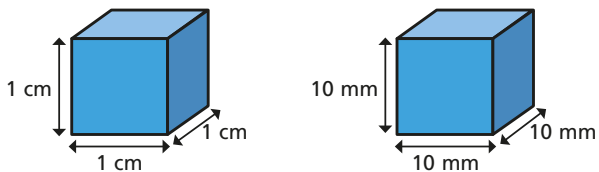
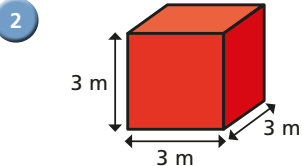


Convert metric units of volume

- 1 Use the diagrams to explain why $1 \text{ cm}^3 = 1,000 \text{ mm}^3$



The dimensions of each cube are the same hence so are the volumes. $1 \text{ cm} \times 1 \text{ cm} \times 1 \text{ cm} = 1 \text{ cm}^3$
 $10 \text{ mm} \times 10 \text{ mm} \times 10 \text{ mm} = 1,000 \text{ mm}^3$ so $1 \text{ cm}^3 = 1,000 \text{ mm}^3$



- a) Find the volume of the cube in m^3

27 m^3

- b) Find the volume of the cube in cm^3

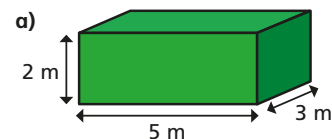
27,000,000 cm^3

- c) Complete the statement.

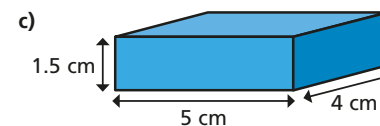
$1 \text{ m}^3 = 1,000,000 \text{ cm}^3$

- 3 Work out the volume of each cuboid.

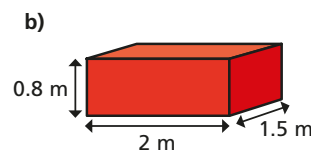
Give your answers in both of the stated units.



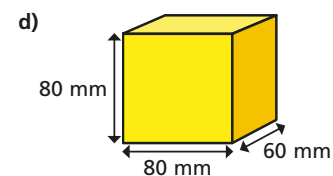
volume = 30 m^3
 volume = 30,000,000 cm^3



volume = 30 cm^3
 volume = 30,000 mm^3



volume = 2.4 m^3
 volume = 2,400,000 cm^3



volume = 384,000 mm^3
 volume = 384 cm^3

- 4 Complete the conversions.

a) $1 \text{ cm}^3 = 1,000 \text{ mm}^3$ $6 \text{ cm}^3 = 6,000 \text{ mm}^3$

b) $7.5 \text{ cm}^3 = 7,500 \text{ mm}^3$ $30 \text{ cm}^3 = 30,000 \text{ mm}^3$

c) $1 \text{ m}^3 = 1,000,000 \text{ cm}^3$ $6 \text{ m}^3 = 6,000,000 \text{ cm}^3$

d) $0.35 \text{ m}^3 = 350,000 \text{ cm}^3$ $0.007 \text{ m}^3 = 7,000 \text{ cm}^3$

5 Complete the conversions.

a) $2,000,000 \text{ cm}^3 = \boxed{2} \text{ m}^3$ $600,000 \text{ cm}^3 = \boxed{0.6} \text{ m}^3$

b) $15,000,000 \text{ cm}^3 = \boxed{15} \text{ m}^3$ $10,000 \text{ cm}^3 = \boxed{0.01} \text{ m}^3$

c) $50,000 \text{ mm}^3 = \boxed{50} \text{ cm}^3$ $51,000 \text{ mm}^3 = \boxed{51} \text{ cm}^3$

6 a) Put these volumes in order of size, starting with the smallest.

Show workings to justify your answer.

900,000 mm³

80 cm³

0.0006 m³

80 cm³

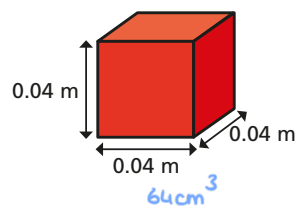
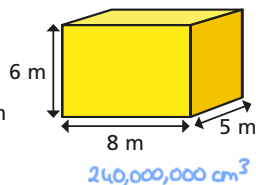
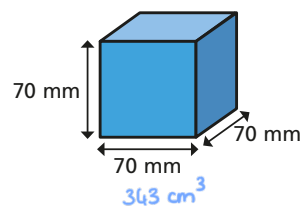
0.0006 m³

900,000 mm³

smallest

greatest

b) Work out the volumes of these cuboids and put them in ascending order.



64 cm³

343 cm³

240 m³

smallest

greatest

7



6 m³ is the same
as $6 \times 10^9 \text{ mm}^3$

a) Do you agree with Jack? yes

Show workings to justify your answer.

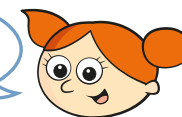
$1 \text{ m} = 1,000 \text{ mm}$

$1 \text{ m}^3 = 1,000,000,000 \text{ mm}^3$

$6 \text{ m}^3 = 6,000,000,000 \text{ mm}^3$
 $= 6 \times 10^9 \text{ mm}^3$

b)

20 cm³ is the same
as $2 \times 10^{-6} \text{ mm}^3$



Do you agree with Alex? no

Show workings to justify your answer.

$1 \text{ cm} = 10 \text{ mm}$

$1 \text{ cm}^3 = 1,000 \text{ mm}^3$

$20 \text{ cm}^3 = 20,000 \text{ mm}^3$
 $= 2 \times 10^4 \text{ mm}^3$

8

1 m³ = 1,000 litres

Is 2,000,000 mm³ more or less than 1 litre?

Show workings to justify your answer.

$1 \text{ m} = 1,000 \text{ mm}$

$1 \text{ m}^3 = 1,000,000,000 \text{ mm}^3$

$1,000 \text{ L} = 1,000,000,000 \text{ mm}^3$
 $\div 500 \quad \quad \quad \div 500$
 $2 \text{ L} = 2,000,000 \text{ mm}^3$

more