

Important Concave Regular Pentagon Formulas PDF



Formulas
Examples
with Units

List of 12 Important Concave Regular Pentagon Formulas

1) Edge Length of Concave Regular Pentagon Formulas

1.1) Edge Length of Concave Regular Pentagon given Area Formula

Formula

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

Example with Units

$$4.9693 \text{ m} = \sqrt{\frac{4 \cdot 19 \text{ m}^2}{\sqrt{25 + 10 \cdot \sqrt{5}} - \sqrt{10 + 2 \cdot \sqrt{5}}}}$$

Evaluate Formula

1.2) Edge Length of Concave Regular Pentagon given Distance of Tips Formula

Formula

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

Example with Units

$$4.9443 \text{ m} = \frac{2 \cdot 8 \text{ m}}{(1 + \sqrt{5})}$$

Evaluate Formula

1.3) Edge Length of Concave Regular Pentagon given Perimeter Formula

Formula

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

Example with Units

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

Evaluate Formula

2) Area of Concave Regular Pentagon Formulas

2.1) Area of Concave Regular Pentagon Formula

Formula

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

Example with Units

$$19.2355 \text{ m}^2 = \frac{5 \text{ m}^2}{4} \cdot (\sqrt{25 + 10 \cdot \sqrt{5}} - \sqrt{10 + 2 \cdot \sqrt{5}})$$

Evaluate Formula



2.2) Area of Concave Regular Pentagon given Distance of Tips Formula

Formula

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

Evaluate Formula 

Example with Units

$$18.8091 \text{ m}^2 = \left(\frac{8 \text{ m}}{1 + \sqrt{5}} \right)^2 \cdot \left(\sqrt{25 + 10 \cdot \sqrt{5}} - \sqrt{10 + 2 \cdot \sqrt{5}} \right)$$

2.3) Area of Concave Regular Pentagon given Perimeter Formula

Formula

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

Evaluate Formula 

Example with Units

$$19.2355 \text{ m}^2 = \frac{25 \text{ m}^2}{100} \cdot \left(\sqrt{25 + 10 \cdot \sqrt{5}} - \sqrt{10 + 2 \cdot \sqrt{5}} \right)$$

3) Distance of the Tips of Concave Regular Pentagon Formulas

3.1) Distance of Tips of Concave Regular Pentagon Formula

Formula

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

Example with Units

$$8.0902 \text{ m} = \frac{1 + \sqrt{5}}{2} \cdot 5 \text{ m}$$

Evaluate Formula 

3.2) Distance of Tips of Concave Regular Pentagon given Area Formula

Formula

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

Evaluate Formula 

Example with Units

$$8.0405 \text{ m} = (1 + \sqrt{5}) \cdot \sqrt{\frac{19 \text{ m}^2}{\sqrt{25 + 10 \cdot \sqrt{5}} - \sqrt{10 + 2 \cdot \sqrt{5}}}}$$

3.3) Distance of Tips of Concave Regular Pentagon given Perimeter Formula

Formula

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

Example with Units

$$8.0902 \text{ m} = \frac{1 + \sqrt{5}}{10} \cdot 25 \text{ m}$$

Evaluate Formula 



4) Perimeter of Concave Regular Pentagon Formulas

4.1) Perimeter of Concave Regular Pentagon Formula

Formula

$$P = 5 \cdot l_e$$

Example with Units

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

Evaluate Formula 

4.2) Perimeter of Concave Regular Pentagon given Area Formula

Formula

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

Evaluate Formula 

Example with Units

$$24.8465 \text{ m} = 10 \cdot \sqrt{\frac{19 \text{ m}^2}{\sqrt{25 + 10 \cdot \sqrt{5}} - \sqrt{10 + 2 \cdot \sqrt{5}}}}$$

4.3) Perimeter of Concave Regular Pentagon given Distance of Tips Formula

Formula

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

Example with Units

$$24.7214 \text{ m} = \frac{10}{1 + \sqrt{5}} \cdot 8 \text{ m}$$



Evaluate Formula 



Variables used in list of Concave Regular Pentagon Formulas above

- **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 in list of Concave Regular Pentagon Formulas above

- **Functions:** **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 (m²)
Area Unit Conversion 





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