Important Barrel Formulas PDF

Formulas
Examples
with Units

List of 11
Important Barrel Formulas

1) Height of Barrel Formulas

1.1) Height of Barrel Formula

Evaluate Formula

Formula

$$h = \sqrt{d_{Space}^{2} - \left(4 \cdot r_{Top/Bottom}^{2}\right)}$$

Example with Units

$$12.49\,\text{m} = \sqrt{16\,\text{m}^{2} - \left(4 \cdot 5\,\text{m}^{2}\right)}$$

1.2) Height of Barrel given Volume Formula

Evaluate Formula

Formula

$$h = \frac{3 \cdot V}{\pi \cdot \left(\left(2 \cdot r_{Middle}^{2}\right) + r_{Top/Bottom}^{2}\right)}$$

Example with Units

$$12.0109\,\text{m} = \frac{3 \cdot 2830\,\text{m}^3}{3.1416 \cdot \left(\left(2 \cdot 10\,\text{m}^{2}\right) + 5\,\text{m}^{2}\right)}$$

2) Radius of Barrel Formulas

2.1) Radius at Middle of Barrel Formula

Evaluate Formula

Formula

$$r_{Middle} = \sqrt{\frac{\frac{3 \cdot V}{\pi \cdot h} - r_{Top/Bottom}^{2}}{2}}$$

Example with Units

$$10.0051\,\text{m} = \sqrt{\frac{\frac{3 \cdot 2830\,\text{m}^3}{3.1416 \cdot 12\,\text{m}} - 5\,\text{m}^{2}}{2}}$$

2.2) Radius at Top and Bottom of Barrel Formula

Evaluate Formula

Formula

$$r_{Top/Bottom} = \sqrt{\frac{3 \cdot V}{\pi \cdot h} - \left(2 \cdot r_{Middle}^{2}\right)}$$

Example with Units

$$5.0204\,\text{m} = \sqrt{\frac{3 \cdot 2830\,\text{m}^3}{3.1416 \cdot 12\,\text{m}} - \left(2 \cdot 10\,\text{m}^{2}\right)}$$

2.3) Radius at Top and Bottom of Barrel given Space Diagonal and Height Formula

Evaluate Formula

Formula

$$r_{Top/Bottom} = \sqrt{\frac{d_{Space}^2 - h^2}{4}}$$

Example with Units

$$5.2915\,\text{m} = \sqrt{\frac{16\,\text{m}^2 - 12\,\text{m}^2}{4}}$$

3) Space Diagonal of Barrel Formulas

3.1) Space Diagonal of Barrel Formula

Evaluate Formula

Formula

$$d_{Space} = \sqrt{h^2 + \left(4 \cdot r_{Top/Bottom}^2\right)}$$

Example with Units

$$15.6205\,\text{m} = \sqrt{12\,\text{m}^2 + \left(4 \cdot 5\,\text{m}^2\right)}$$

3.2) Space Diagonal of Barrel given Height Formula

Evaluate Formula

Formula

$$d_{Space} = \sqrt{h^2 + \left(4 \cdot \left(\frac{3 \cdot V}{\pi \cdot h} - \left(2 \cdot r_{Middle}^2\right)\right)\right)}$$

Example with Units

$$15.6466\,\text{m} = \sqrt{12\,\text{m}^2 + \left(4 \cdot \left(\frac{3 \cdot 2830\,\text{m}^3}{3.1416 \cdot 12\,\text{m}} - \left(2 \cdot 10\,\text{m}^2\right)\right)\right)}$$

3.3) Space Diagonal of Barrel given Volume Formula

Evaluate Formula

Formula

$$d_{Space} = \sqrt{\left(\frac{3 \cdot V}{\pi \cdot \left(\left(2 \cdot r_{Middle}^2\right) + r_{Top/Bottom}^2\right)}\right)^2 + \left(4 \cdot r_{Top/Bottom}^2\right)}$$

Example with Units

$$15.6289\,\text{m} = \sqrt{\left(\frac{3 \cdot 2830\,\text{m}^3}{3.1416 \cdot \left(\left(2 \cdot 10\,\text{m}^2\right) + 5\,\text{m}^2\right)}\right)^2 + \left(4 \cdot 5\,\text{m}^2\right)}$$

4) Volume of Barrel Formulas

4.1) Volume of Barrel Formula

Evaluate Formula

Formula

$$V = \frac{\pi \cdot h}{3} \cdot \left(\left(2 \cdot r_{Middle}^{2} \right) + r_{Top/Bottom}^{2} \right)$$

Example with Units

$$2827.4334\,\text{m}^3 = \frac{3.1416 \cdot 12\,\text{m}}{3} \cdot \left(\left(2 \cdot 10\,\text{m}^{2} \right) + 5\,\text{m}^{2} \right)$$

4.2) Volume of Barrel given Height Formula

Evaluate Formula

Formula

$$V = \frac{\pi \cdot h}{3} \cdot \left(\left(2 \cdot r_{Middle}^{2} \right) + \frac{d_{Space}^{2} - h^{2}}{4} \right)$$

Example with Units

$$2865.1325\,\text{m}^3 = \frac{3.1416 \cdot 12\,\text{m}}{3} \cdot \left(\left(2 \cdot 10\,\text{m}^{2} \right) + \frac{16\,\text{m}^{2} - 12\,\text{m}^{2}}{4} \right)$$

4.3) Volume of Barrel given Space Diagonal and both Radius Formula

Evaluate Formula

Formula

$$V = \frac{\pi \cdot \sqrt{d_{Space}^{2} - \left(4 \cdot r_{Top/Bottom}^{2} \right)}}{3} \cdot \left(\left(2 \cdot r_{Middle}^{2} \right) + r_{Top/Bottom}^{2} \right)$$

Example with Units

$$2942.886\,\text{m}^3 = \frac{3.1416 \cdot \sqrt{16\,\text{m}^{2} - \left(4 \cdot 5\,\text{m}^{2} \right)}}{3} \cdot \left(\left(2 \cdot 10\,\text{m}^{2} \right) + 5\,\text{m}^{2} \right)$$

Variables used in list of Barrel Formulas above

- d_{Space} Space Diagonal of Barrel *(Meter)*
- **h** Height of Barrel *(Meter)*
- r_{Middle} Radius at Middle of Barrel *(Meter)*
- $r_{Top/Bottom}$ Radius at Top and Bottom of Barrel *(Meter)*
- **V** Volume of Barrel *(Cubic Meter)*

Constants, Functions, Measurements used in list of Barrel Formulas above

- constant(s): **pi**, 3.14159265358979323846264338327950288 *Archimedes' constant*
- 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*

Download other Important 3D Geometry PDFs

- Important Anticube Formulas
- Important Antiprism Formulas
- Important Barrel Formulas
- Important Bent Cuboid Formulas
- Important Bicone Formulas
- Important Capsule Formulas
- Important Circular Hyperboloid Formulas
- Important Cuboctahedron Formulas
- Important Cut Cylinder Formulas
- Important Cut Cylindrical Shell Formulas
- Important Cylinder Formulas
- Important Cylindrical Shell Formulas
- Important Diagonally Halved Cylinder Formulas
- Important Disphenoid Formulas
- Important Double Calotte Formulas
- Important Double Point Formulas
- Important Ellipsoid Formulas
- Important Elliptic Cylinder Formulas
- Important Elongated Dodecahedron Formulas
- Important Flat End Cylinder Formulas
- Important Frustum of Cone Formulas
- Important Great Dodecahedron Formulas
- Important Great Icosahedron Formulas
- Important Great Stellated Dodecahedron Formulas
- Important Half Cylinder Formulas
- Important Half Tetrahedron Formulas
- Important Hemisphere Formulas
- Important Hollow Cuboid Formulas
- Important Hollow Cylinder Formulas
- Important Hollow Frustum Formulas
- Important Hollow Hemisphere Formulas
- Important Hollow Pyramid Formulas
- Important Hollow Sphere Formulas
- Important Ingot Formulas
- Important Obelisk Formulas
- Important Oblique Cylinder Formulas
- Important Oblique Prism Formulas
- Important Obtuse Edged Cuboid Formulas
- Important Oloid Formulas
- Important Paraboloid Formulas
- Important Parallelepiped Formulas
- Important Ramp Formulas
- Important Regular Bipyramid Formulas
- Important Rhombohedron Formulas
- Important Right Wedge Formulas
- Important Semi Ellipsoid Formulas
- Important Sharp Bent Cylinder Formulas
- 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
- Important Star Pyramid Formulas
- Important Stellated Octahedron Formulas
- Important Toroid Formulas
- Important Torus Formulas
- Important Trirectangular Tetrahedron Formulas
- Important Truncated Rhombohedron Formulas

Try our Unique Visual Calculators

- Percentage error
- LCM of three numbers
- Subtract 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 | 10:05:31 AM UTC