



calculatoratoz.com



unitsconverters.com

Ellipsoid Formulas

Calculators!

Examples!

Conversions!

Bookmark calculatoratoz.com, unitsconverters.com

Widest Coverage of Calculators and Growing - **30,000+ Calculators!**
Calculate With a Different Unit for Each Variable - **In built Unit Conversion!**
Widest Collection of Measurements and Units - **250+ Measurements!**

Feel free to SHARE this document with your friends!

[Please leave your feedback here...](#)



List of 23 Ellipsoid Formulas

Ellipsoid

Axis of Ellipsoid

1) First Semi Axis of Ellipsoid

$$\text{fx } a = \frac{3 \cdot V}{4 \cdot \pi \cdot b \cdot c}$$

[Open Calculator !\[\]\(de95854c7ee024cfadc48187bbb781b2_img.jpg\)](#)

$$\text{ex } 10.23139\text{m} = \frac{3 \cdot 1200\text{m}^3}{4 \cdot \pi \cdot 7\text{m} \cdot 4\text{m}}$$

2) First Semi Axis of Ellipsoid given Surface Area

$$\text{fx } a = \left(\frac{\left(3 \cdot \left(\frac{\text{SA}}{4 \cdot \pi} \right)^{1.6075} \right) - (b \cdot c)^{1.6075}}{b^{1.6075} + c^{1.6075}} \right)^{\frac{1}{1.6075}}$$

[Open Calculator !\[\]\(6a9b39b98eb945faa14c645ec99e4eaa_img.jpg\)](#)

$$\text{ex } 9.937577\text{m} = \left(\frac{\left(3 \cdot \left(\frac{600\text{m}^2}{4 \cdot \pi} \right)^{1.6075} \right) - (7\text{m} \cdot 4\text{m})^{1.6075}}{(7\text{m})^{1.6075} + (4\text{m})^{1.6075}} \right)^{\frac{1}{1.6075}}$$

3) Second Semi Axis of Ellipsoid

$$\text{fx } b = \frac{3 \cdot V}{4 \cdot \pi \cdot a \cdot c}$$

[Open Calculator !\[\]\(f1c5da15572e3e09d343161be98f508d_img.jpg\)](#)

$$\text{ex } 7.161972\text{m} = \frac{3 \cdot 1200\text{m}^3}{4 \cdot \pi \cdot 10\text{m} \cdot 4\text{m}}$$



4) Second Semi Axis of Ellipsoid given Surface Area Open Calculator 

$$\text{fx } b = \left(\frac{\left(3 \cdot \left(\frac{SA}{4 \cdot \pi} \right)^{1.6075} \right) - (a \cdot c)^{1.6075}}{a^{1.6075} + c^{1.6075}} \right)^{\frac{1}{1.6075}}$$

$$\text{ex } 6.949981\text{m} = \left(\frac{\left(3 \cdot \left(\frac{600\text{m}^2}{4 \cdot \pi} \right)^{1.6075} \right) - (10\text{m} \cdot 4\text{m})^{1.6075}}{(10\text{m})^{1.6075} + (4\text{m})^{1.6075}} \right)^{\frac{1}{1.6075}}$$

5) Third Semi Axis of Ellipsoid Open Calculator 

$$\text{fx } c = \frac{3 \cdot V}{4 \cdot \pi \cdot a \cdot b}$$

$$\text{ex } 4.092556\text{m} = \frac{3 \cdot 1200\text{m}^3}{4 \cdot \pi \cdot 10\text{m} \cdot 7\text{m}}$$

6) Third Semi Axis of Ellipsoid given Surface Area Open Calculator 

$$\text{fx } c = \left(\frac{\left(3 \cdot \left(\frac{SA}{4 \cdot \pi} \right)^{1.6075} \right) - (a \cdot b)^{1.6075}}{a^{1.6075} + b^{1.6075}} \right)^{\frac{1}{1.6075}}$$

$$\text{ex } 3.944642\text{m} = \left(\frac{\left(3 \cdot \left(\frac{600\text{m}^2}{4 \cdot \pi} \right)^{1.6075} \right) - (10\text{m} \cdot 7\text{m})^{1.6075}}{(10\text{m})^{1.6075} + (7\text{m})^{1.6075}} \right)^{\frac{1}{1.6075}}$$



Surface Area of Ellipsoid

7) Surface Area of Ellipsoid

fx

Open Calculator 

$$SA = 4 \cdot \pi \cdot \left(\frac{(a \cdot b)^{1.6075} + (b \cdot c)^{1.6075} + (a \cdot c)^{1.6075}}{3} \right)^{\frac{1}{1.6075}}$$

ex

$$603.2371\text{m}^2 = 4 \cdot \pi \cdot \left(\frac{(10\text{m} \cdot 7\text{m})^{1.6075} + (7\text{m} \cdot 4\text{m})^{1.6075} + (10\text{m} \cdot 4\text{m})^{1.6075}}{3} \right)^{\frac{1}{1.6075}}$$

8) Surface Area of Ellipsoid given Volume, First, and Second Semi Axes

fx

Open Calculator 

$$SA = 4 \cdot \pi \cdot \left(\frac{(a \cdot b)^{1.6075} + \left(\frac{3 \cdot V}{4 \cdot \pi \cdot a} \right)^{1.6075} + \left(\frac{3 \cdot V}{4 \cdot \pi \cdot b} \right)^{1.6075}}{3} \right)^{\frac{1}{1.6075}}$$

ex

$$608.6864\text{m}^2 = 4 \cdot \pi \cdot \left(\frac{(10\text{m} \cdot 7\text{m})^{1.6075} + \left(\frac{3 \cdot 1200\text{m}^3}{4 \cdot \pi \cdot 10\text{m}} \right)^{1.6075} + \left(\frac{3 \cdot 1200\text{m}^3}{4 \cdot \pi \cdot 7\text{m}} \right)^{1.6075}}{3} \right)^{\frac{1}{1.6075}}$$



9) Surface Area of Ellipsoid given Volume, First, and Third Semi Axes

fx

Open Calculator 

$$SA = 4 \cdot \pi \cdot \left(\frac{\left(\frac{3 \cdot V}{4 \cdot \pi \cdot c} \right)^{1.6075} + \left(\frac{3 \cdot V}{4 \cdot \pi \cdot a} \right)^{1.6075} + (a \cdot c)^{1.6075}}{3} \right)^{\frac{1}{1.6075}}$$

ex

$$613.7431\text{m}^2 = 4 \cdot \pi \cdot \left(\frac{\left(\frac{3 \cdot 1200\text{m}^3}{4 \cdot \pi \cdot 4\text{m}} \right)^{1.6075} + \left(\frac{3 \cdot 1200\text{m}^3}{4 \cdot \pi \cdot 10\text{m}} \right)^{1.6075} + (10\text{m} \cdot 4\text{m})^{1.6075}}{3} \right)^{\frac{1}{1.6075}}$$

10) Surface Area of Ellipsoid given Volume, Second, and Third Semi Axes

fx

Open Calculator 

$$SA = 4 \cdot \pi \cdot \left(\frac{\left(\frac{3 \cdot V}{4 \cdot \pi \cdot c} \right)^{1.6075} + (b \cdot c)^{1.6075} + \left(\frac{3 \cdot V}{4 \cdot \pi \cdot b} \right)^{1.6075}}{3} \right)^{\frac{1}{1.6075}}$$

ex

$$615.251\text{m}^2 = 4 \cdot \pi \cdot \left(\frac{\left(\frac{3 \cdot 1200\text{m}^3}{4 \cdot \pi \cdot 4\text{m}} \right)^{1.6075} + (7\text{m} \cdot 4\text{m})^{1.6075} + \left(\frac{3 \cdot 1200\text{m}^3}{4 \cdot \pi \cdot 7\text{m}} \right)^{1.6075}}{3} \right)^{\frac{1}{1.6075}}$$



Surface to Volume Ratio of Ellipsoid

11) Surface to Volume Ratio of Ellipsoid

$$\text{fx } R_{A/V} = \frac{3 \cdot \left(\frac{(a \cdot b)^{1.6075} + (b \cdot c)^{1.6075} + (a \cdot c)^{1.6075}}{3} \right)^{\frac{1}{1.6075}}}{a \cdot b \cdot c}$$

[Open Calculator !\[\]\(950a62bbddad88d64435fd35607dfc42_img.jpg\)](#)

$$\text{ex } 0.514329\text{m}^{-1} = \frac{3 \cdot \left(\frac{(10\text{m} \cdot 7\text{m})^{1.6075} + (7\text{m} \cdot 4\text{m})^{1.6075} + (10\text{m} \cdot 4\text{m})^{1.6075}}{3} \right)^{\frac{1}{1.6075}}}{10\text{m} \cdot 7\text{m} \cdot 4\text{m}}$$

12) Surface to Volume Ratio of Ellipsoid given Surface Area

$$\text{fx } R_{A/V} = \frac{SA}{\frac{4}{3} \cdot \pi \cdot a \cdot b \cdot c}$$

[Open Calculator !\[\]\(73002692dd5e7a64e60946be3158e719_img.jpg\)](#)

$$\text{ex } 0.511569\text{m}^{-1} = \frac{600\text{m}^2}{\frac{4}{3} \cdot \pi \cdot 10\text{m} \cdot 7\text{m} \cdot 4\text{m}}$$

13) Surface to Volume Ratio of Ellipsoid given Surface Area, First and Second Semi Axes

$$\text{fx } R_{A/V} = \frac{SA}{\frac{4 \cdot \pi \cdot a \cdot b}{3} \cdot \left(\frac{\left(3 \cdot \left(\frac{SA}{4 \cdot \pi} \right)^{1.6075} \right) - (a \cdot b)^{1.6075}}{a^{1.6075} + b^{1.6075}} \right)^{\frac{1}{1.6075}}}$$

[Open Calculator !\[\]\(104fbf564e2e5a8fbd84f31656d114c7_img.jpg\)](#)

$$\text{ex } 0.518749\text{m}^{-1} = \frac{600\text{m}^2}{\frac{4 \cdot \pi \cdot 10\text{m} \cdot 7\text{m}}{3} \cdot \left(\frac{\left(3 \cdot \left(\frac{600\text{m}^2}{4 \cdot \pi} \right)^{1.6075} \right) - (10\text{m} \cdot 7\text{m})^{1.6075}}{(10\text{m})^{1.6075} + (7\text{m})^{1.6075}} \right)^{\frac{1}{1.6075}}}$$



14) Surface to Volume Ratio of Ellipsoid given Surface Area, First and Third Semi Axes

fx

$$R_{A/V} = \frac{SA}{\frac{4 \cdot \pi \cdot a \cdot c}{3} \cdot \left(\frac{\left(3 \cdot \left(\frac{SA}{4 \cdot \pi} \right)^{1.6075} \right) - (a \cdot c)^{1.6075}}{a^{1.6075} + c^{1.6075}} \right)^{\frac{1}{1.6075}}}$$

Open Calculator **ex**

$$0.515251m^{-1} = \frac{600m^2}{\frac{4 \cdot \pi \cdot 10m \cdot 4m}{3} \cdot \left(\frac{\left(3 \cdot \left(\frac{600m^2}{4 \cdot \pi} \right)^{1.6075} \right) - (10m \cdot 4m)^{1.6075}}{(10m)^{1.6075} + (4m)^{1.6075}} \right)^{\frac{1}{1.6075}}}$$

15) Surface to Volume Ratio of Ellipsoid given Surface Area, Second and Third Semi Axes

fx

$$R_{A/V} = \frac{SA}{\frac{4 \cdot \pi \cdot b \cdot c}{3} \cdot \left(\frac{\left(3 \cdot \left(\frac{SA}{4 \cdot \pi} \right)^{1.6075} \right) - (b \cdot c)^{1.6075}}{b^{1.6075} + c^{1.6075}} \right)^{\frac{1}{1.6075}}}$$

Open Calculator **ex**

$$0.514783m^{-1} = \frac{600m^2}{\frac{4 \cdot \pi \cdot 7m \cdot 4m}{3} \cdot \left(\frac{\left(3 \cdot \left(\frac{600m^2}{4 \cdot \pi} \right)^{1.6075} \right) - (7m \cdot 4m)^{1.6075}}{(7m)^{1.6075} + (4m)^{1.6075}} \right)^{\frac{1}{1.6075}}}$$



16) Surface to Volume Ratio of Ellipsoid given Volume Open Calculator 

fx

$$R_{A/V} = \frac{4 \cdot \pi \cdot \left(\frac{(a \cdot b)^{1.6075} + (b \cdot c)^{1.6075} + (a \cdot c)^{1.6075}}{3} \right)^{\frac{1}{1.6075}}}{V}$$

ex

$$0.502698\text{m}^{-1} = \frac{4 \cdot \pi \cdot \left(\frac{(10\text{m} \cdot 7\text{m})^{1.6075} + (7\text{m} \cdot 4\text{m})^{1.6075} + (10\text{m} \cdot 4\text{m})^{1.6075}}{3} \right)^{\frac{1}{1.6075}}}{1200\text{m}^3}$$

17) Surface to Volume Ratio of Ellipsoid given Volume, First and Second Semi Axes

Open Calculator 

fx

$$R_{A/V} = \frac{4 \cdot \pi \cdot \left(\frac{(a \cdot b)^{1.6075} + \left(\frac{3 \cdot V}{4 \cdot \pi \cdot a} \right)^{1.6075} + \left(\frac{3 \cdot V}{4 \cdot \pi \cdot b} \right)^{1.6075}}{3} \right)^{\frac{1}{1.6075}}}{V}$$

ex

$$0.507239\text{m}^{-1} = \frac{4 \cdot \pi \cdot \left(\frac{(10\text{m} \cdot 7\text{m})^{1.6075} + \left(\frac{3 \cdot 1200\text{m}^3}{4 \cdot \pi \cdot 10\text{m}} \right)^{1.6075} + \left(\frac{3 \cdot 1200\text{m}^3}{4 \cdot \pi \cdot 7\text{m}} \right)^{1.6075}}{3} \right)^{\frac{1}{1.6075}}}{1200\text{m}^3}$$

18) Surface to Volume Ratio of Ellipsoid given Volume, First and Third Semi Axes Open Calculator 

fx

$$R_{A/V} = \frac{4 \cdot \pi \cdot \left(\frac{\left(\frac{3 \cdot V}{4 \cdot \pi \cdot c} \right)^{1.6075} + \left(\frac{3 \cdot V}{4 \cdot \pi \cdot a} \right)^{1.6075} + (a \cdot c)^{1.6075}}{3} \right)^{\frac{1}{1.6075}}}{V}$$

ex

$$0.511453\text{m}^{-1} = \frac{4 \cdot \pi \cdot \left(\frac{\left(\frac{3 \cdot 1200\text{m}^3}{4 \cdot \pi \cdot 4\text{m}} \right)^{1.6075} + \left(\frac{3 \cdot 1200\text{m}^3}{4 \cdot \pi \cdot 10\text{m}} \right)^{1.6075} + (10\text{m} \cdot 4\text{m})^{1.6075}}{3} \right)^{\frac{1}{1.6075}}}{1200\text{m}^3}$$



19) Surface to Volume Ratio of Ellipsoid given Volume, Second and Third Semi Axes



$$R_{A/V} = \frac{4 \cdot \pi \cdot \left(\frac{\left(\frac{3 \cdot V}{4 \cdot \pi \cdot c} \right)^{1.6075} + (b \cdot c)^{1.6075} + \left(\frac{3 \cdot V}{4 \cdot \pi \cdot b} \right)^{1.6075}}{3} \right)^{\frac{1}{1.6075}}}{V}$$

Open Calculator

fx

ex

$$0.512709m^{-1} = \frac{4 \cdot \pi \cdot \left(\frac{\left(\frac{3 \cdot 1200m^3}{4 \cdot \pi \cdot 4m} \right)^{1.6075} + (7m \cdot 4m)^{1.6075} + \left(\frac{3 \cdot 1200m^3}{4 \cdot \pi \cdot 7m} \right)^{1.6075}}{3} \right)^{\frac{1}{1.6075}}}{1200m^3}$$

Volume of Ellipsoid

20) Volume of Ellipsoid

fx

$$V = \frac{4}{3} \cdot \pi \cdot a \cdot b \cdot c$$

Open Calculator

ex

$$1172.861m^3 = \frac{4}{3} \cdot \pi \cdot 10m \cdot 7m \cdot 4m$$



21) Volume of Ellipsoid given Surface Area, First and Second Semi Axes

fx

Open Calculator 

$$V = \frac{4 \cdot \pi \cdot a \cdot b}{3} \cdot \left(\frac{\left(3 \cdot \left(\frac{SA}{4 \cdot \pi} \right)^{1.6075} \right) - (a \cdot b)^{1.6075}}{a^{1.6075} + b^{1.6075}} \right)^{\frac{1}{1.6075}}$$

ex

$$1156.629\text{m}^3 = \frac{4 \cdot \pi \cdot 10\text{m} \cdot 7\text{m}}{3} \cdot \left(\frac{\left(3 \cdot \left(\frac{600\text{m}^2}{4 \cdot \pi} \right)^{1.6075} \right) - (10\text{m} \cdot 7\text{m})^{1.6075}}{(10\text{m})^{1.6075} + (7\text{m})^{1.6075}} \right)^{\frac{1}{1.6075}}$$

22) Volume of Ellipsoid given Surface Area, First and Third Semi Axes

fx

Open Calculator 

$$V = \frac{4 \cdot \pi \cdot a \cdot c}{3} \cdot \left(\frac{\left(3 \cdot \left(\frac{SA}{4 \cdot \pi} \right)^{1.6075} \right) - (a \cdot c)^{1.6075}}{a^{1.6075} + c^{1.6075}} \right)^{\frac{1}{1.6075}}$$

ex

$$1164.48\text{m}^3 = \frac{4 \cdot \pi \cdot 10\text{m} \cdot 4\text{m}}{3} \cdot \left(\frac{\left(3 \cdot \left(\frac{600\text{m}^2}{4 \cdot \pi} \right)^{1.6075} \right) - (10\text{m} \cdot 4\text{m})^{1.6075}}{(10\text{m})^{1.6075} + (4\text{m})^{1.6075}} \right)^{\frac{1}{1.6075}}$$



23) Volume of Ellipsoid given Surface Area, Second and Third Semi Axes

fx

Open Calculator 

$$V = \frac{4 \cdot \pi \cdot b \cdot c}{3} \cdot \left(\frac{\left(3 \cdot \left(\frac{SA}{4 \cdot \pi} \right)^{1.6075} \right) - (b \cdot c)^{1.6075}}{b^{1.6075} + c^{1.6075}} \right)^{\frac{1}{1.6075}}$$

$$\text{ex } 1165.54\text{m}^3 = \frac{4 \cdot \pi \cdot 7\text{m} \cdot 4\text{m}}{3} \cdot \left(\frac{\left(3 \cdot \left(\frac{600\text{m}^2}{4 \cdot \pi} \right)^{1.6075} \right) - (7\text{m} \cdot 4\text{m})^{1.6075}}{(7\text{m})^{1.6075} + (4\text{m})^{1.6075}} \right)^{\frac{1}{1.6075}}$$



Variables Used

- **a** First Semi Axis of Ellipsoid (*Meter*)
- **b** Second Semi Axis of Ellipsoid (*Meter*)
- **c** Third Semi Axis of Ellipsoid (*Meter*)
- **$R_{A/V}$** Surface to Volume Ratio of Ellipsoid (*1 per Meter*)
- **SA** Surface Area of Ellipsoid (*Square Meter*)
- **V** Volume of Ellipsoid (*Cubic Meter*)



Constants, Functions, Measurements used

- **Constant:** **pi**, 3.14159265358979323846264338327950288
Archimedes' constant
- **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 
- **Measurement:** **Reciprocal Length** in 1 per Meter (m⁻¹)
Reciprocal Length Unit Conversion 



Check other formula lists

- [Anticube Formulas](#)
- [Antiprism Formulas](#)
- [Barrel Formulas](#)
- [Bent Cuboid Formulas](#)
- [Bicone Formulas](#)
- [Capsule Formulas](#)
- [Circular Hyperboloid Formulas](#)
- [Cuboctahedron Formulas](#)
- [Cut Cylinder Formulas](#)
- [Cut Cylindrical Shell Formulas](#)
- [Cylinder Formulas](#)
- [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](#)
- [Prismatoid 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](#) 
- [Stellated Octahedron Formulas](#) 
- [Toroid Formulas](#) 
- [Torus Formulas](#) 
- [Trirectangular Tetrahedron Formulas](#) 
- [Truncated Rhombohedron Formulas](#) 

Feel free to SHARE this document with your friends!

PDF Available in

[English](#) [Spanish](#) [French](#) [German](#) [Russian](#) [Italian](#) [Portuguese](#) [Polish](#) [Dutch](#)

12/1/2023 | 5:28:41 AM UTC

[Please leave your feedback here...](#)

