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Semicircle Formulas

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List of 25 Semicircle Formulas

Semicircle

Arc Length of Semicircle

1) Arc Length of Semicircle

$$fx \quad l_{\text{Arc}} = \pi \cdot r$$

[Open Calculator !\[\]\(de95854c7ee024cfadc48187bbb781b2_img.jpg\)](#)

$$ex \quad 31.41593\text{m} = \pi \cdot 10\text{m}$$

2) Arc Length of Semicircle given Area

$$fx \quad l_{\text{Arc}} = \sqrt{2 \cdot \pi \cdot A}$$

[Open Calculator !\[\]\(6a9b39b98eb945faa14c645ec99e4eaa_img.jpg\)](#)

$$ex \quad 31.70662\text{m} = \sqrt{2 \cdot \pi \cdot 160\text{m}^2}$$

3) Arc Length of Semicircle given Area of Circle

$$fx \quad l_{\text{Arc}} = \sqrt{A_{\text{Circle}} \cdot \pi}$$

[Open Calculator !\[\]\(f1c5da15572e3e09d343161be98f508d_img.jpg\)](#)

$$ex \quad 31.70662\text{m} = \sqrt{320\text{m}^2 \cdot \pi}$$



4) Arc Length of Semicircle given Diameter

$$\text{fx } l_{\text{Arc}} = \frac{\pi}{2} \cdot D$$

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

$$\text{ex } 31.41593\text{m} = \frac{\pi}{2} \cdot 20\text{m}$$

5) Arc Length of Semicircle given Perimeter

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

[Open Calculator !\[\]\(3e2231b1ad3ca8da8658228c00dd08e0_img.jpg\)](#)

$$\text{ex } 30.55077\text{m} = \frac{\pi}{\pi + 2} \cdot 50\text{m}$$

Area of Semicircle

6) Area of Semicircle

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

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

$$\text{ex } 157.0796\text{m}^2 = \frac{\pi}{2} \cdot (10\text{m})^2$$


7) Area of Semicircle given Arc Length

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

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

$$\text{ex } 143.2394\text{m}^2 = \frac{(30\text{m})^2}{2 \cdot \pi}$$



8) Area of Semicircle given Area of Circle 

$$fx \quad A = \frac{A_{\text{Circle}}}{2}$$

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


$$ex \quad 160m^2 = \frac{320m^2}{2}$$

9) Area of Semicircle given Diameter of Semicircle 

$$fx \quad A = \frac{\pi}{8} \cdot D^2$$

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


$$ex \quad 157.0796m^2 = \frac{\pi}{8} \cdot (20m)^2$$

10) Area of Semicircle given Perimeter 

$$fx \quad A = \frac{\pi}{2} \cdot \left(\frac{P}{\pi + 2} \right)^2$$

[Open Calculator !\[\]\(fe3aebe81acea8d45108cd2768939da7_img.jpg\)](#)

$$ex \quad 148.5472m^2 = \frac{\pi}{2} \cdot \left(\frac{50m}{\pi + 2} \right)^2$$


Diameter of Semicircle 11) Diameter of Semicircle 

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

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

$$ex \quad 20m = 2 \cdot 10m$$




12) Diameter of Semicircle given Arc Length 

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

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


$$ex \quad 19.09859m = \frac{2}{\pi} \cdot 30m$$

13) Diameter of Semicircle given Area 

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

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

$$ex \quad 20.18506m = 2 \cdot \sqrt{2 \cdot \frac{160m^2}{\pi}}$$

14) Diameter of Semicircle given Area of Circle 

$$fx \quad D = 2 \cdot \sqrt{\frac{A_{\text{Circle}}}{\pi}}$$

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

$$ex \quad 20.18506m = 2 \cdot \sqrt{\frac{320m^2}{\pi}}$$

15) Diameter of Semicircle given Perimeter 

$$fx \quad D = \frac{2}{\pi + 2} \cdot P$$

[Open Calculator !\[\]\(7bc43b319a082987e20f7bf78f4bab80_img.jpg\)](#)

$$ex \quad 19.44923m = \frac{2}{\pi + 2} \cdot 50m$$



Perimeter of Semicircle

16) Perimeter of Semicircle

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

[Open Calculator !\[\]\(950a62bbddad88d64435fd35607dfc42_img.jpg\)](#)

$$\text{ex } 51.41593\text{m} = (\pi + 2) \cdot 10\text{m}$$

17) Perimeter of Semicircle given Arc Length

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

[Open Calculator !\[\]\(73002692dd5e7a64e60946be3158e719_img.jpg\)](#)

$$\text{ex } 49.09859\text{m} = \frac{\pi + 2}{\pi} \cdot 30\text{m}$$

18) Perimeter of Semicircle given Area

$$\text{fx } P = \pi \cdot \sqrt{\frac{2}{\pi} \cdot A} + 2 \cdot \sqrt{\frac{2}{\pi} \cdot A}$$

[Open Calculator !\[\]\(104fbf564e2e5a8fbd84f31656d114c7_img.jpg\)](#)

$$\text{ex } 51.89168\text{m} = \pi \cdot \sqrt{\frac{2}{\pi} \cdot 160\text{m}^2} + 2 \cdot \sqrt{\frac{2}{\pi} \cdot 160\text{m}^2}$$

19) Perimeter of Semicircle given Area of Circle

$$\text{fx } P = (\pi + 2) \cdot \sqrt{\frac{A_{\text{Circle}}}{\pi}}$$

[Open Calculator !\[\]\(21226b58c700e5231ab98d27101bac58_img.jpg\)](#)

$$\text{ex } 51.89168\text{m} = (\pi + 2) \cdot \sqrt{\frac{320\text{m}^2}{\pi}}$$



20) Perimeter of Semicircle given Diameter

$$\text{fx } P = \left(\frac{\pi}{2} + 1 \right) \cdot D$$

[Open Calculator !\[\]\(9dfdaff1d86ba3c1f8353b4d1b61b8c5_img.jpg\)](#)

$$\text{ex } 51.41593\text{m} = \left(\frac{\pi}{2} + 1 \right) \cdot 20\text{m}$$

Radius of Semicircle

21) Radius of Semicircle given Arc Length

$$\text{fx } r = \frac{l_{\text{Arc}}}{\pi}$$

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

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

22) Radius of Semicircle given Area

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

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

$$\text{ex } 10.09253\text{m} = \sqrt{\frac{2}{\pi} \cdot 160\text{m}^2}$$




23) Radius of Semicircle given Area of Circle 

$$\text{fx } r = \sqrt{\frac{A_{\text{Circle}}}{\pi}}$$

[Open Calculator !\[\]\(6605b201d6f14d9b3bcb8ab5f274d107_img.jpg\)](#)


$$\text{ex } 10.09253\text{m} = \sqrt{\frac{320\text{m}^2}{\pi}}$$

24) Radius of Semicircle given Diameter 

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

[Open Calculator !\[\]\(e8fb589d58dad1692debababa5e928b6_img.jpg\)](#)

$$\text{ex } 10\text{m} = \frac{20\text{m}}{2}$$

25) Radius of Semicircle given Perimeter 

$$\text{fx } r = \frac{P}{\pi + 2}$$

[Open Calculator !\[\]\(4688aadfd656ded00cd6bdfae55089a9_img.jpg\)](#)

$$\text{ex } 9.724613\text{m} = \frac{50\text{m}}{\pi + 2}$$





Variables Used

- **A** Area of Semicircle (*Square Meter*)
- **A_{Circle}** Area of Circle of Semicircle (*Square Meter*)
- **D** Diameter of Semicircle (*Meter*)
- **I_{Arc}** Arc Length of Semicircle (*Meter*)
- **P** Perimeter of Semicircle (*Meter*)
- **r** Radius of Semicircle (*Meter*)



Constants, Functions, Measurements used





















- **Constant:** **pi**, 3.14159265358979323846264338327950288
Archimedes' constant
- **Function:** **sqrt**, sqrt(Number)
Square root function
- **Measurement:** **Length** in Meter (m)
Length Unit Conversion 
- **Measurement:** **Area** in Square Meter (m²)
Area Unit Conversion 



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