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Concave Regular Pentagon Formulas

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List of 12 Concave Regular Pentagon Formulas

Concave Regular Pentagon

Edge Length of Concave Regular Pentagon

1) Edge Length of Concave Regular Pentagon given Area

$$\text{fx } l_e = \sqrt{\frac{4 \cdot A}{\sqrt{25 + 10 \cdot \sqrt{5}} - \sqrt{10 + 2 \cdot \sqrt{5}}}}$$

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

$$\text{ex } 4.969295\text{m} = \sqrt{\frac{4 \cdot 19\text{m}^2}{\sqrt{25 + 10 \cdot \sqrt{5}} - \sqrt{10 + 2 \cdot \sqrt{5}}}}$$

2) Edge Length of Concave Regular Pentagon given Distance of Tips

$$\text{fx } l_e = \frac{2 \cdot d_{\text{Tips}}}{(1 + \sqrt{5})}$$

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

$$\text{ex } 4.944272\text{m} = \frac{2 \cdot 8\text{m}}{(1 + \sqrt{5})}$$



3) Edge Length of Concave Regular Pentagon given Perimeter

$$\text{fx } l_e = \frac{P}{5}$$

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

$$\text{ex } 5\text{m} = \frac{25\text{m}}{5}$$

Area of Concave Regular Pentagon

4) Area of Concave Regular Pentagon

fx

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

$$A = \frac{l_e^2}{4} \cdot \left(\sqrt{25 + 10 \cdot \sqrt{5}} - \sqrt{10 + 2 \cdot \sqrt{5}} \right)$$

$$\text{ex } 19.23552\text{m}^2 = \frac{(5\text{m})^2}{4} \cdot \left(\sqrt{25 + 10 \cdot \sqrt{5}} - \sqrt{10 + 2 \cdot \sqrt{5}} \right)$$

5) Area of Concave Regular Pentagon given Distance of Tips

fx

[Open Calculator !\[\]\(7d1d6890825e83a6a4a51febe2dcc7f3_img.jpg\)](#)

$$A = \left(\frac{d_{\text{Tips}}}{1 + \sqrt{5}} \right)^2 \cdot \left(\sqrt{25 + 10 \cdot \sqrt{5}} - \sqrt{10 + 2 \cdot \sqrt{5}} \right)$$

$$\text{ex } 18.80913\text{m}^2 = \left(\frac{8\text{m}}{1 + \sqrt{5}} \right)^2 \cdot \left(\sqrt{25 + 10 \cdot \sqrt{5}} - \sqrt{10 + 2 \cdot \sqrt{5}} \right)$$



6) Area of Concave Regular Pentagon given Perimeter

fx

Open Calculator 

$$A = \frac{P^2}{100} \cdot \left(\sqrt{25 + 10 \cdot \sqrt{5}} - \sqrt{10 + 2 \cdot \sqrt{5}} \right)$$

ex

$$19.23552\text{m}^2 = \frac{(25\text{m})^2}{100} \cdot \left(\sqrt{25 + 10 \cdot \sqrt{5}} - \sqrt{10 + 2 \cdot \sqrt{5}} \right)$$

Distance of the Tips of Concave Regular Pentagon 7) Distance of Tips of Concave Regular Pentagon

fx

Open Calculator 

$$d_{\text{Tips}} = \frac{1 + \sqrt{5}}{2} \cdot l_e$$

ex

$$8.09017\text{m} = \frac{1 + \sqrt{5}}{2} \cdot 5\text{m}$$

8) Distance of Tips of Concave Regular Pentagon given Area

fx

Open Calculator 

$$d_{\text{Tips}} = \left(1 + \sqrt{5} \right) \cdot \sqrt{\frac{A}{\sqrt{25 + 10 \cdot \sqrt{5}} - \sqrt{10 + 2 \cdot \sqrt{5}}}}$$

ex

$$8.040489\text{m} = \left(1 + \sqrt{5} \right) \cdot \sqrt{\frac{19\text{m}^2}{\sqrt{25 + 10 \cdot \sqrt{5}} - \sqrt{10 + 2 \cdot \sqrt{5}}}}$$



9) Distance of Tips of Concave Regular Pentagon given Perimeter

$$\text{fx } d_{\text{Tips}} = \frac{1 + \sqrt{5}}{10} \cdot P$$

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

$$\text{ex } 8.09017\text{m} = \frac{1 + \sqrt{5}}{10} \cdot 25\text{m}$$

Perimeter of Concave Regular Pentagon

10) Perimeter of Concave Regular Pentagon

$$\text{fx } P = 5 \cdot l_e$$

[Open Calculator !\[\]\(8bba887393ca45b761e5cb49e755e762_img.jpg\)](#)

$$\text{ex } 25\text{m} = 5 \cdot 5\text{m}$$

11) Perimeter of Concave Regular Pentagon given Area

$$\text{fx } P = 10 \cdot \sqrt{\frac{A}{\sqrt{25 + 10 \cdot \sqrt{5}} - \sqrt{10 + 2 \cdot \sqrt{5}}}}$$

[Open Calculator !\[\]\(0fb13ad0bfa3d86868cdd3883e5665b3_img.jpg\)](#)

$$\text{ex } 24.84648\text{m} = 10 \cdot \sqrt{\frac{19\text{m}^2}{\sqrt{25 + 10 \cdot \sqrt{5}} - \sqrt{10 + 2 \cdot \sqrt{5}}}}$$



12) Perimeter of Concave Regular Pentagon given Distance of Tips

fx
$$P = \frac{10}{1 + \sqrt{5}} \cdot d_{\text{Tips}}$$

[Open Calculator !\[\]\(d3fb9f94af8b26d1c844efa9a98805b0_img.jpg\)](#)

ex
$$24.72136\text{m} = \frac{10}{1 + \sqrt{5}} \cdot 8\text{m}$$



Variables Used

- **A** Area of Concave Regular Pentagon (*Square Meter*)
- **d_{Tips}** Distance of Tips of Concave Regular Pentagon (*Meter*)
- **l_e** Edge Length of Concave Regular Pentagon (*Meter*)
- **P** Perimeter of Concave Regular Pentagon (*Meter*)



Constants, Functions, Measurements used

- **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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