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## Important Formulas of Hollow Cuboid

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## List of 15 Important Formulas of Hollow Cuboid

### Important Formulas of Hollow Cuboid

#### Height and Thickness of Hollow Cuboid

##### 1) Height of Hollow Cuboid

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

[Open Calculator !\[\]\(de95854c7ee024cfadc48187bbb781b2\_img.jpg\)](#)

$$\text{ex } 20.17544\text{m} = \frac{2300\text{m}^3}{2 \cdot 3\text{m} \cdot (15\text{m} + 10\text{m} - (2 \cdot 3\text{m}))}$$

##### 2) Thickness of Hollow Cuboid given Inner and Outer Breadth

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

[Open Calculator !\[\]\(6a9b39b98eb945faa14c645ec99e4eaa\_img.jpg\)](#)

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

##### 3) Thickness of Hollow Cuboid given Inner and Outer Length

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

[Open Calculator !\[\]\(f1c5da15572e3e09d343161be98f508d\_img.jpg\)](#)

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

### Length and Breadth of Hollow Cuboid

##### 4) Inner Breadth of Hollow Cuboid

$$\text{fx } b_{\text{Inner}} = b_{\text{Outer}} - (2 \cdot t)$$

[Open Calculator !\[\]\(291e070cef6c4d5e78fefe4696ef53be\_img.jpg\)](#)

$$\text{ex } 4\text{m} = 10\text{m} - (2 \cdot 3\text{m})$$

##### 5) Inner Length of Hollow Cuboid

$$\text{fx } l_{\text{Inner}} = l_{\text{Outer}} - (2 \cdot t)$$

[Open Calculator !\[\]\(066cb4a00c9d9f40edb6f87372ec6f08\_img.jpg\)](#)

$$\text{ex } 9\text{m} = 15\text{m} - (2 \cdot 3\text{m})$$



### 6) Outer Breadth of Hollow Cuboid

$$fx \quad b_{Outer} = b_{Inner} + (2 \cdot t)$$

[Open Calculator !\[\]\(cbe80b694ebd74fcfe136a095b608235\_img.jpg\)](#)

$$ex \quad 10m = 4m + (2 \cdot 3m)$$

### 7) Outer Length of Hollow Cuboid

$$fx \quad l_{Outer} = l_{Inner} + (2 \cdot t)$$

[Open Calculator !\[\]\(3e2231b1ad3ca8da8658228c00dd08e0\_img.jpg\)](#)

$$ex \quad 15m = 9m + (2 \cdot 3m)$$

### Total Surface Area of Hollow Cuboid

### 8) Total Surface Area of Hollow Cuboid

**fx**

[Open Calculator !\[\]\(b792654f2cef9719eabeb6c5be00811e\_img.jpg\)](#)

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

$$ex \quad 1748m^2 = 4 \cdot ((20m \cdot 10m) + (20m \cdot 15m) + (10m \cdot 3m) + (15m \cdot 3m) - (2 \cdot 3m \cdot 20m) - (2 \cdot (3m)^2))$$

### 9) Total Surface Area of Hollow Cuboid given Inner and Outer Breadth

**fx**

[Open Calculator !\[\]\(28f72b996fc97883dfd9d4e8b1b16b4e\_img.jpg\)](#)

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

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

### 10) Total Surface Area of Hollow Cuboid given Outer Length and Inner Breadth

**fx**

[Open Calculator !\[\]\(4c9516d2c24d0d513bc9f84c2e013d65\_img.jpg\)](#)

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

$$ex \quad 1748m^2 = 4 \cdot ((20m \cdot (4m + 2 \cdot 3m)) + (20m \cdot 15m) + ((4m + 2 \cdot 3m) \cdot 3m) + (15m \cdot 3m) - (2 \cdot 3m \cdot 20m) - (2 \cdot (3m)^2))$$



11) Total Surface Area of Hollow Cuboid given Volume 

fx

Open Calculator 

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

ex

$$1761.333m^2 = 4 \cdot \left( \left( \frac{2300m^3}{2 \cdot 3m \cdot (15m + 10m - (2 \cdot 3m))} \right) \cdot 15m \right) + \left( \frac{2300m^3}{2 \cdot 3m \cdot (15m + 10m - (2 \cdot 3m))} \right) \cdot 10m$$


Volume of Hollow Cuboid 

12) Volume of Hollow Cuboid 

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

Open Calculator 


ex  $2280m^3 = 2 \cdot 20m \cdot 3m \cdot (15m + 10m - (2 \cdot 3m))$

13) Volume of Hollow Cuboid given Inner and Outer Breadth 

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

Open Calculator 


ex  $2280m^3 = 20m \cdot (10m - 4m) \cdot (15m + 4m)$

14) Volume of Hollow Cuboid given Outer Length and Inner Breadth 

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

Open Calculator 

ex  $2280m^3 = 2 \cdot 20m \cdot 3m \cdot (4m + 15m)$

15) Volume of Hollow Cuboid given Total Surface Area 

fx

Open Calculator 

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

ex

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






## Variables Used

- **b<sub>Inner</sub>** Inner Breadth of Hollow Cuboid (Meter)
- **b<sub>Outer</sub>** Outer Breadth of Hollow Cuboid (Meter)
- **h** Height of Hollow Cuboid (Meter)
- **l<sub>Inner</sub>** Inner Length of Hollow Cuboid (Meter)
- **l<sub>Outer</sub>** 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

- **Measurement: Length** in Meter (m)  
*Length Unit Conversion* 
- **Measurement: Volume** in Cubic Meter (m<sup>3</sup>)  
*Volume Unit Conversion* 
- **Measurement: Area** in Square Meter (m<sup>2</sup>)  
*Area Unit Conversion* 



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