Important Formulas of Cylinder PDF

Formulas
Examples
with Units

List of 29
Important Formulas of Cylinder

1) Diagonal of Cylinder Formulas

1.1) Diagonal of Cylinder Formula

Evaluate Formula

Formula

$$d = \sqrt{h^2 + (2 \cdot r)^2}$$

Example with Units

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

1.2) Diagonal of Cylinder given Lateral Surface Area and Height Formula

Evaluate Formula

Formula

$$d = \sqrt{h^2 + \left(\frac{LSA}{\pi \cdot h}\right)^2}$$

Example with Units

$$15.6717 \,\text{m}^2 = \sqrt{12 \,\text{m}^2 + \left(\frac{380 \,\text{m}^2}{3.1416 \cdot 12 \,\text{m}}\right)^2}$$

1.3) Diagonal of Cylinder given Total Surface Area and Radius Formula

Evaluate Formula

Formula

$$d = \sqrt{\left(\frac{TSA}{2 \cdot \pi \cdot r} - r\right)^2 + (2 \cdot r)^2}$$

Example with Units

$$15.5212 \,\text{m}^2 = \sqrt{\left(\frac{530 \,\text{m}^2}{2 \cdot 3.1416 \cdot 5 \,\text{m}} - 5 \,\text{m}\right)^2 + (2 \cdot 5 \,\text{m})^2}$$

1.4) Diagonal of Cylinder given Volume and Height Formula

Evaluate Formula

Formula

$$d = \sqrt{h^2 + \frac{4 \cdot V}{\pi \cdot h}}$$

Example with Units

$$15.6121 \,\text{m}^2 = \sqrt{12 \,\text{m}^2 + \frac{4 \cdot 940 \,\text{m}^3}{3.1416 \cdot 12 \,\text{m}}}$$

2) Height of Cylinder Formulas

2.1) Height of Cylinder given Diagonal Formula

Formula

$$h = \sqrt{d^2 - (2 \cdot r)^2}$$

Example with Units

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

Evaluate Formula

2.2) Height of Cylinder given Lateral Surface Area Formula

Formula

$$h = \frac{LSA}{2 \cdot \pi \cdot r}$$

Example with Units

$$12.0958\,\text{m} = \frac{380\,\text{m}^2}{2 \cdot 3.1416 \cdot 5\,\text{m}}$$

Evaluate Formula

2.3) Height of Cylinder given Total Surface Area and Base Area Formula

Formula

$$h = \frac{TSA - 2 \cdot A_{Base}}{2 \cdot \pi \cdot r}$$

Example with Units

$$11.7775\,\text{m} = \frac{530\,\text{m}^2 - 2 \cdot 80\,\text{m}^2}{2 \cdot 3.1416 \cdot 5\,\text{m}}$$

Evaluate Formula

2.4) Height of Cylinder given Volume Formula

Formula

$$h = \frac{V}{\pi \cdot r^2}$$

Example with Units

$$11.9685\,\text{m} = \frac{940\,\text{m}^3}{3.1416 \cdot 5\,\text{m}^2}$$

Evaluate Formula

3) Perimeter of Cylinder Formulas

3.1) Perimeter of Cylinder Formula

Formula

$$P = 2 \cdot (2 \cdot \pi \cdot r + h)$$

Example with Units

$$86.8319\,\text{m} = 2 \cdot (2 \cdot 3.1416 \cdot 5\,\text{m} + 12\,\text{m})$$

Evaluate Formula

3.2) Perimeter of Cylinder given Lateral Surface Area and Height Formula

Formula

$$P = 2 \cdot \left(\frac{LSA}{h} + h \right)$$

Example with Units

$$87.3333\,\text{m} = 2 \cdot \left(\frac{380\,\text{m}^2}{12\,\text{m}} + 12\,\text{m} \right)$$

Evaluate Formula

3.3) Perimeter of Cylinder given Total Surface Area and Height Formula

Formula

$$P = 2 \cdot \left(\frac{TSA - 2 \cdot A_{Base}}{h} + h \right)$$

Example with Units

$$85.6667\,\text{m} = 2 \cdot \left(\frac{530\,\text{m}^2 - 2 \cdot 80\,\text{m}^2}{12\,\text{m}} + 12\,\text{m} \right)$$

Evaluate Formula

3.4) Perimeter of Cylinder given Volume and Radius Formula

Formula

$$P = 2 \cdot \left(2 \cdot \pi \cdot r + \frac{V}{\pi \cdot r^2} \right)$$

Example with Units

$$86.7688\,\text{m} = 2 \cdot \left(2 \cdot 3.1416 \cdot 5\,\text{m} + \frac{940\,\text{m}^3}{3.1416 \cdot 5\,\text{m}^2} \right)$$

Evaluate Formula

4) Radius of Cylinder Formulas

4.1) Radius of Cylinder given Lateral Surface Area Formula

Evaluate Formula

Formula

$$r = \frac{LSA}{2 \cdot \pi \cdot h}$$

Example with Units

$$5.0399\,\text{m} = \frac{380\,\text{m}^2}{2 \cdot 3.1416 \cdot 12\,\text{m}}$$

4.2) Radius of Cylinder given Total Surface Area and Base Area Formula

Evaluate Formula

Formula

$$r = \frac{TSA - 2 \cdot A_{Base}}{2 \cdot \pi \cdot h}$$

Example with Units

$$4.9073\,\text{m} = \frac{530\,\text{m}^2 - 2 \cdot 80\,\text{m}^2}{2 \cdot 3.1416 \cdot 12\,\text{m}}$$

4.3) Radius of Cylinder given Volume Formula

Evaluate Formula

Formula

$$r = \sqrt{\frac{V}{\pi \cdot h}}$$

Example with Units

$$4.9934\,\text{m} = \sqrt{\frac{940\,\text{m}^3}{3.1416 \cdot 12\,\text{m}}}$$

5) Surface Area of Cylinder Formulas

5.1) Base Area of Cylinder Formula

Evaluate Formula

Formula

$$A_{Base} = \pi \cdot r^2$$

Example with Units

$$78.5398\,\text{m}^2 = 3.1416 \cdot 5\,\text{m}^2$$

5.2) Lateral Surface Area of Cylinder Formula

Evaluate Formula

Formula

$$LSA = 2 \cdot \pi \cdot r \cdot h$$

Example with Units

$$376.9911\,\text{m}^2 = 2 \cdot 3.1416 \cdot 5\,\text{m} \cdot 12\,\text{m}$$

5.3) Lateral Surface Area of Cylinder given Diagonal and Radius Formula

Evaluate Formula

Formula

$$LSA = 2 \cdot \pi \cdot r \cdot \sqrt{d^2 - \left(2 \cdot r \right)^2}$$

Example with Units

$$392.3848\,\text{m}^2 = 2 \cdot 3.1416 \cdot 5\,\text{m} \cdot \sqrt{16\,\text{m}^2{}^2 - \left(2 \cdot 5\,\text{m} \right)^2}$$

5.4) Lateral Surface Area of Cylinder given Total Surface Area and Base Area Formula 📤

Formula

$$LSA = TSA - \left(2 \cdot A_{Base}\right)$$

Example with Units

$$370\,m^2 = 530\,m^2 - \left(2 \cdot 80\,m^2\right)$$

5.5) Lateral Surface Area of Cylinder given Volume and Radius Formula 📤

Formula

$$LSA = \frac{2 \cdot V}{r}$$

Example with Units

$$376\,m^2 = \frac{2 \cdot 940\,m^3}{5\,m}$$

5.6) Total Surface Area of Cylinder Formula 📤

Formula

$$TSA = 2 \cdot \pi \cdot r \cdot \left(h + r\right)$$

Example with Units

$$534.0708\,m^2 = 2 \cdot 3.1416 \cdot 5\,m \cdot \left(12\,m + 5\,m\right)$$

5.7) Total Surface Area of Cylinder given Diagonal and Height Formula 📤

Formula

$$TSA = \pi \cdot \sqrt{d^2 - h^2} \cdot \left(h + \frac{\sqrt{d^2 - h^2}}{2}\right)$$

Example with Units

$$574.8991\,m^2 = 3.1416 \cdot \sqrt{16\,m^2{}^2 - 12\,m^2} \cdot \left(12\,m + \frac{\sqrt{16\,m^2{}^2 - 12\,m^2}}{2}\right)$$

5.8) Total Surface Area of Cylinder given Lateral Surface Area and Base Area Formula 📤

Formula

$$TSA = LSA + \left(2 \cdot A_{Base}\right)$$

Example with Units

$$540\,m^2 = 380\,m^2 + \left(2 \cdot 80\,m^2\right)$$

5.9) Total Surface Area of Cylinder given Volume and Radius Formula 📤

Formula

$$TSA = 2 \cdot \pi \cdot r \cdot \left(\frac{V}{\pi \cdot r^2} + r\right)$$

Example with Units

$$533.0796\,m^2 = 2 \cdot 3.1416 \cdot 5\,m \cdot \left(\frac{940\,m^3}{3.1416 \cdot 5\,m^2} + 5\,m\right)$$

6) Volume of Cylinder Formulas ➤

6.1) Volume of Cylinder Formula ➤

Evaluate Formula ➤

Formula

$$V = \pi \cdot r^2 \cdot h$$

Example with Units

$$942.4778\,\text{m}^3 = 3.1416 \cdot 5\,\text{m}^2 \cdot 12\,\text{m}$$

6.2) Volume of Cylinder given Base Area Formula ➤

Evaluate Formula ➤

Formula

$$V = A_{Base} \cdot h$$

Example with Units

$$960\,\text{m}^3 = 80\,\text{m}^2 \cdot 12\,\text{m}$$

6.3) Volume of Cylinder given Diagonal and Radius Formula ➤

Evaluate Formula ➤

Formula

$$V = \pi \cdot r^2 \cdot \sqrt{d^2 - (2 \cdot r)^2}$$

Example with Units

$$980.962\,\text{m}^3 = 3.1416 \cdot 5\,\text{m}^2 \cdot \sqrt{16\,\text{m}^2{}^2 - (2 \cdot 5\,\text{m})^2}$$

6.4) Volume of Cylinder given Lateral Surface Area and Height Formula ➤

Evaluate Formula ➤

Formula

$$V = \frac{LSA^2}{4 \cdot \pi \cdot h}$$

Example with Units

$$957.5822\,\text{m}^3 = \frac{380\,\text{m}^2{}^2}{4 \cdot 3.1416 \cdot 12\,\text{m}}$$

6.5) Volume of Cylinder given Total Surface Area and Height Formula ➤

Evaluate Formula ➤

Formula

$$V = \frac{(TSA - 2 \cdot A_{Base})^2}{4 \cdot \pi \cdot h}$$

Example with Units

$$907.8463\,\text{m}^3 = \frac{(530\,\text{m}^2 - 2 \cdot 80\,\text{m}^2)^2}{4 \cdot 3.1416 \cdot 12\,\text{m}}$$

Variables used in list of Important Formulas of Cylinder above

- A_{Base} Base Area of Cylinder *(Square Meter)*
- **d** Diagonal of Cylinder *(Square Meter)*
- **h** Height of Cylinder *(Meter)*
- **LSA** Lateral Surface Area of Cylinder *(Square Meter)*
- **P** Perimeter of Cylinder *(Meter)*
- **r** Radius of Cylinder *(Meter)*
- **TSA** Total Surface Area of Cylinder *(Square Meter)*
- **V** Volume of Cylinder *(Cubic Meter)*

Constants, Functions, Measurements used in list of Important Formulas of Cylinder 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 (m³) *Volume Unit Conversion* 📤
- Measurement: **Area** in Square Meter (m²) *Area Unit Conversion* 📤

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