Important Formulas of Hollow Sphere PDF

Formulas
Examples
with Units

List of 15
Important Formulas of Hollow Sphere

1) Radius of Hollow Sphere Formulas

1.1) Inner Radius of Hollow Sphere given Surface Area Formula

Evaluate Formula

Formula

$$r_{Inner} = \sqrt{\frac{SA}{4 \cdot \pi} - r_{Outer}^{2}}^{2}$$

Example with Units

$$5.9398\,\text{m} = \sqrt{\frac{1700\,\text{m}^2}{4 \cdot 3.1416} - 10\,\text{m}^{2}}^{2}$$

1.2) Inner Radius of Hollow Sphere given Thickness Formula

Evaluate Formula

Formula

$$r_{Inner} = r_{Outer} - t$$

Example with Units

$$6\,\text{m} = 10\,\text{m} - 4\,\text{m}$$

1.3) Inner Radius of Hollow Sphere given Volume Formula

Evaluate Formula

Formula

$$r_{Inner} = \left(r_{Outer}^{3} - \frac{3 \cdot V}{4 \cdot \pi} \right)^{\frac{1}{3}}$$

Example with Units

$$5.9644\,\text{m} = \left(10\,\text{m}^{3} - \frac{3 \cdot 3300\,\text{m}^3}{4 \cdot 3.1416} \right)^{\frac{1}{3}}$$

1.4) Outer Radius of Hollow Sphere given Surface Area Formula

Evaluate Formula

Formula

$$r_{Outer} = \sqrt{\frac{SA}{4 \cdot \pi} - r_{Inner}^{2}}^{2}$$

Example with Units

$$9.964\,\text{m} = \sqrt{\frac{1700\,\text{m}^2}{4 \cdot 3.1416} - 6\,\text{m}^{2}}^{2}$$

1.5) Outer Radius of Hollow Sphere given Thickness Formula

Evaluate Formula

Formula

$$r_{Outer} = r_{Inner} + t$$

Example with Units

$$10\,\text{m} = 6\,\text{m} + 4\,\text{m}$$

1.6) Outer Radius of Hollow Sphere given Volume Formula

Evaluate Formula

Formula

$$r_{Outer} = \left(\frac{3 \cdot V}{4 \cdot \pi} + r_{Inner}^{3} \right)^{\frac{1}{3}}$$

Example with Units

$$10.0127\,\text{m} = \left(\frac{3 \cdot 3300\,\text{m}^3}{4 \cdot 3.1416} + 6\,\text{m}^{3} \right)^{\frac{1}{3}}$$

2) Surface Area of Hollow Sphere Formulas

2.1) Surface Area of Hollow Sphere Formula

Evaluate Formula

Formula

$$SA = 4 \cdot \pi \cdot \left(r_{Outer}^{2} + r_{Inner}^{2} \right)$$

Example with Units

$$1709.0264\,\text{m}^2 = 4 \cdot 3.1416 \cdot \left(10\,\text{m}^{2} + 6\,\text{m}^{2} \right)$$

2.2) Surface Area of Hollow Sphere given Thickness and Outer Radius Formula

Evaluate Formula

Formula

$$SA = 4 \cdot \pi \cdot \left(r_{Outer}^{2} + \left(r_{Outer} - t \right)^{2} \right)$$

Example with Units

$$1709.0264\,\text{m}^2 = 4 \cdot 3.1416 \cdot \left(10\,\text{m}^{2} + \left(10\,\text{m} - 4\,\text{m} \right)^{2} \right)$$

2.3) Surface Area of Hollow Sphere given Volume and Inner Radius Formula

Evaluate Formula

Formula

$$SA = 4 \cdot \pi \cdot \left(\left(\frac{3 \cdot V}{4 \cdot \pi} + r_{Inner}^{3} \right)^{\frac{2}{3}} + r_{Inner}^{2} \right)$$

Example with Units

$$1712.2221\,\text{m}^2 = 4 \cdot 3.1416 \cdot \left(\left(\frac{3 \cdot 3300\,\text{m}^3}{4 \cdot 3.1416} + 6\,\text{m}^{3} \right)^{\frac{2}{3}} + 6\,\text{m}^{2} \right)$$

3) Thickness of Hollow Sphere Formulas

3.1) Thickness of Hollow Sphere Formula

Evaluate Formula

Formula

$$t = r_{Outer} - r_{Inner}$$

Example with Units

$$4\,\text{m} = 10\,\text{m} - 6\,\text{m}$$

3.2) Thickness of Hollow Sphere given Surface Area and Inner Radius Formula

Evaluate Formula

Formula

$$t = \sqrt{\frac{SA}{4 \cdot \pi} - r_{Inner}^{2}} - r_{Inner}$$

Example with Units

$$3.964\,\text{m} = \sqrt{\frac{1700\,\text{m}^2}{4 \cdot 3.1416} - 6\,\text{m}^{2}} - 6\,\text{m}$$

3.3) Thickness of Hollow Sphere given Volume and Outer Radius Formula

Evaluate Formula

Formula

$$t = r_{Outer} - \left(r_{Outer}^{3} - \frac{3 \cdot V}{4 \cdot \pi} \right)^{\frac{1}{3}}$$

Example with Units

$$4.0356\,\text{m} = 10\,\text{m} - \left(10\,\text{m}^{3} - \frac{3 \cdot 3300\,\text{m}^{3}}{4 \cdot 3.1416} \right)^{\frac{1}{3}}$$

4) Volume of Hollow Sphere Formulas

4.1) Volume of Hollow Sphere Formula

Evaluate Formula

Formula

$$V = \frac{4}{3} \cdot \pi \cdot \left(r_{Outer}^{3} - r_{Inner}^{3} \right)$$

Example with Units

$$3284.0115\,\text{m}^{3} = \frac{4}{3} \cdot 3.1416 \cdot \left(10\,\text{m}^{3} - 6\,\text{m}^{3} \right)$$

4.2) Volume of Hollow Sphere given Surface Area and Outer Radius Formula

Evaluate Formula

Formula

$$V = \frac{4}{3} \cdot \pi \cdot \left(r_{Outer}^{3} - \left(\frac{SA}{4 \cdot \pi} - r_{Outer}^{2} \right)^{\frac{3}{2}} \right)$$

Example with Units

$$3310.9552\,\text{m}^{3} = \frac{4}{3} \cdot 3.1416 \cdot \left(10\,\text{m}^{3} - \left(\frac{1700\,\text{m}^{2}}{4 \cdot 3.1416} - 10\,\text{m}^{2} \right)^{\frac{3}{2}} \right)$$

4.3) Volume of Hollow Sphere given Thickness and Inner Radius Formula

Evaluate Formula

Formula

$$V = \frac{4}{3} \cdot \pi \cdot \left(\left(r_{Inner} + t \right)^{3} - r_{Inner}^{3} \right)$$

Example with Units

$$3284.0115\,\text{m}^{3} = \frac{4}{3} \cdot 3.1416 \cdot \left(\left(6\,\text{m} + 4\,\text{m} \right)^{3} - 6\,\text{m}^{3} \right)$$

Variables used in list of Important Formulas of Hollow Sphere above

- r_{Inner} Inner Radius of Hollow Sphere *(Meter)*
- r_{Outer} Outer Radius of Hollow Sphere *(Meter)*
- **SA** Surface Area of Hollow Sphere *(Square Meter)*
- **t** Thickness of Hollow Sphere *(Meter)*
- **V** Volume of Hollow Sphere *(Cubic Meter)*

Constants, Functions, Measurements used in list of Important Formulas of Hollow Sphere 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*
- Measurement: **Area** in Square Meter (m^2) *Area 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 share
- HCF of two numbers
- Improper 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

7/9/2024 | 1:39:42 PM UTC