



# **Important Formulas of Cuboid**

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# **List of 32 Important Formulas of Cuboid**

# Important Formulas of Cuboid 🗗

Diagonal of Cuboid

Face Diagonals of Cuboid

1) Base Diagonal of Cuboid 🗗

$$d_{\mathrm{Base}} = \sqrt{l^2 + w^2}$$

Open Calculator 🗗

$$13.41641 \mathrm{m} = \sqrt{\left(12 \mathrm{m}\right)^2 + \left(6 \mathrm{m}\right)^2}$$

2) Front Face Diagonal of Cuboid

$$d_{
m Front\,Face} = \sqrt{l^2 + h^2}$$

Open Calculator 🗗

$$\boxed{ 14.42221 \mathrm{m} = \sqrt{\left(12 \mathrm{m}\right)^2 + \left(8 \mathrm{m}\right)^2} }$$

3) Side Face Diagonal of Cuboid

$$d_{
m Side\ Face} = \sqrt{h^2 + w^2}$$

Open Calculator

$$10 \text{m} = \sqrt{(8 \text{m})^2 + (6 \text{m})^2}$$

Space Diagonal of Cuboid

4) Space Diagonal of Cuboid

$$d_{
m Space} = \sqrt{l^2 + w^2 + h^2}$$

Open Calculator

$$15.6205 \text{m} = \sqrt{(12 \text{m})^2 + (6 \text{m})^2 + (8 \text{m})^2}$$



### 5) Space Diagonal of Cuboid given Lateral Surface Area, Length, and Height

 $d_{\mathrm{Space}} = \sqrt{l^2 + \left(rac{\mathrm{LSA}}{2 \cdot \mathrm{h}} - l
ight)^2 + \mathrm{h}^2}$ 

Open Calculator 2

$$\boxed{ \text{ex} } 15.92365 \text{m} = \sqrt{ \left( 12 \text{m} \right)^2 + \left( \frac{300 \text{m}^2}{2 \cdot 8 \text{m}} - 12 \text{m} \right)^2 + \left( 8 \text{m} \right)^2 }$$

# 6) Space Diagonal of Cuboid given Total Surface Area, Length, and Width

 $\mathbf{c}$   $\mathbf{d}_{\mathrm{Space}} = \sqrt{\mathbf{l}^2 + \mathbf{w}^2 + \left(\frac{\frac{\mathrm{TSA}}{2} - (\mathbf{l} \cdot \mathbf{w})}{\mathbf{l} + \mathbf{w}}\right)^2}$ 

Open Calculator 2

$$\boxed{ 15.88238 \text{m} = \sqrt{ (12\text{m})^2 + (6\text{m})^2 + \left( \frac{450\text{m}^2}{2} - (12\text{m} \cdot 6\text{m})}{12\text{m} + 6\text{m}} \right)^2 }$$

#### 7) Space Diagonal of Cuboid given Volume, Width, and Height [

 $d_{\mathrm{Space}} = \sqrt{\left(rac{V}{w \cdot h}
ight)^2 + w^2 + h^2}$ 

Open Calculator

ex 
$$16.00781m = \sqrt{\left(\frac{600m^3}{6m \cdot 8m}\right)^2 + (6m)^2 + (8m)^2}$$

# Edges of Cuboid

# 8) Height of Cuboid given Lateral Surface Area

 $\mathbf{h} = rac{\mathrm{LSA}}{2 \cdot (\mathrm{l} + \mathrm{w})}$ 

Open Calculator 🚰

$$\boxed{ 8.333333 m = \frac{300 m^2}{2 \cdot (12 m + 6 m)} }$$

### 9) Height of Cuboid given Volume

$$h = \frac{V}{1 \cdot w}$$

Open Calculator 🚰

$$= \frac{600 \text{m}^3}{12 \text{m} \cdot 6 \text{m}}$$



## 10) Length of Cuboid given Space Diagonal

 $l = \sqrt{d_{\mathrm{Space}}^2 - w^2 - h^2}$ 

Open Calculator 🗗

$$\mathbf{ex}$$
 12.49m =  $\sqrt{(16\text{m})^2 - (6\text{m})^2 - (8\text{m})^2}$ 

# 11) Length of Cuboid given Volume

 $\textbf{fx} \boxed{l = \frac{V}{w \cdot h}}$ 

Open Calculator

# $12.5m = \frac{600m^3}{6m \cdot 8m}$

# 12) Width of Cuboid given Surface to Volume Ratio

 $\mathbf{x} = rac{\mathbf{l} \cdot \mathbf{h}}{rac{\mathbf{R}_{\mathrm{A/V}} \cdot \mathbf{l} \cdot \mathbf{h}}{2} - (\mathbf{l} + \mathbf{h})}$ 

Open Calculator

# 

# $\mathbf{x} = \frac{\frac{TSA}{2} - (h \cdot l)}{h + l}$

Open Calculator

# Perimeter of Cuboid 2

## 14) Perimeter of Cuboid

 $\mathbf{f}\mathbf{x} \left[ \mathbf{P} = 4 \cdot (\mathbf{l} + \mathbf{w} + \mathbf{h}) 
ight]$ 

Open Calculator

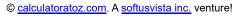
- $104 ext{m} = 4 \cdot (12 ext{m} + 6 ext{m} + 8 ext{m})$
- 15) Perimeter of Cuboid given Space Diagonal, Length, and Width
- $extstyle extstyle extstyle extstyle P = 4 \cdot \left( 1 + extstyle extstyle$

Open Calculator

$$P = 4 \cdot \left(1 + w + \sqrt{d_{\text{Space}} - 1 - w^2}\right)$$

$$\boxed{ 106.8712 m = 4 \cdot \left( 12 m + 6 m + \sqrt{\left( 16 m \right)^2 - \left( 12 m \right)^2 - \left( 6 m \right)^2} \right) }$$







# 16) Perimeter of Cuboid given Total Surface Area, Height, and Length

$$extbf{P} = 4 \cdot \left( 1 + rac{rac{ ext{TSA}}{2} - ( ext{h} \cdot ext{l})}{ ext{h} + ext{l}} + ext{h} 
ight)$$

Open Calculator

# 17) Perimeter of Cuboid given Volume, Height and Width 🖸

$$oldsymbol{\mathbb{R}} \left[ \mathrm{P} = 4 \cdot \left( rac{\mathrm{V}}{\mathrm{w} \cdot \mathrm{h}} + \mathrm{h} + \mathrm{w} 
ight) 
ight]$$

Open Calculator

# $\boxed{106\mathrm{m} = 4 \cdot \left(\frac{600\mathrm{m}^3}{6\mathrm{m} \cdot 8\mathrm{m}} + 8\mathrm{m} + 6\mathrm{m}\right)}$

# Surface Area of Cuboid 2

# 18) Base Area of Cuboid

Face Areas of Cuboid

fx  $A_{\mathrm{Base}} = l \cdot w$ 

Open Calculator

- $oxed{ex} 72 \mathrm{m}^{\scriptscriptstyle 2} = 12 \mathrm{m} \cdot 6 \mathrm{m}$
- $\mathbf{A}_{\mathrm{Front\ Face}} = \mathbf{l} \cdot \mathbf{h}$

Open Calculator

- 71 Front Face 1 11
- $96\text{m}^2 = 12\text{m} \cdot 8\text{m}$

# 20) Side Face Area of Cuboid 🗗

19) Front Face Area of Cuboid 🚰

 $\mathbf{K} ar{\mathrm{A}_{\mathrm{Side\ Face}}} = \mathrm{h} \cdot \mathrm{w}$ 

Open Calculator

- $48\mathrm{m}^2=8\mathrm{m}\cdot6\mathrm{m}$
- Lateral Surface Area of Cuboid

# \_\_\_\_\_

# 21) Lateral Surface Area of Cuboid 🖸

 $extbf{LSA} = 2 \cdot ext{h} \cdot ( ext{l} + ext{w})$ 

Open Calculator [ ]

$$\boxed{288\mathrm{m}^2 = 2\cdot 8\mathrm{m}\cdot (12\mathrm{m} + 6\mathrm{m})}$$





### 22) Lateral Surface Area of Cuboid given Space Diagonal, Height and Width 🗗

 $extbf{LSA} = 2 \cdot ext{h} \cdot \left( \sqrt{ ext{d}_{ ext{Space}}^2 - ext{w}^2 - ext{h}^2} + ext{w} 
ight)$ 

Open Calculator

 $\boxed{\texttt{ex}} \left[ 295.8399 \text{m}^2 = 2 \cdot 8 \text{m} \cdot \left( \sqrt{\left(16 \text{m}\right)^2 - \left(6 \text{m}\right)^2 - \left(8 \text{m}\right)^2} + 6 \text{m} \right) \right]$ 

#### 23) Lateral Surface Area of Cuboid given Total Surface Area, Length and Width

fx LSA = TSA -  $(2 \cdot l \cdot w)$ 

Open Calculator

 $= 306 \text{m}^2 = 450 \text{m}^2 - (2 \cdot 12 \text{m} \cdot 6 \text{m})$ 

#### 24) Lateral Surface Area of Cuboid given Volume, Length and Height

 $extbf{LSA} = 2 \cdot ext{h} \cdot \left( 1 + rac{ ext{V}}{1 \cdot ext{h}} 
ight)$ 

Open Calculator

 $\boxed{\texttt{ex}} \ 292 \text{m}^2 = 2 \cdot 8 \text{m} \cdot \left(12 \text{m} + \frac{600 \text{m}^3}{12 \text{m} \cdot 8 \text{m}}\right)$ 

#### Total Surface Area of Cuboid 🚰

#### 25) Total Surface Area of Cuboid 🛂

 $extbf{K} extbf{TSA} = 2 \cdot (( extbf{l} \cdot extbf{h}) + ( extbf{h} \cdot extbf{w}) + ( extbf{l} \cdot extbf{w}))$ 

Open Calculator

# 26) Total Surface Area of Cuboid given Lateral Surface Area, Height and Width

 $ag{TSA} = 2 \cdot \left( \left( \left( rac{ ext{LSA}}{2 \cdot ext{h}} - ext{w} 
ight) \cdot ext{h} 
ight) + ( ext{h} \cdot ext{w}) + \left( \left( rac{ ext{LSA}}{2 \cdot ext{h}} - ext{w} 
ight) \cdot ext{w} 
ight) 
ight)$ 

Open Calculator

 $\boxed{ 453 \text{m}^2 = 2 \cdot \left( \left( \left( \frac{300 \text{m}^2}{2 \cdot 8 \text{m}} - 6 \text{m} \right) \cdot 8 \text{m} \right) + \left( 8 \text{m} \cdot 6 \text{m} \right) + \left( \left( \frac{300 \text{m}^2}{2 \cdot 8 \text{m}} - 6 \text{m} \right) \cdot 6 \text{m} \right) \right) }$ 

# 27) Total Surface Area of Cuboid given Space Diagonal, Length and Height 🗗

 $ag{TSA} = 2 \cdot \left( ( ext{l} \cdot ext{h}) + \left( ext{h} \cdot \sqrt{ ext{d}_{ ext{Space}}^2 - ext{l}^2 - ext{h}^2} 
ight) + \left( ext{l} \cdot \sqrt{ ext{d}_{ ext{Space}}^2 - ext{l}^2 - ext{h}^2} 
ight) 
ight)$ 

Open Calculator

 $\boxed{469.1281 \text{m}^2 = 2 \cdot \left( \left(12 \text{m} \cdot 8 \text{m}\right) + \left(8 \text{m} \cdot \sqrt{\left(16 \text{m}\right)^2 - \left(12 \text{m}\right)^2 - \left(8 \text{m}\right)^2}\right) + \left(12 \text{m} \cdot \sqrt{\left(16 \text{m}\right)^2 - \left(12 \text{m}\right)^2 - \left(8 \text{m}\right)^2}\right) + \left(12 \text{m} \cdot \sqrt{\left(16 \text{m}\right)^2 - \left(12 \text{m}\right)^2 - \left(8 \text{m}\right)^2}\right) + \left(12 \text{m} \cdot \sqrt{\left(16 \text{m}\right)^2 - \left(12 \text{m}\right)^2 - \left(8 \text{m}\right)^2}\right) + \left(12 \text{m} \cdot \sqrt{\left(16 \text{m}\right)^2 - \left(12 \text{m}\right)^2 - \left(8 \text{m}\right)^2}\right) + \left(12 \text{m} \cdot \sqrt{\left(16 \text{m}\right)^2 - \left(12 \text{m}\right)^2 - \left(8 \text{m}\right)^2}\right) + \left(12 \text{m} \cdot \sqrt{\left(16 \text{m}\right)^2 - \left(12 \text{m}\right)^2 - \left(8 \text{m}\right)^2}\right) + \left(12 \text{m} \cdot \sqrt{\left(16 \text{m}\right)^2 - \left(12 \text{m}\right)^2 - \left(8 \text{m}\right)^2}\right) + \left(12 \text{m} \cdot \sqrt{\left(16 \text{m}\right)^2 - \left(12 \text{m}\right)^2 - \left(8 \text{m}\right)^2}\right) + \left(12 \text{m} \cdot \sqrt{\left(16 \text{m}\right)^2 - \left(12 \text{m}\right)^2 - \left(8 \text{m}\right)^2}\right) + \left(12 \text{m} \cdot \sqrt{\left(16 \text{m}\right)^2 - \left(12 \text{m}\right)^2 - \left(8 \text{m}\right)^2}\right) + \left(12 \text{m} \cdot \sqrt{\left(16 \text{m}\right)^2 - \left(12 \text{m}\right)^2 - \left(8 \text{m}\right)^2}\right) + \left(12 \text{m} \cdot \sqrt{\left(16 \text{m}\right)^2 - \left(12 \text{m}\right)^2 - \left(8 \text{m}\right)^2}\right) + \left(12 \text{m} \cdot \sqrt{\left(16 \text{m}\right)^2 - \left(12 \text{m}\right)^2 - \left(8 \text{m}\right)^2}\right) + \left(12 \text{m} \cdot \sqrt{\left(16 \text{m}\right)^2 - \left(12 \text{m}\right)^2 - \left(8 \text{m}\right)^2}\right) + \left(12 \text{m} \cdot \sqrt{\left(16 \text{m}\right)^2 - \left(12 \text{m}\right)^2 - \left(8 \text{m}\right)^2}\right) + \left(12 \text{m} \cdot \sqrt{\left(16 \text{m}\right)^2 - \left(12 \text{m}\right)^2 - \left(8 \text{m}\right)^2}\right)}$ 





28) Total Surface Area of Cuboid given Volume, Length and Width 🗗

$$ext{TSA} = 2 \cdot \left( rac{ ext{V}}{1} + ( ext{l} \cdot ext{w}) + rac{ ext{V}}{ ext{w}} 
ight)$$

Open Calculator

$$\boxed{ \mathbf{ex} \left[ 444 m^2 = 2 \cdot \left( \frac{600 m^3}{12 m} + (12 m \cdot 6 m) + \frac{600 m^3}{6 m} \right) \right] }$$

## Volume of Cuboid

29) Volume of Cuboid

fx 
$$V = l \cdot w \cdot h$$

Open Calculator 🖸

30) Volume of Cuboid given Lateral Surface Area, Width and Height

$$V = \left(rac{LSA}{2 \cdot h} - w
ight) \cdot w \cdot h$$

Open Calculator

$$\boxed{\textbf{ex}} \ 612 m^3 = \left(\frac{300 m^2}{2 \cdot 8m} - 6m\right) \cdot 6m \cdot 8m$$

31) Volume of Cuboid given Space Diagonal, Length and Width

$$V = l \cdot w \cdot \sqrt{d_{\mathrm{Space}}^2 - l^2 - w^2}$$

Open Calculator

$$\mathbf{ex} \left[ 627.6814 \mathrm{m}^3 = 12 \mathrm{m} \cdot 6 \mathrm{m} \cdot \sqrt{\left(16 \mathrm{m}\right)^2 - \left(12 \mathrm{m}\right)^2 - \left(6 \mathrm{m}\right)^2} \right]$$

32) Volume of Cuboid given Total Surface Area, Width and Height

$$\mathbf{K} = rac{rac{\mathrm{TSA}}{2} - (\mathbf{h} \cdot \mathbf{w})}{\mathbf{h} + \mathbf{w}} \cdot \mathbf{w} \cdot \mathbf{h}$$

#### Variables Used

- ABase Base Area of Cuboid (Square Meter)
- AFront Face Front Face Area of Cuboid (Square Meter)
- Aside Face Side Face Area of Cuboid (Square Meter)
- d<sub>Base</sub> Base Diagonal of Cuboid (Meter)
- dFront Face Front Face Diagonal of Cuboid (Meter)
- d<sub>Side Face</sub> Side Face Diagonal of Cuboid (Meter)
- d<sub>Space</sub> Space Diagonal of Cuboid (Meter)
- **h** Height of Cuboid (Meter)
- I Length of Cuboid (Meter)
- LSA Lateral Surface Area of Cuboid (Square Meter)
- P Perimeter of Cuboid (Meter)
- RA/V Surface to Volume Ratio of Cuboid (1 per Meter)
- TSA Total Surface Area of Cuboid (Square Meter)
- V Volume of Cuboid (Cubic Meter)
- w Width of Cuboid (Meter)





# Constants, Functions, Measurements used

- Function: sqrt, sqrt(Number) Square root function
- 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<sup>-1</sup>)

  Reciprocal Length Unit Conversion





#### **Check other formula lists**

- Cuboid Formulas
- Cut Cuboid Formulas
- Half Cuboid Formulas

- Skewed Cuboid Formulas
- Truncated Cuboid Formulas
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