The circumference of a circle with a diameter of 12cm
- 2) The diameter of a circle with a circumference of 30cm
- 3) The perimeter of a semicircle with diameter 15cm
- 4) The arc length of the diagram

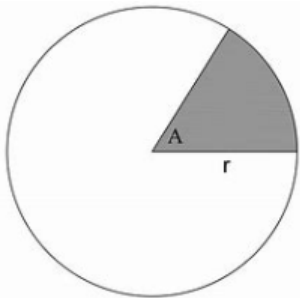


# AREA OF CIRCLES AND PART CIRCLES

## Key Concepts

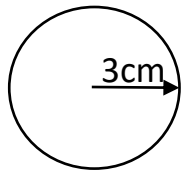
The **area** of a circle is calculated by  $\pi r^2$

The **area of a sector** is calculated by  $\frac{\theta}{360} \pi r^2$



Calculate:

a) **Area**



$$A = \pi \times 3^2$$

$$= 9\pi$$

$$\text{or} = 28.3\text{cm}^2$$

b) **Radius** when the area is  $20\text{cm}^2$

$$A = \pi \times r^2$$

$$20 = \pi \times r^2$$

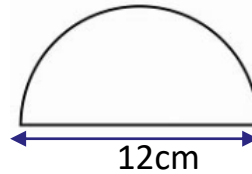
$$\frac{20}{\pi} = r^2$$

$$\sqrt{\frac{20}{\pi}} = r$$

$$\text{Or } 2.52\text{cm}$$

## Examples

c) **Area**



$$P = \frac{\pi \times r^2}{2}$$

$$P = \frac{\pi \times 6^2}{2}$$

$$P = 18\pi$$

$$\text{Or} = 56.55\text{cm}^2$$

d) **Area of a sector**

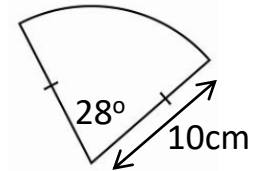
$$\text{Arc} = \frac{\theta}{360} \times \pi \times r^2$$

$$\text{Arc} = \frac{28}{360} \times \pi \times 10^2$$

$$\text{Arc} = \frac{28}{360} \times \pi \times 100$$

$$\text{Arc} = \frac{70}{9} \pi$$

$$\text{Or} = 24.43\text{cm}$$



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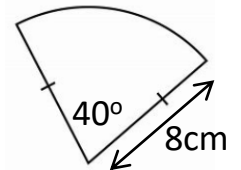
539, 540, 542-  
543, 546-547

## Key Words

**Circle**  
**Area**  
**Radius**  
**Diameter**  
**Pi**  
**Sector**

Calculate:

- 1) The area of a circle with a radius of 9cm
- 2) The radius of a circle with an area of  $45\text{cm}^2$
- 3) The area of a semicircle with diameter of 16cm
- 4) The area of the sector in the diagram



ANSWERS: 1)  $81\pi$  or  $254.47\text{cm}^2$  2)  $\sqrt{\frac{45}{\pi}}$  or  $3.78\text{cm}$  3)  $32\pi$  or  $100.53\text{cm}^2$  4)  $\frac{9}{64}\pi$  or  $22.34\text{cm}^2$