

Important Pyramids Formulas PDF



**Formulas
Examples
with Units**

**List of 18
Important Pyramids Formulas**

1) Hexagonal Pyramid Formulas

1.1) Base Area of Hexagonal Pyramid Formula

Formula

$$A_{\text{Base(Hexagon)}} = \frac{3 \cdot \sqrt{3}}{2} \cdot l_{\text{e(Base)Hexagon}}^2$$

Example with Units

$$259.8076 \text{ m}^2 = \frac{3 \cdot \sqrt{3}}{2} \cdot 10 \text{ m}^2$$

Evaluate Formula 

1.2) Lateral Surface Area of Hexagonal Pyramid Formula

Formula

$$LSA_{\text{Hexagon}} = 3 \cdot h_{\text{slant(Hexagon)}} \cdot l_{\text{e(Base)Hexagon}}$$

Example with Units

$$510 \text{ m}^2 = 3 \cdot 17 \text{ m} \cdot 10 \text{ m}$$

Evaluate Formula 

1.3) Total Surface Area of Hexagonal Pyramid Formula

Formula

$$TSA_{\text{Hexagon}} = \left(3 \cdot h_{\text{slant(Hexagon)}} \cdot l_{\text{e(Base)Hexagon}} \right) + \left(\frac{3 \cdot \sqrt{3}}{2} \cdot l_{\text{e(Base)Hexagon}}^2 \right)$$

Evaluate Formula 

Example with Units

$$769.8076 \text{ m}^2 = \left(3 \cdot 17 \text{ m} \cdot 10 \text{ m} \right) + \left(\frac{3 \cdot \sqrt{3}}{2} \cdot 10 \text{ m}^2 \right)$$

1.4) Volume of Hexagonal Pyramid Formula

Formula

$$V_{\text{Hexagon}} = \frac{\sqrt{3}}{2} \cdot l_{\text{e(Base)Hexagon}}^2 \cdot h_{\text{Hexagon}}$$

Example with Units

$$1299.0381 \text{ m}^3 = \frac{\sqrt{3}}{2} \cdot 10 \text{ m}^2 \cdot 15 \text{ m}$$

Evaluate Formula 



2) Pentagonal Pyramid Formulas ↗

2.1) Base Area of Pentagonal Pyramid Formula ↗

Formula

$$A_{\text{Base(Pentagon)}} = \frac{1}{4} \cdot \sqrt{5 \cdot \left(5 + \left(2 \cdot \sqrt{5} \right) \right)} \cdot l_{\text{e(Base)Pentagon}}^2$$

Evaluate Formula ↗

Example with Units

$$172.0477 \text{ m}^2 = \frac{1}{4} \cdot \sqrt{5 \cdot \left(5 + \left(2 \cdot \sqrt{5} \right) \right)} \cdot 10 \text{ m}^2$$

2.2) Lateral Surface Area of Pentagonal Pyramid Formula ↗

Formula

$$LSA_{\text{Pentagon}} = \frac{5}{2} \cdot l_{\text{e(Base)Pentagon}} \cdot h_{\text{slant(Pentagon)}}$$

Example with Units

$$425 \text{ m}^2 = \frac{5}{2} \cdot 10 \text{ m} \cdot 17 \text{ m}$$

Evaluate Formula ↗

2.3) Total Surface Area of Pentagonal Pyramid Formula ↗

Formula

$$TSA_{\text{Pentagon}} = \left(\frac{5}{2} \cdot l_{\text{e(Base)Pentagon}} \cdot h_{\text{slant(Pentagon)}} \right) + \left(\frac{5}{4} \cdot \tan \left(54 \cdot \frac{\pi}{180} \right) \cdot l_{\text{e(Base)Pentagon}}^2 \right)$$

Evaluate Formula ↗

Example with Units

$$597.0477 \text{ m}^2 = \left(\frac{5}{2} \cdot 10 \text{ m} \cdot 17 \text{ m} \right) + \left(\frac{5}{4} \cdot \tan \left(54 \cdot \frac{3.1416}{180} \right) \cdot 10 \text{ m}^2 \right)$$

2.4) Volume of Pentagonal Pyramid Formula ↗

Formula

$$V_{\text{Pentagon}} = \frac{5}{12} \cdot \tan \left(54 \cdot \frac{\pi}{180} \right) \cdot h_{\text{Pentagon}} \cdot l_{\text{e(Base)Pentagon}}^2$$

Evaluate Formula ↗

Example with Units

$$860.2387 \text{ m}^3 = \frac{5}{12} \cdot \tan \left(54 \cdot \frac{3.1416}{180} \right) \cdot 15 \text{ m} \cdot 10 \text{ m}^2$$

3) Regular Pyramid Formulas ↗

3.1) Base Area of Pyramid Formula ↗

Formula

$$A_{\text{Base}} = l_{\text{e(Base)}}^2$$

Example with Units

$$100 \text{ m}^2 = 10 \text{ m}^2$$

Evaluate Formula ↗



3.2) Lateral Surface Area of Pyramid Formula ↻

Formula

$$LSA = l_{e(Base)} \cdot \sqrt{(4 \cdot h^2) + l_{e(Base)}^2}$$

Example with Units

$$316.2278 m^2 = 10 m \cdot \sqrt{(4 \cdot 15 m^2) + 10 m^2}$$

Evaluate Formula ↻

3.3) Total Surface Area of Pyramid Formula ↻

Formula

$$TSA = l_{e(Base)}^2 + \left(l_{e(Base)} \cdot \sqrt{(4 \cdot h^2) + l_{e(Base)}^2} \right)$$

Example with Units

$$416.2278 m^2 = 10 m^2 + \left(10 m \cdot \sqrt{(4 \cdot 15 m^2) + 10 m^2} \right)$$

Evaluate Formula ↻

3.4) Volume of Pyramid Formula ↻

Formula

$$V = \frac{l_{e(Base)}^2 \cdot h}{3}$$

Example with Units

$$500 m^3 = \frac{10 m^2 \cdot 15 m}{3}$$

Evaluate Formula ↻

4) Truncated Pyramid Formulas ↻

4.1) Base Area of Truncated Pyramid Formula ↻

Formula

$$A_{Base(Truncated)} = TSA_{Truncated} - (LSA_{Truncated} + A_{Top})$$

Example with Units

$$100 m^2 = 575 m^2 - (450 m^2 + 25 m^2)$$

Evaluate Formula ↻

4.2) Height of Truncated Pyramid Formula ↻

Formula

$$h_{Truncated} = \frac{3 \cdot V_{Truncated}}{A_{Base(Truncated)} + \sqrt{A_{Top} \cdot A_{Base(Truncated)}} + A_{Top}}$$

Example with Units

$$15 m = \frac{3 \cdot 875 m^3}{100 m^2 + \sqrt{25 m^2 \cdot 100 m^2} + 25 m^2}$$

Evaluate Formula ↻



4.3) Lateral Surface Area of Truncated Pyramid Formula ↻

[Evaluate Formula ↻](#)**Formula**

$$LSA_{\text{Truncated}} = 2 \cdot \left(\sqrt{A_{\text{Base(Truncated)}}} + \sqrt{A_{\text{Top}}} \right) \cdot \sqrt{\left(\frac{\sqrt{A_{\text{Base(Truncated)}}} - \sqrt{A_{\text{Top}}}}{2} \right)^2 + h_{\text{Truncated}}^2}$$

Example with Units

$$456.2072 \text{ m}^2 = 2 \cdot \left(\sqrt{100 \text{ m}^2} + \sqrt{25 \text{ m}^2} \right) \cdot \sqrt{\left(\frac{\sqrt{100 \text{ m}^2} - \sqrt{25 \text{ m}^2}}{2} \right)^2 + 15 \text{ m}^2}$$

4.4) Top Area of Truncated Pyramid Formula ↻

[Evaluate Formula ↻](#)**Formula**

$$A_{\text{Top}} = TSA_{\text{Truncated}} - \left(A_{\text{Base(Truncated)}} + LSA_{\text{Truncated}} \right)$$

Example with Units

$$25 \text{ m}^2 = 575 \text{ m}^2 - \left(100 \text{ m}^2 + 450 \text{ m}^2 \right)$$

4.5) Total Surface Area of Truncated Pyramid Formula ↻

[Evaluate Formula ↻](#)**Formula**

$$TSA_{\text{Truncated}} = LSA_{\text{Truncated}} + A_{\text{Top}} + A_{\text{Base(Truncated)}}$$

Example with Units

$$575 \text{ m}^2 = 450 \text{ m}^2 + 25 \text{ m}^2 + 100 \text{ m}^2$$

4.6) Volume of Truncated Pyramid Formula ↻

[Evaluate Formula ↻](#)**Formula**

$$V_{\text{Truncated}} = \frac{1}{3} \cdot h_{\text{Truncated}} \cdot \left(A_{\text{Base(Truncated)}} + \sqrt{A_{\text{Top}} \cdot A_{\text{Base(Truncated)}}} + A_{\text{Top}} \right)$$

Example with Units

$$875 \text{ m}^3 = \frac{1}{3} \cdot 15 \text{ m} \cdot \left(100 \text{ m}^2 + \sqrt{25 \text{ m}^2 \cdot 100 \text{ m}^2} + 25 \text{ m}^2 \right)$$



Variables used in list of Pyramids Formulas above

- **A_{Base}** Base Area of Pyramid (Square Meter)
- **A_{Base(Hexagon)}** Base Area of Hexagonal Pyramid (Square Meter)
- **A_{Base(Pentagon)}** Base Area of Pentagonal Pyramid (Square Meter)
- **A_{Base(Truncated)}** Base Area of Truncated Pyramid (Square Meter)
- **A_{Top}** Top Area of Truncated Pyramid (Square Meter)
- **h** Height of Pyramid (Meter)
- **h_{Hexagon}** Height of Hexagonal Pyramid (Meter)
- **h_{Pentagon}** Height of Pentagonal Pyramid (Meter)
- **h_{slant(Hexagon)}** Slant Height of Hexagonal Pyramid (Meter)
- **h_{slant(Pentagon)}** Slant Height of Pentagonal Pyramid (Meter)
- **h_{Truncated}** Height of Truncated Pyramid (Meter)
- **l_{e(Base)}** Edge Length of Base of Pyramid (Meter)
- **l_{e(Base)Hexagon}** Edge Length of Base of Hexagonal Pyramid (Meter)
- **l_{e(Base)Pentagon}** Edge Length of Base of Pentagonal Pyramid (Meter)
- **LSA** Lateral Surface Area of Pyramid (Square Meter)
- **LSA_{Hexagon}** Lateral Surface Area of Hexagonal Pyramid (Square Meter)
- **LSA_{Pentagon}** Lateral Surface Area of Pentagonal Pyramid (Square Meter)
- **LSA_{Truncated}** Lateral Surface Area of Truncated Pyramid (Square Meter)
- **TSA** Total Surface Area of Pyramid (Square Meter)
- **TSA_{Hexagon}** Total Surface Area of Hexagonal Pyramid (Square Meter)

Constants, Functions, Measurements used in list of Pyramids Formulas above

- **constant(s):** pi, 3.14159265358979323846264338327950288
Archimedes' constant
- **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:** Volume in Cubic Meter (m³)
Volume Unit Conversion 
- **Measurement:** Area in Square Meter (m²)
Area Unit Conversion 



- **TSA_{Pentagon}** Total Surface Area of Pentagonal Pyramid (Square Meter)
- **TSA_{Truncated}** Total Surface Area of Truncated Pyramid (Square Meter)
- **V** Volume of Pyramid (Cubic Meter)
- **V_{Hexagon}** Volume of Hexagonal Pyramid (Cubic Meter)
- **V_{Pentagon}** Volume of Pentagonal Pyramid (Cubic Meter)
- **V_{Truncated}** Volume of Truncated Pyramid (Cubic Meter)



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- **Important Small Stellated Dodecahedron Formulas** 
- **Important Solid of Revolution Formulas** 
- **Important Sphere Formulas** 
- **Important Spherical Cap Formulas** 
- **Important Spherical Corner Formulas** 
- **Important Spherical Ring Formulas** 
- **Important Spherical Sector Formulas** 
- **Important Spherical Segment Formulas** 
- **Important Spherical Wedge Formulas** 
- **Important Square Pillar Formulas** 
- **Important Star Pyramid Formulas** 
- **Important Stellated Octahedron Formulas** 
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- **Important Trirectangular Tetrahedron Formulas** 
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