Important Rhombicosidodecahedron Formulas PDF

Formulas
Examples
with Units

List of 30
Important Rhombicosidodecahedron Formulas

1) Edge Length of Rhombicosidodecahedron Formulas

1.1) Edge Length of Rhombicosidodecahedron given Circumsphere Radius Formula

Evaluate Formula

Formula

$$l_e = \frac{2 \cdot r_c}{\sqrt{11 + (4 \cdot \sqrt{5})}}$$

Example with Units

$$9.8524\,\text{m} = \frac{2 \cdot 22\,\text{m}}{\sqrt{11 + (4 \cdot \sqrt{5})}}$$

1.2) Edge Length of Rhombicosidodecahedron given Midsphere Radius Formula

Evaluate Formula

Formula

$$l_e = \frac{2 \cdot r_m}{\sqrt{10 + (4 \cdot \sqrt{5})}}$$

Example with Units

$$9.6496\,\text{m} = \frac{2 \cdot 21\,\text{m}}{\sqrt{10 + (4 \cdot \sqrt{5})}}$$

1.3) Edge Length of Rhombicosidodecahedron given Surface to Volume Ratio Formula

Evaluate Formula

Formula

$$l_e = \frac{3 \cdot \left(30 + (5 \cdot \sqrt{3}) + \left(3 \cdot \sqrt{25 + (10 \cdot \sqrt{5})}\right)\right)}{R_{A/V} \cdot (60 + (29 \cdot \sqrt{5}))}$$

Example with Units

$$14.251\,\text{m} = \frac{3 \cdot \left(30 + (5 \cdot \sqrt{3}) + \left(3 \cdot \sqrt{25 + (10 \cdot \sqrt{5})}\right)\right)}{0.1\,\text{m}^{-1} \cdot (60 + (29 \cdot \sqrt{5}))}$$

1.4) Edge Length of Rhombicosidodecahedron given Total Surface Area Formula

Evaluate Formula

Formula

$$l_e = \sqrt{\frac{TSA}{30 + (5 \cdot \sqrt{3}) + \left(3 \cdot \sqrt{25 + (10 \cdot \sqrt{5})}\right)}}$$

Example with Units

$$9.9742\,\text{m} = \sqrt{\frac{5900\,\text{m}^2}{30 + (5 \cdot \sqrt{3}) + \left(3 \cdot \sqrt{25 + (10 \cdot \sqrt{5})}\right)}}$$

1.5) Edge Length of Rhombicosidodecahedron given Volume Formula

Evaluate Formula

Formula

$$l_e = \left(\frac{3 \cdot V}{60 + (29 \cdot \sqrt{5})}\right)^{\frac{1}{3}}$$

Example with Units

$$10.0307\,\text{m} = \left(\frac{3 \cdot 42000\,\text{m}^3}{60 + (29 \cdot \sqrt{5})}\right)^{\frac{1}{3}}$$

2) Radius of Rhombicosidodecahedron Formulas

2.1) Circumsphere Radius of Rhombicosidodecahedron Formulas

2.1.1) Circumsphere Radius of Rhombicosidodecahedron Formula

Evaluate Formula

Formula

$$r_c = \frac{\sqrt{11 + (4 \cdot \sqrt{5})}}{2} \cdot l_e$$

Example with Units

$$22.3295\,\text{m} = \frac{\sqrt{11 + (4 \cdot \sqrt{5})}}{2} \cdot 10\,\text{m}$$

2.1.2) Circumsphere Radius of Rhombicosidodecahedron given Midsphere Radius Formula

Evaluate Formula

Formula

$$r_c = \sqrt{11 + \left(4 \cdot \sqrt{5}\right)} \cdot \frac{r_m}{\sqrt{10 + (4 \cdot \sqrt{5})}}$$

Example with Units

$$21.5471\,\text{m} = \sqrt{11 + \left(4 \cdot \sqrt{5}\right)} \cdot \frac{21\,\text{m}}{\sqrt{10 + (4 \cdot \sqrt{5})}}$$

2.1.3) Circumsphere Radius of Rhombicosidodecahedron given Surface to Volume Ratio Formula

Evaluate Formula

Formula

$$r_c = \frac{\sqrt{11 + (4 \cdot \sqrt{5})}}{2} \cdot \frac{3 \cdot \left(30 + (5 \cdot \sqrt{3}) + \left(3 \cdot \sqrt{25 + (10 \cdot \sqrt{5})}\right)\right)}{R_{A/V} \cdot (60 + (29 \cdot \sqrt{5}))}$$

Example with Units

$$31.8218\,\text{m} = \frac{\sqrt{11 + (4 \cdot \sqrt{5})}}{2} \cdot \frac{3 \cdot \left(30 + (5 \cdot \sqrt{3}) + \left(3 \cdot \sqrt{25 + (10 \cdot \sqrt{5})}\right)\right)}{0.1\,\text{m}^{-1} \cdot (60 + (29 \cdot \sqrt{5}))}$$

2.1.4) Circumsphere Radius of Rhombicosidodecahedron given Total Surface Area Formula

Evaluate Formula

Formula

$$r_c = \frac{\sqrt{11 + (4 \cdot \sqrt{5})}}{2} \cdot \sqrt{\frac{TSA}{30 + (5 \cdot \sqrt{3}) + \left(3 \cdot \sqrt{25 + (10 \cdot \sqrt{5})}\right)}}$$

Example with Units

$$22.2718\,\text{m} = \frac{\sqrt{11 + (4 \cdot \sqrt{5})}}{2} \cdot \sqrt{\frac{5900\,\text{m}^2}{30 + (5 \cdot \sqrt{3}) + \left(3 \cdot \sqrt{25 + (10 \cdot \sqrt{5})}\right)}}$$

2.1.5) Circumsphere Radius of Rhombicosidodecahedron given Volume Formula

Evaluate Formula

Formula

$$r_c = \frac{\sqrt{11 + (4 \cdot \sqrt{5})}}{2} \cdot \left(\frac{3 \cdot V}{60 + (29 \cdot \sqrt{5})}\right)^{\frac{1}{3}}$$

Example with Units

$$22.3981\,\text{m} = \frac{\sqrt{11 + (4 \cdot \sqrt{5})}}{2} \cdot \left(\frac{3 \cdot 42000\,\text{m}^3}{60 + (29 \cdot \sqrt{5})}\right)^{\frac{1}{3}}$$

2.2) Midsphere Radius of Rhombicosidodecahedron Formulas

2.2.1) Midsphere Radius of Rhombicosidodecahedron Formula

Evaluate Formula

Formula

$$r_m = \frac{\sqrt{10 + (4 \cdot \sqrt{5})}}{2} \cdot l_e$$

Example with Units

$$21.7625\,\text{m} = \frac{\sqrt{10 + (4 \cdot \sqrt{5})}}{2} \cdot 10\,\text{m}$$

2.2.2) Midsphere Radius of Rhombicosidodecahedron given Circumsphere Radius Formula

Evaluate Formula

Formula

$$r_m = \sqrt{10 + \left(4 \cdot \sqrt{5}\right)} \cdot \frac{r_c}{\sqrt{11 + (4 \cdot \sqrt{5})}}$$

Example with Units

$$21.4414\,\text{m} = \sqrt{10 + \left(4 \cdot \sqrt{5}\right)} \cdot \frac{22\,\text{m}}{\sqrt{11 + (4 \cdot \sqrt{5})}}$$

2.2.3) Midsphere Radius of Rhombicosidodecahedron given Surface to Volume Ratio Formula

Evaluate Formula

Formula

$$r_m = \frac{\sqrt{10 + (4 \cdot \sqrt{5})}}{2} \cdot \frac{3 \cdot \left(30 + (5 \cdot \sqrt{3}) + \left(3 \cdot \sqrt{25 + (10 \cdot \sqrt{5})}\right)\right)}{R_{A/V} \cdot (60 + (29 \cdot \sqrt{5}))}$$

Example with Units

$$31.0137\,\text{m} = \frac{\sqrt{10 + (4 \cdot \sqrt{5})}}{2} \cdot \frac{3 \cdot \left(30 + (5 \cdot \sqrt{3}) + \left(3 \cdot \sqrt{25 + (10 \cdot \sqrt{5})}\right)\right)}{0.1\,\text{m}^{-1} \cdot (60 + (29 \cdot \sqrt{5}))}$$

2.2.4) Midsphere Radius of Rhombicosidodecahedron given Total Surface Area Formula

Evaluate Formula

Formula

$$r_m = \frac{\sqrt{10 + (4 \cdot \sqrt{5})}}{2} \cdot \sqrt{\frac{TSA}{30 + (5 \cdot \sqrt{3}) + \left(3 \cdot \sqrt{25 + (10 \cdot \sqrt{5})}\right)}}$$

Example with Units

$$21.7063\,\text{m} = \frac{\sqrt{10 + (4 \cdot \sqrt{5})}}{2} \cdot \sqrt{\frac{5900\,\text{m}^2}{30 + (5 \cdot \sqrt{3}) + \left(3 \cdot \sqrt{25 + (10 \cdot \sqrt{5})}\right)}}$$

2.2.5) Midsphere Radius of Rhombicosidodecahedron given Volume Formula

Evaluate Formula

Formula

$$r_m = \frac{\sqrt{10 + (4 \cdot \sqrt{5})}}{2} \cdot \left(\frac{3 \cdot V}{60 + (29 \cdot \sqrt{5})}\right)^{\frac{1}{3}}$$

Example with Units

$$21.8294\,\text{m} = \frac{\sqrt{10 + (4 \cdot \sqrt{5})}}{2} \cdot \left(\frac{3 \cdot 42000\,\text{m}^3}{60 + (29 \cdot \sqrt{5})}\right)^{\frac{1}{3}}$$

3) Surface Area of Rhombicosidodecahedron Formulas

3.1) Total Surface Area of Rhombicosidodecahedron Formulas

3.1.1) Total Surface Area of Rhombicosidodecahedron Formula

Evaluate Formula

Formula

$$TSA = \left(30 + \left(5 \cdot \sqrt{3}\right) + \left(3 \cdot \sqrt{25 + \left(10 \cdot \sqrt{5}\right)}\right)\right) \cdot l_e^2$$

Example with Units

$$5930.5983\,\text{m}^2 = \left(30 + \left(5 \cdot \sqrt{3}\right) + \left(3 \cdot \sqrt{25 + \left(10 \cdot \sqrt{5}\right)}\right)\right) \cdot 10\,\text{m}^2$$

3.1.2) Total Surface Area of Rhombicosidodecahedron given Circumsphere Radius Formula

Evaluate Formula

Formula

$$TSA = \left(30 + \left(5 \cdot \sqrt{3}\right) + \left(3 \cdot \sqrt{25 + \left(10 \cdot \sqrt{5}\right)}\right)\right) \cdot \left(\frac{2 \cdot r_c}{\sqrt{11 + \left(4 \cdot \sqrt{5}\right)}}\right)^2$$

Example with Units

$$5756.8601\,\text{m}^2 = \left(30 + \left(5 \cdot \sqrt{3}\right) + \left(3 \cdot \sqrt{25 + \left(10 \cdot \sqrt{5}\right)}\right)\right) \cdot \left(\frac{2 \cdot 22\,\text{m}}{\sqrt{11 + \left(4 \cdot \sqrt{5}\right)}}\right)^2$$

3.1.3) Total Surface Area of Rhombicosidodecahedron given Midsphere Radius Formula

Evaluate Formula

Formula

$$TSA = \left(30 + \left(5 \cdot \sqrt{3}\right) + \left(3 \cdot \sqrt{25 + \left(10 \cdot \sqrt{5}\right)}\right)\right) \cdot \left(\frac{2 \cdot r_m}{\sqrt{10 + \left(4 \cdot \sqrt{5}\right)}}\right)^2$$

Example with Units

$$5522.2895\,\text{m}^2 = \left(30 + \left(5 \cdot \sqrt{3}\right) + \left(3 \cdot \sqrt{25 + \left(10 \cdot \sqrt{5}\right)}\right)\right) \cdot \left(\frac{2 \cdot 21\,\text{m}}{\sqrt{10 + \left(4 \cdot \sqrt{5}\right)}}\right)^2$$

3.1.4) Total Surface Area of Rhombicosidodecahedron given Surface to Volume Ratio Formula

Evaluate Formula

Formula

$$TSA = \left(30 + \left(5 \cdot \sqrt{3}\right) + \left(3 \cdot \sqrt{25 + \left(10 \cdot \sqrt{5}\right)}\right)\right) \cdot \left(\frac{3 \cdot \left(30 + \left(5 \cdot \sqrt{3}\right) + \left(3 \cdot \sqrt{25 + \left(10 \cdot \sqrt{5}\right)}\right)\right)}{R_{A/V} \cdot \left(60 + \left(29 \cdot \sqrt{5}\right)\right)}\right)^2$$

Example with Units

$$12044.5053\,\text{m}^2 = \left(30 + \left(5 \cdot \sqrt{3}\right) + \left(3 \cdot \sqrt{25 + \left(10 \cdot \sqrt{5}\right)}\right)\right) \cdot \left(\frac{3 \cdot \left(30 + \left(5 \cdot \sqrt{3}\right) + \left(3 \cdot \sqrt{25 + \left(10 \cdot \sqrt{5}\right)}\right)\right)}{0.1\,\text{m}^{-1} \cdot \left(60 + \left(29 \cdot \sqrt{5}\right)\right)}\right)^2$$

3.1.5) Total Surface Area of Rhombicosidodecahedron given Volume Formula

Evaluate Formula

Formula

$$TSA = \left(30 + \left(5 \cdot \sqrt{3}\right) + \left(3 \cdot \sqrt{25 + \left(10 \cdot \sqrt{5}\right)}\right)\right) \cdot \left(\frac{3 \cdot V}{60 + \left(29 \cdot \sqrt{5}\right)}\right)^{\frac{2}{3}}$$

Example with Units

$$5967.089\,\text{m}^2 = \left(30 + \left(5 \cdot \sqrt{3}\right) + \left(3 \cdot \sqrt{25 + \left(10 \cdot \sqrt{5}\right)}\right)\right) \cdot \left(\frac{3 \cdot 42000\,\text{m}^3}{60 + \left(29 \cdot \sqrt{5}\right)}\right)^{\frac{2}{3}}$$

4) Surface to Volume Ratio of Rhombicosidodecahedron Formulas

4.1) Surface to Volume Ratio of Rhombicosidodecahedron Formula

Evaluate Formula

Formula

$$R_{A/V} = \frac{3 \cdot \left(30 + \left(5 \cdot \sqrt{3}\right) + \left(3 \cdot \sqrt{25 + \left(10 \cdot \sqrt{5}\right)}\right)\right)}{l_e \cdot \left(60 + \left(29 \cdot \sqrt{5}\right)\right)}$$

Example with Units

$$0.1425\,\text{m}^{-1} = \frac{3 \cdot \left(30 + \left(5 \cdot \sqrt{3}\right) + \left(3 \cdot \sqrt{25 + \left(10 \cdot \sqrt{5}\right)}\right)\right)}{10\,\text{m} \cdot \left(60 + \left(29 \cdot \sqrt{5}\right)\right)}$$

4.2) Surface to Volume Ratio of Rhombicosidodecahedron given Circumsphere Radius Formula

Evaluate Formula

Formula

$$R_{A/V} = \frac{3 \cdot \left(30 + \left(5 \cdot \sqrt{3}\right) + \left(3 \cdot \sqrt{25 + \left(10 \cdot \sqrt{5}\right)}\right)\right)}{\frac{2 \cdot r_c}{\sqrt{11 + \left(4 \cdot \sqrt{5}\right)}} \cdot \left(60 + \left(29 \cdot \sqrt{5}\right)\right)}$$

Example with Units

$$0.1446\,\text{m}^{-1} = \frac{3 \cdot \left(30 + \left(5 \cdot \sqrt{3}\right) + \left(3 \cdot \sqrt{25 + \left(10 \cdot \sqrt{5}\right)}\right)\right)}{\frac{2 \cdot 22\,\text{m}}{\sqrt{11 + \left(4 \cdot \sqrt{5}\right)}} \cdot \left(60 + \left(29 \cdot \sqrt{5}\right)\right)}$$

4.3) Surface to Volume Ratio of Rhombicosidodecahedron given Midsphere Radius Formula

Evaluate Formula

Formula

$$R_{A/V} = \frac{3 \cdot \left(30 + \left(5 \cdot \sqrt{3}\right) + \left(3 \cdot \sqrt{25 + \left(10 \cdot \sqrt{5}\right)}\right)\right)}{\frac{2 \cdot r_m}{\sqrt{10 + \left(4 \cdot \sqrt{5}\right)}} \cdot \left(60 + \left(29 \cdot \sqrt{5}\right)\right)}$$

Example with Units

$$0.1477\,\text{m}^{-1} = \frac{3 \cdot \left(30 + \left(5 \cdot \sqrt{3}\right) + \left(3 \cdot \sqrt{25 + \left(10 \cdot \sqrt{5}\right)}\right)\right)}{\frac{2 \cdot 21\,\text{m}}{\sqrt{10 + \left(4 \cdot \sqrt{5}\right)}} \cdot \left(60 + \left(29 \cdot \sqrt{5}\right)\right)}$$

4.4) Surface to Volume Ratio of Rhombicosidodecahedron given Total Surface Area Formula

Evaluate Formula

Formula

$$R_{A/V} = \frac{3 \cdot \left(30 + \left(5 \cdot \sqrt{3}\right) + \left(3 \cdot \sqrt{25 + \left(10 \cdot \sqrt{5}\right)}\right)\right)}{\sqrt{\frac{\text{TSA}}{30 + \left(5 \cdot \sqrt{3}\right) + \left(3 \cdot \sqrt{25 + \left(10 \cdot \sqrt{5}\right)}\right)}} \cdot \left(60 + \left(29 \cdot \sqrt{5}\right)\right)}$$

Example with Units

$$0.1429\,\text{m}^{-1} = \frac{3 \cdot \left(30 + \left(5 \cdot \sqrt{3}\right) + \left(3 \cdot \sqrt{25 + \left(10 \cdot \sqrt{5}\right)}\right)\right)}{\sqrt{\frac{5900\,\text{m}^2}{30 + \left(5 \cdot \sqrt{3}\right) + \left(3 \cdot \sqrt{25 + \left(10 \cdot \sqrt{5}\right)}\right)}} \cdot \left(60 + \left(29 \cdot \sqrt{5}\right)\right)}$$

4.5) Surface to Volume Ratio of Rhombicosidodecahedron given Volume Formula

Evaluate Formula

Formula

$$R_{A/V} = \frac{3 \cdot \left(30 + \left(5 \cdot \sqrt{3} \right) + \left(3 \cdot \sqrt{25 + \left(10 \cdot \sqrt{5} \right)} \right) \right)}{\left(\frac{3 \cdot V}{60 + \left(29 \cdot \sqrt{5} \right)} \right)^{\frac{1}{3}} \cdot \left(60 + \left(29 \cdot \sqrt{5} \right) \right)}$$

Example with Units

$$0.1421\,\text{m}^{-1} = \frac{3 \cdot \left(30 + \left(5 \cdot \sqrt{3} \right) + \left(3 \cdot \sqrt{25 + \left(10 \cdot \sqrt{5} \right)} \right) \right)}{\left(\frac{3 \cdot 42000\,\text{m}^3}{60 + \left(29 \cdot \sqrt{5} \right)} \right)^{\frac{1}{3}} \cdot \left(60 + \left(29 \cdot \sqrt{5} \right) \right)}$$

5) Volume of Rhombicosidodecahedron Formulas

5.1) Volume of Rhombicosidodecahedron Formula

Evaluate Formula

Formula

$$V = \frac{60 + \left(29 \cdot \sqrt{5} \right)}{3} \cdot l_e^{\,3}$$

Example with Units

$$41615.3238\,\text{m}^3 = \frac{60 + \left(29 \cdot \sqrt{5} \right)}{3} \cdot 10\,\text{m}^{\,3}$$

5.2) Volume of Rhombicosidodecahedron given Circumsphere Radius Formula

Evaluate Formula

Formula

$$V = \frac{60 + \left(29 \cdot \sqrt{5} \right)}{3} \cdot \left(\frac{2 \cdot r_c}{\sqrt{11 + \left(4 \cdot \sqrt{5} \right)}} \right)^3$$

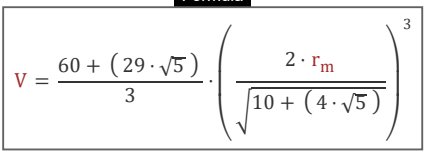
Example with Units

$$39800.0876\,\text{m}^3 = \frac{60 + \left(29 \cdot \sqrt{5} \right)}{3} \cdot \left(\frac{2 \cdot 22\,\text{m}}{\sqrt{11 + \left(4 \cdot \sqrt{5} \right)}} \right)^3$$

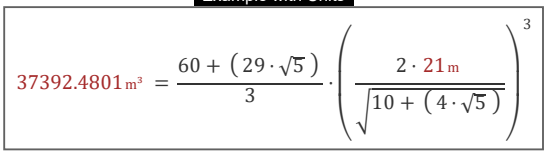
5.3) Volume of Rhombicosidodecahedron given Midsphere Radius Formula

Evaluate Formula

Formula



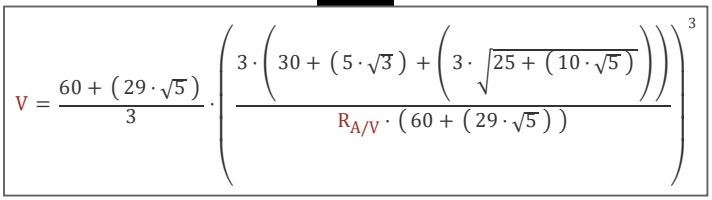
Example with Units



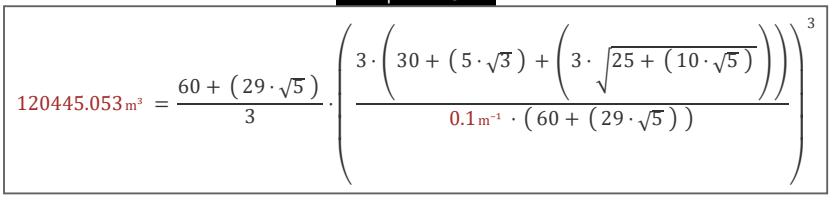
5.4) Volume of Rhombicosidodecahedron given Surface to Volume Ratio Formula

Evaluate Formula

Formula



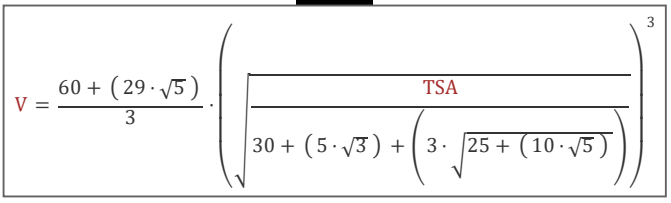
Example with Units



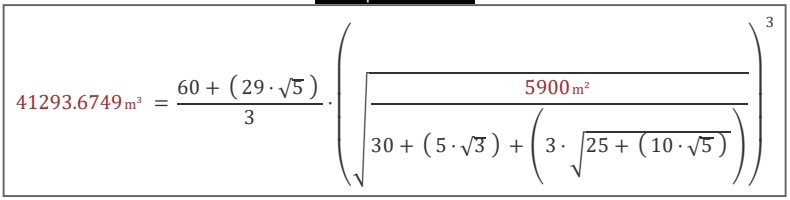
5.5) Volume of Rhombicosidodecahedron given Total Surface Area Formula

Evaluate Formula

Formula



Example with Units



Variables used in list of Rhombicosidodecahedron Formulas above

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

Constants, Functions, Measurements used in list of Rhombicosidodecahedron 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

Download other Important Archimedean Solids PDFs

- Important Icosidodecahedron Formulas
- Important Rhombicosidodecahedron Formulas
- Important Rhombicuboctahedron Formulas
- Important Snub Cube Formulas
- Important Snub Dodecahedron Formulas
- Important Truncated Cube Formulas
- Important Truncated Cuboctahedron Formulas
- Important Truncated Dodecahedron Formulas
- Important Truncated Icosahedron Formulas
- Important Truncated Icosidodecahedron Formulas
- Important Truncated Tetrahedron Formulas

Try our Unique Visual Calculators

- Percentage increase
- HCF calculator
- Mixed fraction

Please SHARE this PDF with someone who needs it!

This PDF can be downloaded in these languages

English Spanish French German Russian Italian Portuguese Polish Dutch

7/8/2024 | 9:08:28 AM UTC