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Truncated Tetrahedron Formulas

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List of 9 Truncated Tetrahedron Formulas

Truncated Tetrahedron

Edge Length of Truncated Tetrahedron

1) Edge Length of Truncated Tetrahedron given Tetrahedral Edge Length

Open Calculator

fx $$l_e = \frac{l_{e(\text{Tetrahedron})}}{3}$$

ex $$10\text{m} = \frac{30\text{m}}{3}$$

2) Edge Length of Truncated Tetrahedron given Total Surface Area

Open Calculator

fx $$l_e = \sqrt{\frac{\text{TSA}}{7 \cdot \sqrt{3}}}$$

ex $$9.948584\text{m} = \sqrt{\frac{1200\text{m}^2}{7 \cdot \sqrt{3}}}$$

3) Edge Length of Truncated Tetrahedron given Volume

Open Calculator

fx $$l_e = \left(\frac{12 \cdot V}{23 \cdot \sqrt{2}} \right)^{\frac{1}{3}}$$

ex $$9.986977\text{m} = \left(\frac{12 \cdot 2700\text{m}^3}{23 \cdot \sqrt{2}} \right)^{\frac{1}{3}}$$

Radius of Truncated Tetrahedron

4) Circumsphere Radius of Truncated Tetrahedron

Open Calculator

fx $$r_c = \frac{l_e}{4} \cdot \sqrt{22}$$

ex $$11.72604\text{m} = \frac{10\text{m}}{4} \cdot \sqrt{22}$$

5) Midsphere Radius of Truncated Tetrahedron

Open Calculator

fx $$r_m = \frac{3}{4} \cdot \sqrt{2} \cdot l_e$$

ex $$10.6066\text{m} = \frac{3}{4} \cdot \sqrt{2} \cdot 10\text{m}$$

Surface Area of Truncated Tetrahedron

6) Total Surface Area of Truncated Tetrahedron

Open Calculator

fx $\mathrm{TSA} = 7 \cdot \sqrt{3} \cdot \mathrm{l_e^2}$

ex $1212.436\mathrm{m^2} = 7 \cdot \sqrt{3} \cdot (10\mathrm{m})^2$

Surface Volume Ratio of Truncated Tetrahedron

7) Surface to Volume Ratio of Truncated Tetrahedron

Open Calculator

fx $\mathrm{R_{A/V}} = \dfrac{84 \cdot \sqrt{3}}{23 \cdot \sqrt{2} \cdot \mathrm{l_e}}$

ex $0.447298\mathrm{m^{-1}} = \dfrac{84 \cdot \sqrt{3}}{23 \cdot \sqrt{2} \cdot 10\mathrm{m}}$

Tetrahedral Edge Length of Truncated Tetrahedron

8) Tetrahedral Edge Length of Truncated Tetrahedron

Open Calculator

fx $\mathrm{l_{e(Tetrahedron)}} = 3 \cdot \mathrm{l_e}$

ex $30\mathrm{m} = 3 \cdot 10\mathrm{m}$

Volume of Truncated Tetrahedron

9) Volume of Truncated Tetrahedron

Open Calculator

fx $$V = \frac{23}{12} \cdot \sqrt{2} \cdot l_e^3$$

ex $$2710.576\text{m}^3 = \frac{23}{12} \cdot \sqrt{2} \cdot (10\text{m})^3$$

Variables Used

- l_e Edge Length of Truncated Tetrahedron *(Meter)*
- $l_{e(Tetrahedron)}$ Tetrahedral Edge Length of Truncated Tetrahedron *(Meter)*
- $R_{A/V}$ Surface to Volume Ratio of Truncated Tetrahedron *(1 per Meter)*
- r_c Circumsphere Radius of Truncated Tetrahedron *(Meter)*
- r_m Midsphere Radius of Truncated Tetrahedron *(Meter)*
- **TSA** Total Surface Area of Truncated Tetrahedron *(Square Meter)*
- **V** Volume of Truncated Tetrahedron *(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

Check other formula lists

- Icosidodecahedron Formulas
- Rhombicosidodecahedron Formulas
- Rhombicuboctahedron Formulas
- Snub Cube Formulas
- Snub Dodecahedron Formulas
- Truncated Cube Formulas
- Truncated Cuboctahedron Formulas
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