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Circle Formulas

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List of 25 Circle Formulas

Circle

Area of Circle

1) Area of Circle

$$\text{fx } A = \pi \cdot r^2$$

Open Calculator 

$$\text{ex } 78.53982\text{m}^2 = \pi \cdot (5\text{m})^2$$

2) Area of Circle given Chord Length

$$\text{fx } A = \pi \cdot \left(\frac{l_c}{2 \cdot \sin\left(\frac{\angle_{\text{Central}}}{2}\right)} \right)^2$$

Open Calculator 

$$\text{ex } 50.65023\text{m}^2 = \pi \cdot \left(\frac{8\text{m}}{2 \cdot \sin\left(\frac{170^\circ}{2}\right)} \right)^2$$

3) Area of Circle given Circumference

$$\text{fx } A = \frac{C^2}{4 \cdot \pi}$$

Open Calculator 

$$\text{ex } 71.61972\text{m}^2 = \frac{(30\text{m})^2}{4 \cdot \pi}$$



4) Area of Circle given Diameter

$$\text{fx } A = \frac{\pi}{4} \cdot D^2$$

[Open Calculator !\[\]\(cbe80b694ebd74fcfe136a095b608235_img.jpg\)](#)

$$\text{ex } 78.53982\text{m}^2 = \frac{\pi}{4} \cdot (10\text{m})^2$$

Chord Length of Circle

5) Chord Length of Circle

$$\text{fx } l_c = 2 \cdot r \cdot \sin\left(\frac{\angle_{\text{Central}}}{2}\right)$$

[Open Calculator !\[\]\(5361750c22c4e047a52f4eac1ec2d4cc_img.jpg\)](#)

$$\text{ex } 9.961947\text{m} = 2 \cdot 5\text{m} \cdot \sin\left(\frac{170^\circ}{2}\right)$$

6) Chord Length of Circle given Diameter and Central Angle

$$\text{fx } l_c = D \cdot \sin\left(\frac{\angle_{\text{Central}}}{2}\right)$$

[Open Calculator !\[\]\(b792654f2cef9719eabeb6c5be00811e_img.jpg\)](#)

$$\text{ex } 9.961947\text{m} = 10\text{m} \cdot \sin\left(\frac{170^\circ}{2}\right)$$

7) Chord Length of Circle given Diameter and Inscribed Angle

$$\text{fx } l_c = D \cdot \sin(\angle_{\text{Inscribed}})$$

[Open Calculator !\[\]\(84f47badaad7772cd95667a7c387a639_img.jpg\)](#)

$$\text{ex } 9.961947\text{m} = 10\text{m} \cdot \sin(85^\circ)$$



8) Chord Length of Circle given Inscribed Angle

$$fx \quad l_c = 2 \cdot r \cdot \sin(\angle_{\text{Inscribed}})$$

[Open Calculator !\[\]\(e78f798d4ea5c530c9db49e7d26e6b95_img.jpg\)](#)

$$ex \quad 9.961947m = 2 \cdot 5m \cdot \sin(85^\circ)$$

9) Chord Length of Circle given Perpendicular Length

$$fx \quad l_c = 2 \cdot \sqrt{r^2 - l_{\text{Perpendicular}}^2}$$

[Open Calculator !\[\]\(05be7c7a8995decd503647c99211f7c2_img.jpg\)](#)

$$ex \quad 8m = 2 \cdot \sqrt{(5m)^2 - (3m)^2}$$

Circumference of Circle

10) Circumference of Circle

$$fx \quad C = 2 \cdot \pi \cdot r$$

[Open Calculator !\[\]\(626ce8ac21792b9405bfddfea8e0c96a_img.jpg\)](#)

$$ex \quad 31.41593m = 2 \cdot \pi \cdot 5m$$

11) Circumference of Circle given Arc Length

$$fx \quad C = \frac{2 \cdot \pi \cdot l_{\text{Arc}}}{\angle_{\text{Central}}}$$

[Open Calculator !\[\]\(c1168d6a8b365d11e842ece304635fa7_img.jpg\)](#)

$$ex \quad 31.76471m = \frac{2 \cdot \pi \cdot 15m}{170^\circ}$$



12) Circumference of Circle given Area

$$fx \quad C = \sqrt{4 \cdot \pi \cdot A}$$

[Open Calculator !\[\]\(e2376d476d06eb31946dc01a69a4403a_img.jpg\)](#)

$$ex \quad 31.70662m = \sqrt{4 \cdot \pi \cdot 80m^2}$$

13) Circumference of Circle given Chord Length

$$fx \quad C = \frac{2 \cdot \pi \cdot l_c}{2 \cdot \sin\left(\frac{\angle_{\text{Central}}}{2}\right)}$$

[Open Calculator !\[\]\(0b5e7e25e8775f7e7e80906ada4f0021_img.jpg\)](#)

$$ex \quad 25.22874m = \frac{2 \cdot \pi \cdot 8m}{2 \cdot \sin\left(\frac{170^\circ}{2}\right)}$$

14) Circumference of Circle given Diameter

$$fx \quad C = \pi \cdot D$$

[Open Calculator !\[\]\(bd3b31712ad9bab5a241210fa6925cdd_img.jpg\)](#)

$$ex \quad 31.41593m = \pi \cdot 10m$$

Diameter of Circle


15) Diameter of Circle

$$fx \quad D = 2 \cdot r$$

[Open Calculator !\[\]\(e50091943b385fe16d3277389202856f_img.jpg\)](#)

$$ex \quad 10m = 2 \cdot 5m$$



16) Diameter of Circle given Arc Length 

$$fx \quad D = \frac{2 \cdot l_{\text{Arc}}}{\angle_{\text{Central}}}$$

Open Calculator 


$$ex \quad 10.11102m = \frac{2 \cdot 15m}{170^\circ}$$

17) Diameter of Circle given Area 

$$fx \quad D = 2 \cdot \sqrt{\frac{A}{\pi}}$$

Open Calculator 

$$ex \quad 10.09253m = 2 \cdot \sqrt{\frac{80m^2}{\pi}}$$

18) Diameter of Circle given Circumference 

$$fx \quad D = \frac{C}{\pi}$$

Open Calculator 

$$ex \quad 9.549297m = \frac{30m}{\pi}$$



Inscribed Angle of Circle

19) Inscribed Angle of Circle

$$\text{fx } \angle_{\text{Inscribed}} = \pi - \frac{\angle_{\text{Central}}}{2}$$

[Open Calculator !\[\]\(83f22ed94ec5517769dd76d702c6bfd8_img.jpg\)](#)

$$\text{ex } 95^\circ = \pi - \frac{170^\circ}{2}$$

20) Inscribed Angle of Circle given Arc Length

$$\text{fx } \angle_{\text{Inscribed}} = \pi - \frac{l_{\text{Arc}}}{2 \cdot r}$$

[Open Calculator !\[\]\(3cb60d42b10e53f9522bb0b392c1c4cd_img.jpg\)](#)

$$\text{ex } 94.05633^\circ = \pi - \frac{15\text{m}}{2 \cdot 5\text{m}}$$

21) Inscribed Angle of Circle given other Inscribed Angle

$$\text{fx } \angle_{\text{Inscribed}} = \pi - \angle_{\text{Inscribed}2}$$

[Open Calculator !\[\]\(0d7ca0919e6c47bbd874bfa0189fe22e_img.jpg\)](#)

$$\text{ex } 85^\circ = \pi - 95^\circ$$



Radius of Circle

22) Radius of Circle given Arc Length

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

[Open Calculator !\[\]\(96cc62f861fdd6e50510c0224a756dff_img.jpg\)](#)

$$\text{ex } 5.05551\text{m} = \frac{15\text{m}}{170^\circ}$$

23) Radius of Circle given Area

$$\text{fx } r = \sqrt{\frac{A}{\pi}}$$

[Open Calculator !\[\]\(f95dab70c751fda7d824b8b03650f7aa_img.jpg\)](#)

$$\text{ex } 5.046265\text{m} = \sqrt{\frac{80\text{m}^2}{\pi}}$$

24) Radius of Circle given Circumference

$$\text{fx } r = \frac{C}{2 \cdot \pi}$$

[Open Calculator !\[\]\(e9474ce1d70442456f8fe9c393ea149c_img.jpg\)](#)

$$\text{ex } 4.774648\text{m} = \frac{30\text{m}}{2 \cdot \pi}$$



25) Radius of Circle given Diameter

[Open Calculator !\[\]\(666e09182d4cd268646ea700ea60dcdf_img.jpg\)](#)

$$\text{fx } r = \frac{D}{2}$$

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






Variables Used

- \angle **Central** Central Angle of Circle (Degree)
- \angle **Inscribed** Inscribed Angle of Circle (Degree)
- \angle **Inscribed2** Second Inscribed Angle of Circle (Degree)
- **A** Area of Circle (Square Meter)
- **C** Circumference of Circle (Meter)
- **D** Diameter of Circle (Meter)
- **I_{Arc}** Arc Length of Circle (Meter)
- **I_C** Chord Length of Circle (Meter)
- **I_{Perpendicular}** Perpendicular Length to Chord of Circle (Meter)
- **r** Radius of Circle (Meter)





Constants, Functions, Measurements used

- **Constant:** **pi**, 3.14159265358979323846264338327950288
Archimedes' constant
- **Function:** **sin**, $\sin(\text{Angle})$
Trigonometric sine function
- **Function:** **sqrt**, $\text{sqrt}(\text{Number})$
Square root function
- **Measurement:** **Length** in Meter (m)
Length Unit Conversion 
- **Measurement:** **Area** in Square Meter (m^2)
Area Unit Conversion 
- **Measurement:** **Angle** in Degree ($^\circ$)
Angle Unit Conversion 



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