Volume of a Cylinder

Video 357 on www.corbettmaths.com

Question 1: Work out the volume of each cylinder. Give each answer to one decimal place.

(a)  
(b)  
(c)  
(d)  
(e)  
(f)  

Question 2: Work out the volume of each cylinder. Give each answer in terms of \( \pi \).

(a)  
(b)  
(c)  

Question 3: Work out the height of each cylinder. Give each answer to one decimal place.

(a)  
Volume = 1600cm\(^3\)  
(b)  
Volume = 800cm\(^3\)  
(c)  
Volume = 0.11m\(^3\)
Question 1: A cylindrical oil drum has a diameter of 48cm and a height of 92cm. Calculate the volume of the oil drum.

\[
\text{Volume} = \pi r^2 h
\]

\[
= \pi \left(\frac{48}{2}\right)^2 \times 92
\]

Question 2: A cylinder has a radius of 2m and a height of 5cm. Work out the volume of the cylinder in terms of \(\pi\).

\[
\text{Volume} = \pi r^2 h
\]

\[
= \pi \times 2^2 \times 0.05
\]

Question 3: Timothy is filling cups with orange juice. Each cup is a cylinder with radius 3cm and height 7cm. Timothy has 2 litres of orange juice. 1 litre = 1000cm³

How many cups can be filled?

\[
\text{Volume of one cup} = \pi r^2 h
\]

\[
= \pi \times 3^2 \times 7
\]

\[
\text{Total volume of orange juice} = 2 \times 1000 \text{cm}^3
\]

\[
\text{Number of cups} = \frac{2 \times 1000}{\pi \times 3^2 \times 7}
\]

Question 4: Shown below is a cylinder and a cube. The volume of the cylinder is equal to the volume of the cube. Find \(y\).

\[
\text{Volume of cylinder} = \pi r^2 h
\]

\[
= \pi \times 8^2 \times y
\]

\[
\text{Volume of cube} = s^3
\]

\[
= 9^3
\]

\[
\pi \times 8^2 \times y = 9^3
\]

\[
y = \frac{9^3}{\pi \times 8^2}
\]
Question 5: Calculate the volume of this shape.

![Cylinder diagram]

Question 6: 6 cylinders are placed in a crate as shown below.
The radius of each cylinder is 4cm and the height of each cylinder is 14cm.
The crate also has a height of 14cm.

What percentage of space in the crate is empty?

![Crate diagram]

Question 7: A solid glass cylinder has a radius of 1.5cm and a height of 7.2cm
The density of the glass is 2.61g/cm³
Work out the mass of the cylinder.

![Cylinder diagram]

Question 8: The diagram shows a solid cylinder.
The cylinder has radius of 2y and height of 6y.
The cylinder is melted down and made into a sphere of radius r.

Express r in terms of y.

![Cylinder and sphere diagram]

Answers

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