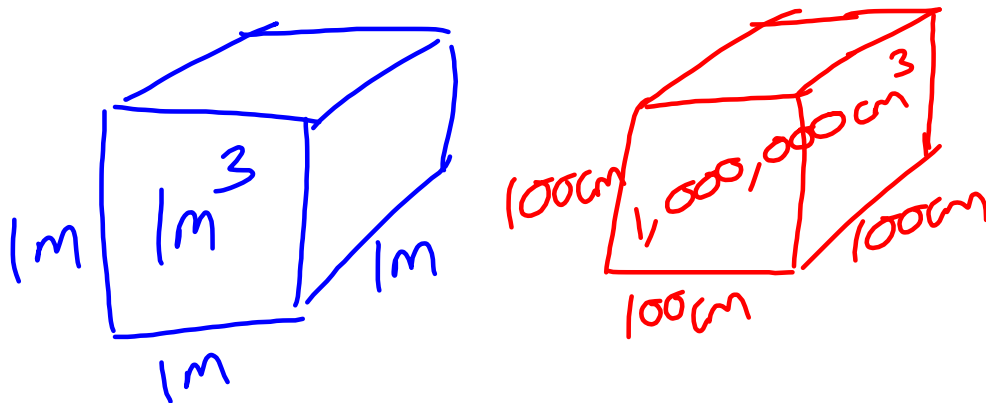


More Volume of a Cylinder Questions

Question: How many cm^3 are there in a m^3 ?

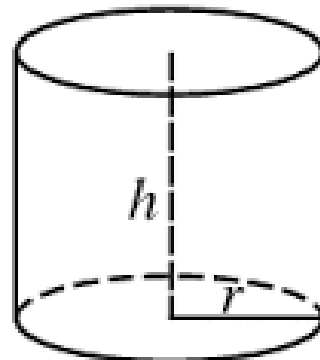


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To calculate the volume we need to know the height of the cylinder and its radius.

$$\text{Volume}_{\text{cylinder}} = \pi r^2 h$$

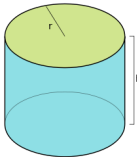
The " πr^2 " represents the area of the circle and the " h " represents the height of the stack of circles.



Always check to see that the radius and height are in the same units.

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Example Find the volume of a cylinder that has a radius of 0.05m and a height of 6cm.



0.0471 m^3
 471 cm^3
 0.000471 cm^3
 471 cm^3

We need to calculate with the distances in the same units.

$0.05 \text{ m} \rightarrow 5 \text{ cm}$ (radius)
 6 cm (height)

$$\text{Vol} = \pi r^2 h$$

$$= 3.14 \times 5^2 \times 6 = 471 \text{ cm}^3$$

If calculating in metres

$6 \text{ cm} \rightarrow 0.06 \text{ m}$ (height)
 0.05 m (radius)

$$\text{Vol} = \pi r^2 h = 3.14 \times 0.05^2 \times 0.06$$

$$= 0.000471 \text{ m}^3$$

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Find the volume of a cylinder that has a radius of 0.4m and a height of 60cm.

$$\begin{aligned} \text{Vol} &= \pi r^2 h \\ &= 3.14 \times 0.4^2 \times 0.6 \\ &= 0.30144 \text{ m}^3 \end{aligned}$$

← converted height to metres

$$\begin{aligned} \text{Vol} &= \pi r^2 h \\ &= 3.14 \times 40^2 \times 60 \\ &= 301440 \text{ cm}^3 \end{aligned}$$

← converted radius to centimetres

Find the volume of a cylinder with radius of 0.3m and a height of 15cm.

Express your answer in **both cm³ and m³**.

$$\begin{aligned}
 V &= \pi r^2 h \\
 &= 3.14 \times 30^2 \times 15 \\
 &= 42390 \text{ cm}^3
 \end{aligned}$$

Converted to cm

$$\begin{aligned}
 V &= \pi r^2 h \\
 &= 3.14 \times 0.3^2 \times 0.15 \\
 &= 0.04239 \text{ m}^3
 \end{aligned}$$

Converted to metres

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Find the volume of a cylinder with height of 0.05km and a radius of 40cm. Express your answer in **m³**.

$$0.05 \text{ km} \xrightarrow{\times 1000} 50 \text{ m}$$

$$40 \text{ cm} \xrightarrow{\div 100} 0.4 \text{ m}$$

$$\begin{aligned}
 \text{Volume} &= \pi r^2 h \\
 &= 3.14 \times 0.4^2 \times 50 \\
 &= 25.12 \text{ m}^3
 \end{aligned}$$

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