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# Circular Sector Formulas

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# List of 12 Circular Sector Formulas

## Circular Sector

### 1) Area of Circle given Area of Sector

$$fx \quad A_{\text{Circle}} = \frac{2 \cdot \pi \cdot A}{\angle_{\text{Sector}}}$$

[Open Calculator !\[\]\(a870788d6ed9b8fd294b7654a8c8526b\_img.jpg\)](#)

$$ex \quad 81m^2 = \frac{2 \cdot \pi \cdot 9m^2}{40^\circ}$$

### 2) Diameter of Circle given Area of Sector

$$fx \quad D = 2 \cdot \sqrt{\frac{2 \cdot A}{\angle_{\text{Sector}}}}$$

[Open Calculator !\[\]\(c50c8b7b2cc2cf9ff925edec0ee94c0d\_img.jpg\)](#)

$$ex \quad 10.15541m = 2 \cdot \sqrt{\frac{2 \cdot 9m^2}{40^\circ}}$$

### 3) Inscribed Angle of Circle given Area of Sector

$$fx \quad \angle_{\text{Inscribed}} = \pi - \frac{A}{r^2}$$

[Open Calculator !\[\]\(f60b7a900783ac3fd531bfd9c111be6d\_img.jpg\)](#)

$$ex \quad 159.3735^\circ = \pi - \frac{9m^2}{(5m)^2}$$



#### 4) Radius of Circle given Area of Sector

[Open Calculator !\[\]\(4729e517bc6a7cd81c8025b9646574fb\_img.jpg\)](#)

$$\text{fx } r = \sqrt{\frac{2 \cdot A}{\angle_{\text{Sector}}}}$$

$$\text{ex } 5.077706\text{m} = \sqrt{\frac{2 \cdot 9\text{m}^2}{40^\circ}}$$

#### Angle of Circular Sector

#### 5) Angle of Circular Sector given Arc Length

[Open Calculator !\[\]\(3e2231b1ad3ca8da8658228c00dd08e0\_img.jpg\)](#)

$$\text{fx } \angle_{\text{Sector}} = \frac{l_{\text{Arc}}}{r}$$

$$\text{ex } 45.83662^\circ = \frac{4\text{m}}{5\text{m}}$$

#### 6) Angle of Circular Sector given Area of Circular Sector

[Open Calculator !\[\]\(0d5ec72f61334709c3fc9450209b754f\_img.jpg\)](#)

$$\text{fx } \angle_{\text{Sector}} = \frac{2 \cdot A}{r^2}$$

$$\text{ex } 41.25296^\circ = \frac{2 \cdot 9\text{m}^2}{(5\text{m})^2}$$



## Area of Circular Sector

### 7) Area of Circular Sector

$$\text{fx } A = \frac{\angle_{\text{Sector}}}{2} \cdot r^2$$

[Open Calculator !\[\]\(23d9fc146e83b5c3013cfa32c784f8d5\_img.jpg\)](#)

$$\text{ex } 8.726646\text{m}^2 = \frac{40^\circ}{2} \cdot (5\text{m})^2$$

### 8) Area of Circular Sector given Arc Length

$$\text{fx } A = \frac{r \cdot l_{\text{Arc}}}{2}$$

[Open Calculator !\[\]\(aa53ad6fea213b8b2226d3077e30533a\_img.jpg\)](#)

$$\text{ex } 10\text{m}^2 = \frac{5\text{m} \cdot 4\text{m}}{2}$$

### 9) Area of Circular Sector given Area of Circle

$$\text{fx } A = \frac{\angle_{\text{Sector}}}{2 \cdot \pi} \cdot A_{\text{Circle}}$$

[Open Calculator !\[\]\(626ce8ac21792b9405bfddfea8e0c96a\_img.jpg\)](#)

$$\text{ex } 8.888889\text{m}^2 = \frac{40^\circ}{2 \cdot \pi} \cdot 80\text{m}^2$$



## Perimeter of Circular Sector

### 10) Perimeter of Circular Sector

$$\text{fx } P = (\angle_{\text{Sector}} + 2) \cdot r$$

[Open Calculator !\[\]\(74d4806277d7e73349d8e8c0897931e9\_img.jpg\)](#)

$$\text{ex } 13.49066\text{m} = (40^\circ + 2) \cdot 5\text{m}$$

### 11) Perimeter of Circular Sector given Arc Length

$$\text{fx } P = l_{\text{Arc}} + 2 \cdot r$$

[Open Calculator !\[\]\(8bba887393ca45b761e5cb49e755e762\_img.jpg\)](#)

$$\text{ex } 14\text{m} = 4\text{m} + 2 \cdot 5\text{m}$$

### 12) Perimeter of Circular Sector given Circumference of Circle

$$\text{fx } P = \left( C_{\text{Circle}} \cdot \frac{\angle_{\text{Sector}}}{2 \cdot \pi} \right) + (2 \cdot r)$$

[Open Calculator !\[\]\(0fb13ad0bfa3d86868cdd3883e5665b3\_img.jpg\)](#)

$$\text{ex } 13.33333\text{m} = \left( 30\text{m} \cdot \frac{40^\circ}{2 \cdot \pi} \right) + (2 \cdot 5\text{m})$$






## Variables Used

- $\angle_{\text{Inscribed}}$  Inscribed Angle of Circle (Degree)
- $\angle_{\text{Sector}}$  Angle of Circular Sector (Degree)
- **A** Area of Circular Sector (Square Meter)
- **A<sub>Circle</sub>** Area of Circle of Circular Sector (Square Meter)
- **C<sub>Circle</sub>** Circumference of Circle of Circular Sector (Meter)
- **D** Diameter of Circle (Meter)
- **I<sub>Arc</sub>** Arc Length of Circular Sector (Meter)
- **P** Perimeter of Circular Sector (Meter)
- **r** Radius of Circular Sector (Meter)



## Constants, Functions, Measurements used

- **Constant:** **pi**, 3.14159265358979323846264338327950288  
*Archimedes' constant*
- **Function:** **sqrt**, sqrt(Number)  
*A square root function is a function that takes a non-negative number as an input and returns the square root of the given input number.*
- **Measurement:** **Length** in Meter (m)  
*Length Unit Conversion* 
- **Measurement:** **Area** in Square Meter (m<sup>2</sup>)  
*Area Unit Conversion* 
- **Measurement:** **Angle** in Degree (°)  
*Angle Unit Conversion* 



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- [Circle Formulas](#) 
- [Circular Arc Formulas](#) 
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