

Important Formulas of Heptagon PDF



Formulas
Examples
with Units

List of 25
Important Formulas of Heptagon

1) Area of Heptagon Formulas

1.1) Area of Heptagon Formula

Formula

$$A = \frac{7 \cdot S^2}{4 \cdot \tan\left(\frac{\pi}{7}\right)}$$

Example with Units

$$363.3912 \text{ m}^2 = \frac{7 \cdot 10 \text{ m}^2}{4 \cdot \tan\left(\frac{3.1416}{7}\right)}$$

Evaluate Formula 

1.2) Area of Heptagon given Height Formula

Formula

$$A = \frac{7}{4} \cdot \frac{\left(2 \cdot h \cdot \tan\left(\frac{\pi}{7}\right)\right)^2}{\tan\left(\frac{\pi}{7}\right)}$$

Example with Units

$$366.5022 \text{ m}^2 = \frac{7}{4} \cdot \frac{\left(2 \cdot 22 \text{ m} \cdot \tan\left(\frac{3.1416}{7}\right)\right)^2}{\tan\left(\frac{3.1416}{7}\right)}$$

Evaluate Formula 

1.3) Area of Heptagon given Perimeter Formula

Formula

$$A = \frac{7}{4} \cdot \frac{\left(\frac{P}{7}\right)^2}{\tan\left(\frac{\pi}{7}\right)}$$

Example with Units

$$363.3912 \text{ m}^2 = \frac{7}{4} \cdot \frac{\left(\frac{70 \text{ m}}{7}\right)^2}{\tan\left(\frac{3.1416}{7}\right)}$$

Evaluate Formula 

1.4) Area of Triangle of Heptagon given Inradius Formula

Formula

$$A_{\text{Triangle}} = \frac{1}{2} \cdot S \cdot r_i$$

Example with Units

$$55 \text{ m}^2 = \frac{1}{2} \cdot 10 \text{ m} \cdot 11 \text{ m}$$

Evaluate Formula 



2) Diagonal of Heptagon Formulas ↻

2.1) Long Diagonal of Heptagon Formula ↻

Formula

$$d_{\text{Long}} = \frac{S}{2 \cdot \sin\left(\frac{\pi}{7}\right)}$$

Example with Units

$$22.4698 \text{ m} = \frac{10 \text{ m}}{2 \cdot \sin\left(\frac{3.1416}{7}\right)}$$

Evaluate Formula ↻

2.2) Long Diagonal of Heptagon given Width Formula ↻

Formula

$$d_{\text{Long}} = \frac{w}{1}$$

Example with Units

$$23 \text{ m} = \frac{23 \text{ m}}{1}$$

Evaluate Formula ↻

2.3) Short Diagonal of Heptagon Formula ↻

Formula

$$d_{\text{Short}} = 2 \cdot S \cdot \cos\left(\frac{\pi}{7}\right)$$

Example with Units

$$18.0194 \text{ m} = 2 \cdot 10 \text{ m} \cdot \cos\left(\frac{3.1416}{7}\right)$$

Evaluate Formula ↻

2.4) Short Diagonal of Heptagon given Perimeter Formula ↻

Formula

$$d_{\text{Short}} = 2 \cdot \left(\frac{P}{7}\right) \cdot \cos\left(\frac{\pi}{7}\right)$$

Example with Units

$$18.0194 \text{ m} = 2 \cdot \left(\frac{70 \text{ m}}{7}\right) \cdot \cos\left(\frac{3.1416}{7}\right)$$

Evaluate Formula ↻

3) Height of Heptagon Formulas ↻

3.1) Height of Heptagon Formula ↻

Formula

$$h = \frac{S}{2 \cdot \tan\left(\frac{\pi}{7}\right)}$$

Example with Units

$$21.9064 \text{ m} = \frac{10 \text{ m}}{2 \cdot \tan\left(\frac{3.1416}{7}\right)}$$

Evaluate Formula ↻

3.2) Height of Heptagon given Perimeter Formula ↻

Formula

$$h = \frac{\frac{P}{7}}{2 \cdot \tan\left(\frac{\pi}{7}\right)}$$

Example with Units

$$21.9064 \text{ m} = \frac{\frac{70 \text{ m}}{7}}{2 \cdot \tan\left(\frac{3.1416}{7}\right)}$$

Evaluate Formula ↻



3.3) Height of Heptagon given Width Formula ↻

Formula

$$h = w \cdot \frac{\sin\left(\frac{\pi}{7}\right)}{\tan\left(\frac{\pi}{7}\right)}$$

Example with Units

$$22.4233\text{m} = 23\text{m} \cdot \frac{\sin\left(\frac{3.1416}{7}\right)}{\tan\left(\frac{3.1416}{7}\right)}$$

Evaluate Formula ↻

4) Perimeter of Heptagon Formulas ↻

4.1) Perimeter of Heptagon Formula ↻

Formula

$$P = 7 \cdot S$$

Example with Units

$$70\text{m} = 7 \cdot 10\text{m}$$

Evaluate Formula ↻

4.2) Perimeter of Heptagon given Circumradius Formula ↻

Formula

$$P = 14 \cdot r_c \cdot \sin\left(\frac{\pi}{7}\right)$$

Example with Units

$$72.8925\text{m} = 14 \cdot 12\text{m} \cdot \sin\left(\frac{3.1416}{7}\right)$$

Evaluate Formula ↻

4.3) Perimeter of Heptagon given Inradius Formula ↻

Formula

$$P = 14 \cdot r_i \cdot \tan\left(\frac{\pi}{7}\right)$$

Example with Units

$$74.1625\text{m} = 14 \cdot 11\text{m} \cdot \tan\left(\frac{3.1416}{7}\right)$$

Evaluate Formula ↻

5) Radius of Heptagon Formulas ↻

5.1) Circumradius of Heptagon Formula ↻

Formula

$$r_c = \frac{S}{2 \cdot \sin\left(\frac{\pi}{7}\right)}$$

Example with Units

$$11.5238\text{m} = \frac{10\text{m}}{2 \cdot \sin\left(\frac{3.1416}{7}\right)}$$

Evaluate Formula ↻

5.2) Circumradius of Heptagon given Area Formula ↻

Formula

$$r_c = \frac{\sqrt{\frac{4 \cdot A \cdot \tan\left(\frac{\pi}{7}\right)}{7}}}{2 \cdot \sin\left(\frac{\pi}{7}\right)}$$

Example with Units

$$11.5493\text{m} = \frac{\sqrt{\frac{4 \cdot 365\text{m}^2 \cdot \tan\left(\frac{3.1416}{7}\right)}{7}}}{2 \cdot \sin\left(\frac{3.1416}{7}\right)}$$

Evaluate Formula ↻



5.3) Inradius of Heptagon Formula

Formula

$$r_i = \frac{S}{2 \cdot \tan\left(\frac{\pi}{7}\right)}$$

Example with Units

$$10.3826\text{m} = \frac{10\text{m}}{2 \cdot \tan\left(\frac{3.1416}{7}\right)}$$

Evaluate Formula 

5.4) Inradius of Heptagon given Area of Triangle Formula

Formula

$$r_i = \frac{2 \cdot A_{\text{Triangle}}}{S}$$

Example with Units

$$10\text{m} = \frac{2 \cdot 50\text{m}^2}{10\text{m}}$$

Evaluate Formula 

6) Side of Heptagon Formulas

6.1) Side of Heptagon given Area Formula

Formula

$$S = \sqrt{\frac{4 \cdot A \cdot \tan\left(\frac{\pi}{7}\right)}{7}}$$

Example with Units

$$10.0221\text{m} = \sqrt{\frac{4 \cdot 365\text{m}^2 \cdot \tan\left(\frac{3.1416}{7}\right)}{7}}$$

Evaluate Formula 

6.2) Side of Heptagon given Area of Triangle and Inradius Formula

Formula

$$S = \frac{2 \cdot A_{\text{Triangle}}}{r_i}$$

Example with Units

$$9.0909\text{m} = \frac{2 \cdot 50\text{m}^2}{11\text{m}}$$

Evaluate Formula 

6.3) Side of Heptagon given Circumradius Formula

Formula

$$S = 2 \cdot r_c \cdot \sin\left(\frac{\pi}{7}\right)$$

Example with Units

$$10.4132\text{m} = 2 \cdot 12\text{m} \cdot \sin\left(\frac{3.1416}{7}\right)$$

Evaluate Formula 

6.4) Side of Heptagon given Height Formula

Formula

$$S = 2 \cdot h \cdot \tan\left(\frac{\left(\frac{\pi}{2}\right)}{7}\right)$$

Example with Units

$$10.0427\text{m} = 2 \cdot 22\text{m} \cdot \tan\left(\frac{\left(\frac{3.1416}{2}\right)}{7}\right)$$

Evaluate Formula 



7) Width of Heptagon Formulas

7.1) Width of Heptagon Formula

Formula

$$w = \frac{S}{2 \cdot \sin\left(\frac{\left(\frac{\pi}{2}\right)}{7}\right)}$$

Example with Units

$$22.4698 \text{ m} = \frac{10 \text{ m}}{2 \cdot \sin\left(\frac{\left(\frac{3.1416}{2}\right)}{7}\right)}$$

Evaluate Formula 

7.2) Width of Heptagon given Area Formula

Formula

$$w = \frac{\sqrt{\frac{4 \cdot \tan\left(\frac{\pi}{7}\right)}{7} \cdot A}}{2 \cdot \sin\left(\frac{\left(\frac{\pi}{2}\right)}{7}\right)}$$

Example with Units

$$22.5195 \text{ m} = \frac{\sqrt{\frac{4 \cdot \tan\left(\frac{3.1416}{7}\right)}{7} \cdot 365 \text{ m}^2}}{2 \cdot \sin\left(\frac{\left(\frac{3.1416}{2}\right)}{7}\right)}$$

Evaluate Formula 

7.3) Width of Heptagon given Perimeter Formula

Formula

$$w = \frac{P}{14 \cdot \sin\left(\frac{\left(\frac{\pi}{2}\right)}{7}\right)}$$

Example with Units

$$22.4698 \text{ m} = \frac{70 \text{ m}}{14 \cdot \sin\left(\frac{\left(\frac{3.1416}{2}\right)}{7}\right)}$$



Evaluate Formula 






Variables used in list of Important Formulas of Heptagon above

- **A** Area of Heptagon (Square Meter)
- **A_{Triangle}** Area of Triangle of Heptagon (Square Meter)
- **d_{Long}** Long Diagonal of Heptagon (Meter)
- **d_{Short}** Short Diagonal of Heptagon (Meter)
- **h** Height of Heptagon (Meter)
- **P** Perimeter of Heptagon (Meter)
- **r_c** Circumradius of Heptagon (Meter)
- **r_i** Inradius of Heptagon (Meter)
- **S** Side of Heptagon (Meter)
- **w** Width of Heptagon (Meter)

Constants, Functions, Measurements used in list of Important Formulas of Heptagon above

- **constant(s):** pi, 3.14159265358979323846264338327950288
Archimedes' constant
- **Functions:** cos, cos(Angle)
Cosine of an angle is the ratio of the side adjacent to the angle to the hypotenuse of the triangle.
- **Functions:** sin, sin(Angle)
Sine is a trigonometric function that describes the ratio of the length of the opposite side of a right triangle to the length of the hypotenuse.
- **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.
- **Functions:** tan, tan(Angle)
The tangent of an angle is a trigonometric ratio of the length of the side opposite an angle to the length of the side adjacent to an angle in a right triangle.
- **Measurement:** Length in Meter (m)
Length Unit Conversion 
- **Measurement:** Area in Square Meter (m²)
Area Unit Conversion 



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