Important Formulas of Hollow Cuboid PDF

Formulas
Examples
with Units

List of 15
Important Formulas of Hollow Cuboid

1) Height and Thickness of Hollow Cuboid Formulas

1.1) Height of Hollow Cuboid Formula

Evaluate Formula

Formula

$$h = \frac{V}{2 \cdot t \cdot \left(l_{Outer} + b_{Outer} - \left(2 \cdot t \right) \right)}$$

Example with Units

$$20.1754\,\text{m} = \frac{2300\,\text{m}^3}{2 \cdot 3\,\text{m} \cdot \left(15\,\text{m} + 10\,\text{m} - \left(2 \cdot 3\,\text{m} \right) \right)}$$

1.2) Thickness of Hollow Cuboid given Inner and Outer Breadth Formula

Evaluate Formula

Formula

$$t = \frac{b_{Outer} - b_{Inner}}{2}$$

Example with Units

$$3\,\text{m} = \frac{10\,\text{m} - 4\,\text{m}}{2}$$

1.3) Thickness of Hollow Cuboid given Inner and Outer Length Formula

Evaluate Formula

Formula

$$t = \frac{l_{Outer} - l_{Inner}}{2}$$

Example with Units

$$3\,\text{m} = \frac{15\,\text{m} - 9\,\text{m}}{2}$$

2) Length and Breadth of Hollow Cuboid Formulas

2.1) Inner Breadth of Hollow Cuboid Formula

Evaluate Formula

Formula

$$b_{Inner} = b_{Outer} - \left(2 \cdot t \right)$$

Example with Units

$$4\,\text{m} = 10\,\text{m} - \left(2 \cdot 3\,\text{m} \right)$$

2.2) Inner Length of Hollow Cuboid Formula

Evaluate Formula

Formula

$$l_{Inner} = l_{Outer} - \left(2 \cdot t \right)$$

Example with Units

$$9\,\text{m} = 15\,\text{m} - \left(2 \cdot 3\,\text{m} \right)$$

2.3) Outer Breadth of Hollow Cuboid Formula

Evaluate Formula

Formula

$$b_{Outer} = b_{Inner} + \left(2 \cdot t \right)$$

Example with Units

$$10\,\text{m} = 4\,\text{m} + \left(2 \cdot 3\,\text{m} \right)$$

2.4) Outer Length of Hollow Cuboid Formula

Evaluate Formula

Formula

$$l_{Outer} = l_{Inner} + \left(2 \cdot t \right)$$

Example with Units

$$15\,\text{m} = 9\,\text{m} + \left(2 \cdot 3\,\text{m} \right)$$

3) Total Surface Area of Hollow Cuboid Formulas

3.1) Total Surface Area of Hollow Cuboid Formula

Evaluate Formula

Formula

$$TSA = 4 \cdot \left(\left(h \cdot b_{Outer} \right) + \left(h \cdot l_{Outer} \right) + \left(b_{Outer} \cdot t \right) + \left(l_{Outer} \cdot t \right) - \left(2 \cdot t \cdot h \right) - \left(2 \cdot t^2 \right) \right)$$

Example with Units

$$1748\,\text{m}^2 = 4 \cdot \left(\left(20\,\text{m} \cdot 10\,\text{m} \right) + \left(20\,\text{m} \cdot 15\,\text{m} \right) + \left(10\,\text{m} \cdot 3\,\text{m} \right) + \left(15\,\text{m} \cdot 3\,\text{m} \right) - \left(2 \cdot 3\,\text{m} \cdot 20\,\text{m} \right) - \left(2 \cdot 3\,\text{m}^2 \right) \right)$$

3.2) Total Surface Area of Hollow Cuboid given Inner and Outer Breadth Formula

Evaluate Formula

Formula

$$TSA = 4 \cdot \left(\left(h \cdot b_{Outer} \right) + \left(h \cdot l_{Outer} \right) + \left(b_{Outer} \cdot \left(\frac{b_{Outer} - b_{Inner}}{2} \right) \right) + \left(l_{Outer} \cdot \left(\frac{b_{Outer} - b_{Inner}}{2} \right) \right) - \left(2 \cdot \left(\frac{b_{Outer} - b_{Inner}}{2} \right) \cdot h \right) - \left(2 \cdot \left(\frac{b_{Outer} - b_{Inner}}{2} \right)^2 \right) \right)$$

Example with Units

$$1748\,\text{m}^2 = 4 \cdot \left(\left(20\,\text{m} \cdot 10\,\text{m} \right) + \left(20\,\text{m} \cdot 15\,\text{m} \right) + \left(10\,\text{m} \cdot \left(\frac{10\,\text{m} - 4\,\text{m}}{2} \right) \right) + \left(15\,\text{m} \cdot \left(\frac{10\,\text{m} - 4\,\text{m}}{2} \right) \right) - \left(2 \cdot \left(\frac{10\,\text{m} - 4\,\text{m}}{2} \right) \cdot 20\,\text{m} \right) - \left(2 \cdot \left(\frac{10\,\text{m} - 4\,\text{m}}{2} \right)^2 \right) \right)$$

3.3) Total Surface Area of Hollow Cuboid given Outer Length and Inner Breadth Formula

Evaluate Formula

Formula

$$TSA = 4 \cdot \left(\left(h \cdot \left(b_{Inner} + 2 \cdot t \right) \right) + \left(h \cdot l_{Outer} \right) + \left(\left(b_{Inner} + 2 \cdot t \right) \cdot t \right) + \left(l_{Outer} \cdot t \right) - \left(2 \cdot t \cdot h \right) - \left(2 \cdot t^2 \right) \right)$$

Example with Units

$$1748\,\text{m}^2 = 4 \cdot \left(\left(20\,\text{m} \cdot \left(4\,\text{m} + 2 \cdot 3\,\text{m} \right) \right) + \left(20\,\text{m} \cdot 15\,\text{m} \right) + \left(\left(4\,\text{m} + 2 \cdot 3\,\text{m} \right) \cdot 3\,\text{m} \right) + \left(15\,\text{m} \cdot 3\,\text{m} \right) - \left(2 \cdot 3\,\text{m} \cdot 20\,\text{m} \right) - \left(2 \cdot 3\,\text{m}^2 \right) \right)$$

3.4) Total Surface Area of Hollow Cuboid given Volume Formula

Evaluate Formula

Formula

$$TSA = 4 \cdot \left(\left(\frac{V}{2 \cdot t \cdot \left(l_{Outer} + b_{Outer} - \left(2 \cdot t \right) \right)} \cdot l_{Outer} \right) + \left(\frac{V}{2 \cdot t \cdot \left(l_{Outer} + b_{Outer} - \left(2 \cdot t \right) \right)} \cdot b_{Outer} \right) + \left(l_{Outer} \cdot t \right) + \left(b_{Outer} \cdot t \right) - \left(\frac{V}{l_{Outer} + b_{Outer} - \left(2 \cdot t \right)} \right) - \left(2 \right.$$

Example with Units

$$1761.3333\,\text{m}^2 = 4 \cdot \left(\left(\frac{2300\,\text{m}^3}{2 \cdot 3\,\text{m} \cdot \left(15\,\text{m} + 10\,\text{m} - \left(2 \cdot 3\,\text{m} \right) \right)} \cdot 15\,\text{m} \right) + \left(\frac{2300\,\text{m}^3}{2 \cdot 3\,\text{m} \cdot \left(15\,\text{m} + 10\,\text{m} - \left(2 \cdot 3\,\text{m} \right) \right)} \cdot 10\,\text{m} \right) + \left(15\,\text{m} \cdot 3\,\text{m} \right) + \left(10\,\text{m} \cdot 3\,\text{m} \right) - \left(\frac{2300\,\text{m}}{15\,\text{m} + 10\,\text{m} -} \right.$$

4) Volume of Hollow Cuboid Formulas

4.1) Volume of Hollow Cuboid Formula

Evaluate Formula

Formula

$$V = 2 \cdot h \cdot t \cdot \left(l_{Outer} + b_{Outer} - \left(2 \cdot t \right) \right)$$

Example with Units

$$2280\,\text{m}^3 = 2 \cdot 20\,\text{m} \cdot 3\,\text{m} \cdot \left(15\,\text{m} + 10\,\text{m} - \left(2 \cdot 3\,\text{m} \right) \right)$$

4.2) Volume of Hollow Cuboid given Inner and Outer Breadth Formula

Evaluate Formula

Formula

$$V = h \cdot \left(b_{Outer} - b_{Inner} \right) \cdot \left(l_{Outer} + b_{Inner} \right)$$

Example with Units

$$2280\,\text{m}^3 = 20\,\text{m} \cdot \left(10\,\text{m} - 4\,\text{m} \right) \cdot \left(15\,\text{m} + 4\,\text{m} \right)$$

4.3) Volume of Hollow Cuboid given Outer Length and Inner Breadth Formula

Evaluate Formula

Formula

$$V = 2 \cdot h \cdot t \cdot \left(b_{Inner} + l_{Outer} \right)$$

Example with Units

$$2280\,\text{m}^3 = 2 \cdot 20\,\text{m} \cdot 3\,\text{m} \cdot \left(4\,\text{m} + 15\,\text{m} \right)$$

4.4) Volume of Hollow Cuboid given Total Surface Area Formula

Evaluate Formula

Formula

$$V = \left(\left(h \cdot b_{Outer} \right) + \left(h \cdot l_{Outer} \right) + \left(b_{Outer} \cdot t \right) + \left(l_{Outer} \cdot t \right) - \left(2 \cdot t^2 \right) - \frac{TSA}{4} \right) \cdot \left(l_{Outer} + b_{Outer} - \left(2 \cdot t \right) \right)$$

Example with Units

$$2270.5\,\text{m}^3 = \left(\left(20\,\text{m} \cdot 10\,\text{m} \right) + \left(20\,\text{m} \cdot 15\,\text{m} \right) + \left(10\,\text{m} \cdot 3\,\text{m} \right) + \left(15\,\text{m} \cdot 3\,\text{m} \right) - \left(2 \cdot 3\,\text{m}^2 \right) - \frac{1750\,\text{m}^2}{4} \right) \cdot \left(15\,\text{m} + 10\,\text{m} - \left(2 \cdot 3\,\text{m} \right) \right)$$

Variables used in list of Important Formulas of Hollow Cuboid above

- b_{Inner} Inner Breadth of Hollow Cuboid *(Meter)*
- b_{Outer} Outer Breadth of Hollow Cuboid *(Meter)*
- **h** Height of Hollow Cuboid *(Meter)*
- l_{Inner} Inner Length of Hollow Cuboid *(Meter)*
- l_{Outer} Outer Length of Hollow Cuboid *(Meter)*
- **t** Thickness of Hollow Cuboid *(Meter)*
- **TSA** Total Surface Area of Hollow Cuboid *(Square Meter)*
- **V** Volume of Hollow Cuboid *(Cubic Meter)*

Constants, Functions, Measurements used in list of Important Formulas of Hollow Cuboid above

- 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

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- Important Spherical Corner Formulas
- Important Spherical Ring Formulas
- Important Spherical Sector Formulas
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