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Obelisk Formulas

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List of 16 Obelisk Formulas

Obelisk

Edge Length of Obelisk

1) Base Edge Length of Obelisk

Open Calculator

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

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

Height of Obelisk

2) Frustum Height of Obelisk

Open Calculator

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

ex $$20m = 25m - 5m$$

3) Height of Obelisk

Open Calculator

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

ex $$25m = 20m + 5m$$

4) Pyramidal Height of Obelisk

Open Calculator

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

ex $$5m = 25m - 20m$$

5) Pyramidal Height of Obelisk given Volume and Frustum Height

Open Calculator

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

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

Surface Area of Obelisk

Lateral Surface Area of Obelisk

6) Lateral Surface Area of Obelisk given Frustum Height and Height of Obelisk

fx Open Calculator

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

ex

$$1149.204m^2 = \left((15m + 10m) \cdot \sqrt{(15m - 10m)^2 + \left(4 \cdot (20m)^2\right)}\right) + \left(10m \cdot \sqrt{\left(4 \cdot (25m - 20m)^2\right) + (10m)}\right.$$

7) Lateral Surface Area of Obelisk given Frustum Height and Pyramidal Height

fx Open Calculator

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

ex $1149.204m^2 = \left((15m + 10m) \cdot \sqrt{(15m - 10m)^2 + \left(4 \cdot (20m)^2\right)}\right) + \left(10m \cdot \sqrt{\left(4 \cdot (5m)^2\right) + (10m)^2}\right)$

8) Lateral Surface Area of Obelisk given Pyramidal Height and Height of Obelisk

fx Open Calculator

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

ex

$$1149.204m^2 = \left((15m + 10m) \cdot \sqrt{(15m - 10m)^2 + \left(4 \cdot (25m - 5m)^2\right)}\right) + \left(10m \cdot \sqrt{\left(4 \cdot (5m)^2\right) + (10m)^2}\right)$$

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

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

ex $1150m^2 = 1375m^2 - (15m)^2$

Total Surface Area of Obelisk

10) Total Surface Area of Obelisk

Open Calculator

fx $$\mathrm{TSA} = \mathrm{l}^2_{\mathrm{e(Base)}} + \mathrm{LSA}$$

ex $$1375\mathrm{m^2} = (15\mathrm{m})^2 + 1150\mathrm{m^2}$$

Surface to Volume Ratio of Obelisk

11) Surface to Volume Ratio of Obelisk

Open Calculator

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

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

12) Surface to Volume Ratio of Obelisk given Frustum Height and Height of Obelisk

Open Calculator

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

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

13) Surface to Volume Ratio of Obelisk given Pyramidal Height and Height of Obelisk

Open Calculator

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

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

Volume of Obelisk

14) Volume of Obelisk

Open Calculator

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

ex $$3333.333\text{m}^3 = \frac{\left(20\text{m} \cdot \left((15\text{m})^2 + (10\text{m})^2 + \sqrt{(15\text{m})^2 \cdot (10\text{m})^2}\right)\right) + \left((10\text{m})^2 \cdot 5\text{m}\right)}{3}$$

15) Volume of Obelisk given Frustum Height and Height of Obelisk

Open Calculator

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

ex $$3333.333\text{m}^3 = \frac{\left(20\text{m} \cdot \left((15\text{m})^2 + (10\text{m})^2 + \sqrt{(15\text{m})^2 \cdot (10\text{m})^2}\right)\right) + \left((10\text{m})^2 \cdot (25\text{m} - 20\text{m})\right)}{3}$$

16) Volume of Obelisk given Pyramidal Height and Height of Obelisk

Open Calculator

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

ex $$3333.333\text{m}^3 = \frac{\left((25\text{m} - 5\text{m}) \cdot \left((15\text{m})^2 + (10\text{m})^2 + \sqrt{(15\text{m})^2 \cdot (10\text{m})^2}\right)\right) + \left((10\text{m})^2 \cdot 5\text{m}\right)}{3}$$

Variables Used

- **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

- Function: **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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- Bicone Formulas
- Capsule Formulas
- Circular Hyperboloid Formulas
- Cuboctahedron Formulas
- Cut Cylinder Formulas
- Cut Cylindrical Shell Formulas
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- Cylindrical Shell Formulas
- Diagonally Halved Cylinder Formulas
- Disphenoid Formulas
- Double Calotte Formulas
- Double Point Formulas
- Ellipsoid Formulas
- Elliptic Cylinder Formulas
- Elongated Dodecahedron Formulas
- Flat End Cylinder Formulas
- Frustum of Cone Formulas
- Great Dodecahedron Formulas
- Great Icosahedron Formulas
- Great Stellated Dodecahedron Formulas
- Half Cylinder Formulas
- Half Tetrahedron Formulas
- Hemisphere Formulas
- Hollow Cuboid Formulas
- Hollow Cylinder Formulas
- Hollow Frustum Formulas
- Hollow Hemisphere Formulas
- Hollow Pyramid Formulas
- Hollow Sphere Formulas
- Ingot Formulas
- Obelisk Formulas
- Oblique Cylinder Formulas
- Oblique Prism Formulas
- Obtuse Edged Cuboid Formulas
- Oloid Formulas
- Paraboloid Formulas
- Parallelepiped Formulas
- Ramp Formulas
- Regular Bipyramid Formulas
- Rhombohedron Formulas
- Right Wedge Formulas
- Semi Ellipsoid Formulas
- Sharp Bent Cylinder Formulas
- Skewed Three Edged Prism Formulas
- Small Stellated Dodecahedron Formulas
- Solid of Revolution Formulas
- Sphere Formulas
- Spherical Cap Formulas
- Spherical Corner Formulas
- Spherical Ring Formulas
- Spherical Sector Formulas
- Spherical Segment Formulas
- Spherical Wedge Formulas
- Square Pillar Formulas
- Star Pyramid Formulas
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