Important Obelisk Formulas PDF

Formulas
Examples
with Units

List of 16
Important Obelisk Formulas

1) Edge Length of Obelisk Formulas

1.1) Base Edge Length of Obelisk Formula

Evaluate Formula

Formula

$$l_{e(Base)} = \sqrt{TSA - LSA}$$

Example with Units

$$15\,m = \sqrt{1375\,m^2 - 1150\,m^2}$$

2) Height of Obelisk Formulas

2.1) Frustum Height of Obelisk Formula

Evaluate Formula

Formula

$$h_{Frustum} = h - h_{Pyramid}$$

Example with Units

$$20\,m = 25\,m - 5\,m$$

2.2) Height of Obelisk Formula

Evaluate Formula

Formula

$$h = h_{Frustum} + h_{Pyramid}$$

Example with Units

$$25\,m = 20\,m + 5\,m$$

2.3) Pyramidal Height of Obelisk Formula

Evaluate Formula

Formula

$$h_{Pyramid} = h - h_{Frustum}$$

Example with Units

$$5\,m = 25\,m - 20\,m$$

2.4) Pyramidal Height of Obelisk given Volume and Frustum Height Formula

Evaluate Formula

Formula

$$h_{Pyramid} = \frac{(3 \cdot V) - \left(h_{Frustum} \cdot \left(l_{e(Base)}^2 + l_{e(Transition)}^2 + \sqrt{l_{e(Base)}^2 \cdot l_{e(Transition)}^2}\right)\right)}{l_{e(Transition)}^2}$$

Example with Units

$$4.9\,m = \frac{(3 \cdot 3330\,m^3) - \left(20\,m \cdot \left(15\,m^2 + 10\,m^2 + \sqrt{15\,m^2 \cdot 10\,m^2}\right)\right)}{10\,m^2}$$

3) Surface Area of Obelisk Formulas

3.1) Lateral Surface Area of Obelisk Formulas

3.1.1) Lateral Surface Area of Obelisk given Frustum Height and Height of Obelisk Formula

Evaluate Formula

Formula

$$LSA = \left((l_{e(Base)} + l_{e(Transition)}) \cdot \sqrt{(l_{e(Base)} - l_{e(Transition)})^2 + (4 \cdot h_{Frustum}^2)}\right) + \left(l_{e(Transition)} \cdot \sqrt{\left(4 \cdot (h - h_{Frustum})^2\right) + l_{e(Transition)}^2}\right)$$

Example with Units

$$1149.2036\,m^2 = \left((15\,m + 10\,m) \cdot \sqrt{(15\,m - 10\,m)^2 + (4 \cdot 20\,m^2)}\right) + \left(10\,m \cdot \sqrt{\left(4 \cdot (25\,m - 20\,m)^2\right) + 10\,m^2}\right)$$

3.1.2) Lateral Surface Area of Obelisk given Frustum Height and Pyramidal Height Formula

Evaluate Formula

Formula

$$LSA = \left(\left(l_{e(Base)} + l_{e(Transition)} \right) \cdot \sqrt{\left(l_{e(Base)} - l_{e(Transition)} \right)^2 + \left(4 \cdot h_{Frustum}^2 \right)} \right) + \left(l_{e(Transition)} \cdot \sqrt{\left(4 \cdot h_{Pyramid}^2 \right) + l_{e(Transition)}^2} \right)$$

Example with Units

$$1149.2036\,\text{m}^2 = \left(\left(15\,\text{m} + 10\,\text{m} \right) \cdot \sqrt{\left(15\,\text{m} - 10\,\text{m} \right)^2 + \left(4 \cdot 20\,\text{m}^2 \right)} \right) + \left(10\,\text{m} \cdot \sqrt{\left(4 \cdot 5\,\text{m}^2 \right) + 10\,\text{m}^2} \right)$$

3.1.3) Lateral Surface Area of Obelisk given Pyramidal Height and Height of Obelisk Formula

Evaluate Formula

Formula

$$LSA = \left(\left(l_{e(Base)} + l_{e(Transition)} \right) \cdot \sqrt{\left(l_{e(Base)} - l_{e(Transition)} \right)^2 + \left(4 \cdot \left(h - h_{Pyramid} \right)^2 \right)} \right) + \left(l_{e(Transition)} \cdot \sqrt{\left(4 \cdot h_{Pyramid}^2 \right) + l_{e(Transition)}^2} \right)$$

Example with Units

$$1149.2036\,\text{m}^2 = \left(\left(15\,\text{m} + 10\,\text{m} \right) \cdot \sqrt{\left(15\,\text{m} - 10\,\text{m} \right)^2 + \left(4 \cdot \left(25\,\text{m} - 5\,\text{m} \right)^2 \right)} \right) + \left(10\,\text{m} \cdot \sqrt{\left(4 \cdot 5\,\text{m}^2 \right) + 10\,\text{m}^2} \right)$$

3.1.4) Lateral Surface Area of Obelisk given Total Surface Area and Base Edge Length Formula

Evaluate Formula

Formula

$$LSA = TSA - l_{e(Base)}^2$$

Example with Units

$$1150\,\text{m}^2 = 1375\,\text{m}^2 - 15\,\text{m}^2$$

3.2) Total Surface Area of Obelisk Formulas

3.2.1) Total Surface Area of Obelisk Formula

Evaluate Formula

Formula

$$TSA = l_{e(Base)}^2 + LSA$$

Example with Units

$$1375\,\text{m}^2 = 15\,\text{m}^2 + 1150\,\text{m}^2$$

4) Surface to Volume Ratio of Obelisk Formulas

4.1) Surface to Volume Ratio of Obelisk Formula

Evaluate Formula

Formula

$$R_{A/V} = \frac{l_{e(Base)}^2 + LSA}{\frac{\left(h_{Frustum} \cdot \left(l_{e(Base)}^2 + l_{e(Transition)}^2 + \sqrt{l_{e(Base)}^2 \cdot l_{e(Transition)}^2} \right) \right) + \left(l_{e(Transition)}^2 \cdot h_{Pyramid} \right)}{3}}$$

Example with Units

$$0.4125\,\text{m}^{-1} = \frac{15\,\text{m}^2 + 1150\,\text{m}^2}{\frac{\left(20\,\text{m} \cdot \left(15\,\text{m}^2 + 10\,\text{m}^2 + \sqrt{15\,\text{m}^2 \cdot 10\,\text{m}^2} \right) \right) + \left(10\,\text{m}^2 \cdot 5\,\text{m} \right)}{3}}$$

4.2) Surface to Volume Ratio of Obelisk given Frustum Height and Height of Obelisk Formula

Evaluate Formula

Formula

$$R_{A/V} = \frac{l_{e(Base)}^2 + LSA}{\frac{\left(\left(h - h_{Pyramid} \right) \cdot \left(l_{e(Base)}^2 + l_{e(Transition)}^2 + \sqrt{l_{e(Base)}^2 \cdot l_{e(Transition)}^2} \right) \right) + \left(l_{e(Transition)}^2 \cdot h_{Pyramid} \right)}{3}}$$

Example with Units

$$0.4125\,\text{m}^{-1} = \frac{15\,\text{m}^2 + 1150\,\text{m}^2}{\frac{\left(\left(25\,\text{m} - 5\,\text{m} \right) \cdot \left(15\,\text{m}^2 + 10\,\text{m}^2 + \sqrt{15\,\text{m}^2 \cdot 10\,\text{m}^2} \right) \right) + \left(10\,\text{m}^2 \cdot 5\,\text{m} \right)}{3}}$$

4.3) Surface to Volume Ratio of Obelisk given Pyramidal Height and Height of Obelisk Formula

Evaluate Formula

Formula

$$R_{A/V} = \frac{l_{e(Base)}^{2} + LSA}{\frac{\left(h_{Frustum} \cdot \left(l_{e(Base)}^{2} + l_{e(Transition)}^{2} + \sqrt{l_{e(Base)}^{2} \cdot l_{e(Transition)}^{2}}\right)\right) + \left(l_{e(Transition)}^{2} \cdot \left(h - h_{Frustum}\right)\right)}{3}}$$

Example with Units

$$0.4125\,\text{m}^{-1} = \frac{15\,\text{m}^{2} + 1150\,\text{m}^{2}}{\frac{\left(20\,\text{m} \cdot \left(15\,\text{m}^{2} + 10\,\text{m}^{2} + \sqrt{15\,\text{m}^{2} \cdot 10\,\text{m}^{2}}\right)\right) + \left(10\,\text{m}^{2} \cdot \left(25\,\text{m} - 20\,\text{m}\right)\right)}{3}}$$

5) Volume of Obelisk Formulas

5.1) Volume of Obelisk Formula

Evaluate Formula

Formula

$$V = \frac{\left(h_{Frustum} \cdot \left(l_{e(Base)}^{2} + l_{e(Transition)}^{2} + \sqrt{l_{e(Base)}^{2} \cdot l_{e(Transition)}^{2}}\right)\right) + \left(l_{e(Transition)}^{2} \cdot h_{Pyramid}\right)}{3}$$

Example with Units

$$3333.3333\,\text{m}^{3} = \frac{\left(20\,\text{m} \cdot \left(15\,\text{m}^{2} + 10\,\text{m}^{2} + \sqrt{15\,\text{m}^{2} \cdot 10\,\text{m}^{2}}\right)\right) + \left(10\,\text{m}^{2} \cdot 5\,\text{m}\right)}{3}$$

5.2) Volume of Obelisk given Frustum Height and Height of Obelisk Formula

Evaluate Formula

Formula

$$V = \frac{\left(h_{Frustum} \cdot \left(l_{e(Base)}^{2} + l_{e(Transition)}^{2} + \sqrt{l_{e(Base)}^{2} \cdot l_{e(Transition)}^{2}}\right)\right) + \left(l_{e(Transition)}^{2} \cdot \left(h - h_{Frustum}\right)\right)}{3}$$

Example with Units

$$3333.3333\,\text{m}^{3} = \frac{\left(20\,\text{m} \cdot \left(15\,\text{m}^{2} + 10\,\text{m}^{2} + \sqrt{15\,\text{m}^{2} \cdot 10\,\text{m}^{2}}\right)\right) + \left(10\,\text{m}^{2} \cdot \left(25\,\text{m} - 20\,\text{m}\right)\right)}{3}$$

5.3) Volume of Obelisk given Pyramidal Height and Height of Obelisk Formula

Evaluate Formula

Formula

$$V = \frac{\left(\left(h - h_{Pyramid}\right) \cdot \left(l_{e(Base)}^{2} + l_{e(Transition)}^{2} + \sqrt{l_{e(Base)}^{2} \cdot l_{e(Transition)}^{2}}\right)\right) + \left(l_{e(Transition)}^{2} \cdot h_{Pyramid}\right)}{3}$$

Example with Units

$$3333.3333\,\text{m}^{3} = \frac{\left(\left(25\,\text{m} - 5\,\text{m}\right) \cdot \left(15\,\text{m}^{2} + 10\,\text{m}^{2} + \sqrt{15\,\text{m}^{2} \cdot 10\,\text{m}^{2}}\right)\right) + \left(10\,\text{m}^{2} \cdot 5\,\text{m}\right)}{3}$$

Variables used in list of Obelisk Formulas above

- **h** Height of Obelisk *(Meter)*
- $h_{Frustum}$ Frustum Height of Obelisk *(Meter)*
- $h_{Pyramid}$ Pyramidal Height of Obelisk *(Meter)*
- $l_{e(Base)}$ Base Edge Length of Obelisk *(Meter)*
- $l_{e(Transition)}$ Transition Edge Length of Obelisk *(Meter)*
- **LSA** Lateral Surface Area of Obelisk *(Square Meter)*
- $R_{A/V}$ Surface to Volume Ratio of Obelisk *(1 per Meter)*
- **TSA** Total Surface Area of Obelisk *(Square Meter)*
- **V** Volume of Obelisk *(Cubic Meter)*

Constants, Functions, Measurements used in list of Obelisk 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: **Volume** in Cubic Meter (m^3)
  Volume Unit Conversion
- Measurement: **Area** in Square Meter (m^2)
  Area Unit Conversion
- Measurement: **Reciprocal Length** in 1 per Meter (m^{-1})
  Reciprocal Length Unit Conversion

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- Important Skewed Three Edged Prism Formulas
- 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
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