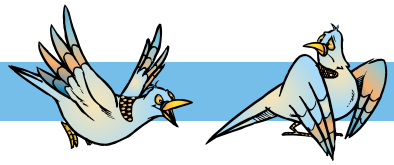
MATHS BUILDER CONCEPT DICTIONARY

Volume and Capacity

This Concept Dictionary consists of Teaching Points extracted from Maths Builder's worksheets and shows the development of important maths concepts from the Volume and Capacity strand, Year 0 to Year 6.

0:03 Volume & capacity



Volume and Capacity

Full means that nothing else will fit into the container.

This is a cupful.

This lift is full.

3:02 The litre

Estimate how many litres of water are needed to fill a bathtub.

(Volume & capacity)

To measure the volume of a liquid or the capacity of a container, we can use litres.

One litre fills four cups.

Two litres is written as 2 L.

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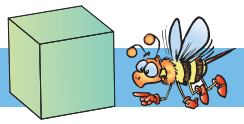
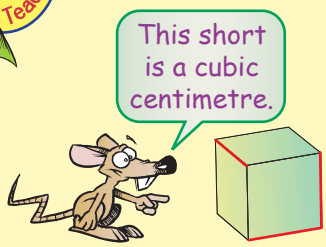
3:06 The cubic centimetre

1 cubic centimetre is written as 1 cm^3.

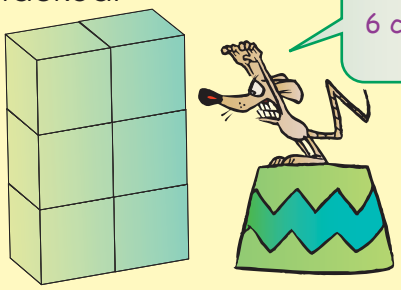


(Volume & capacity)

We can use a cubic centimetre to find the volume of objects that are packed or stacked.



1 cm^3 is 1 cm high, 1 cm long and 1 cm deep.

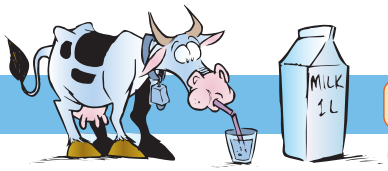


The length of this line is 1 cm. — length

The area of this shape is 1 cm^2. — length, breadth

The volume of this object is 1 cm^3. — length, breadth (width), height

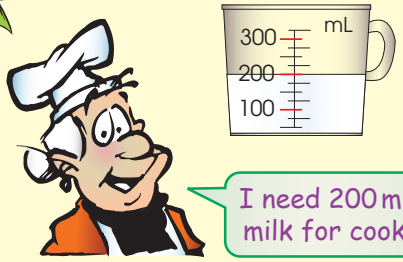
4:03 Volume and capacity

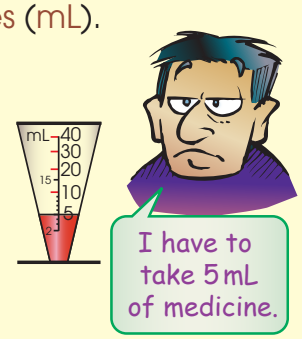


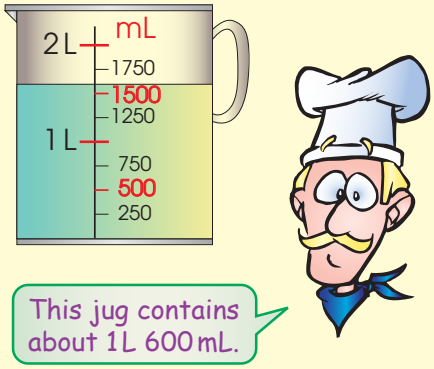
1000 mL = 1 L

(Volume & capacity)

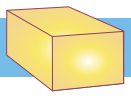
To measure volumes and capacities of parts of a litre we use millilitres (mL).





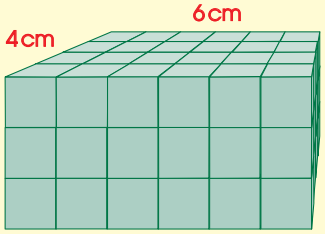


4:07 Volume of a prism

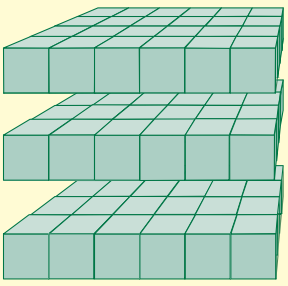


A box can be called a rectangular prism.

(Volume & capacity)



Each layer of a prism is the same size.



layer 1 — 24 cm^3

layer 2 — 24 cm^3

layer 3 — 24 cm^3

Total volume = 24 cm^3 + 24 cm^3 + 24 cm^3

= 72 cm^3

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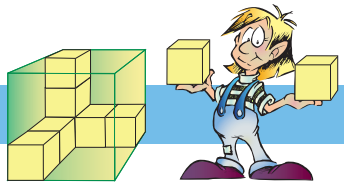
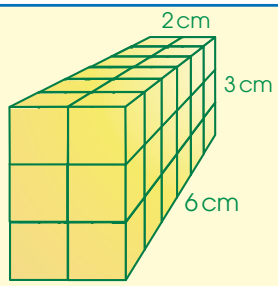
4:08 Calculating volume



The volume of a box is the number of cm³ that would fill it.

(Volume & capacity)



layer 1 = 12 cm³ 12

layer 2 = 12 cm³ 12

layer 3 = 12 cm³ 12

Total volume = 36 cm³

This model has 3 layers of 12 cubic centimetres.

$3 \times 12 = 36$

4:10 Volume by displacement

1000 mL = 1 L

1mL = 1cm³

(Volume & capacity)

The volume of an object can be found by completely submerging the object in water, and noting the difference in water level.

5:01 Measurement

(Volume & Capacity)

A can of drink holds 375 mL and a carton of juice holds 560 mL. How much less does the can hold?

		15		
	4	5	10	
	~~5~~	~~6~~	~~0~~	mL
−	3	7	5	mL
	1	8	5	mL

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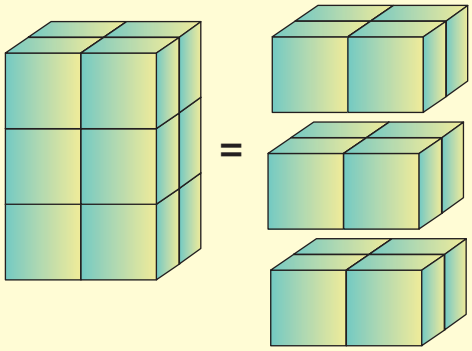
5:03 Volume in layers

What is the volume of a Base 10 short?

(Volume & Capacity)

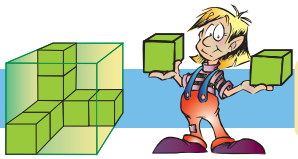


$4\,cm^3 + 4\,cm^3 + 4\,cm^3$

There are 3 layers, with $4\,cm^3$ in each.

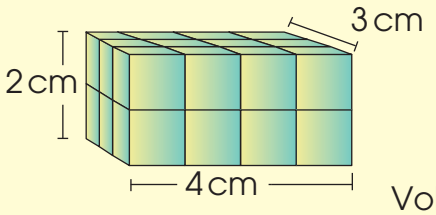
$$\text{Volume} = 4\,cm^3 + 4\,cm^3 + 4\,cm^3$$
$$= 3 \times 4\,cm^3$$
$$= 12\,cm^3$$

5:04 Calculating volume



Volume is the amount of space taken up by an object.

(Volume & Capacity)



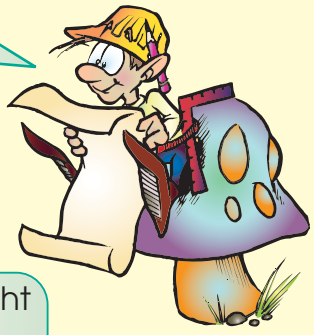
Length = 4 cm
Breadth = 3 cm
Height = 2 cm

$$\text{Volume} = 4\,cm \times 3\,cm \times 2\,cm$$
$$\text{Volume} = 24\,cm^3$$

Volume = Length × Breadth × Height

$V = L \times B \times H$

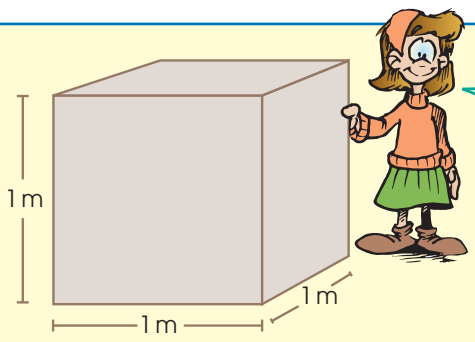
Each layer is $12\,cm^3$. The volume of the whole model is $24\,cm^3$.



5:06 The cubic metre

Estimate the volume of the bathtub.

(Volume & Capacity)



This is 1 cubic metre.

Our dishwasher came in a box that size.

$1\,m \times 1\,m \times 1\,m = 1\,m^3$

1 cubic metre is written as $1\,m^3$.

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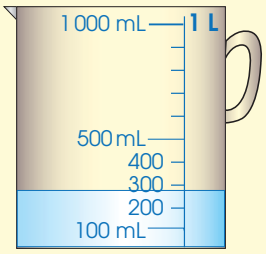
5:08 Thousandths in measurement

1000 mL = 1 L
1000 g = 1 kg
1000 m = 1 km
(Volume & Capacity)

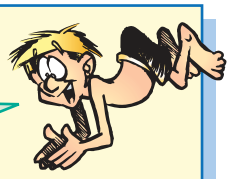


What part of a litre is 276 mL?

276 mL is 276 out of 1 000 mL = $\frac{276}{1000}$

or 276 thousandths of a litre.

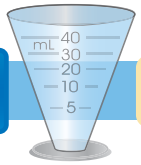
ones		tenths	hundredths	thousandths
0	.	2	7	6



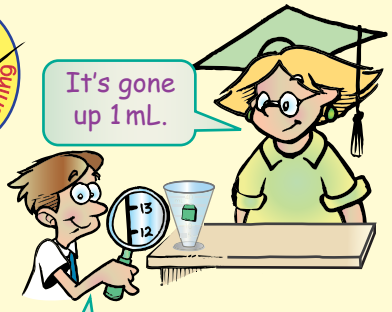
We divide by 1000 to change millilitres to litres.

3 L 250 mL
= 3·250 L
= 3·25 L

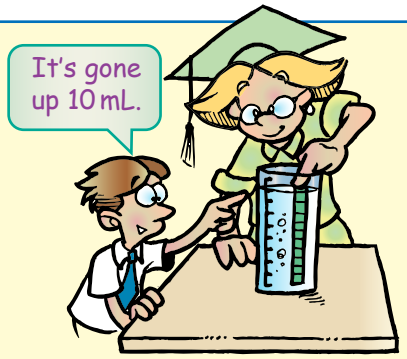
5:09 Millilitres and cubic centimetres



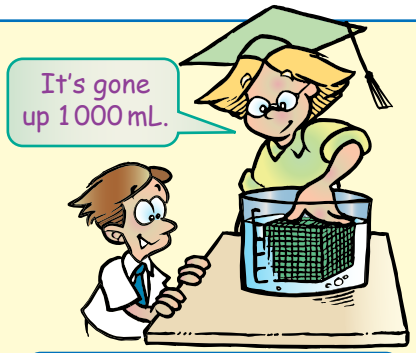
30 mL = 30 cm^3.
(Volume & Capacity)



1 cm^3 displaces 1 mL
so 1 cm^3 = 1 mL.



10 cm^3 displaces 10 mL
so 10 cm^3 = 10 mL.



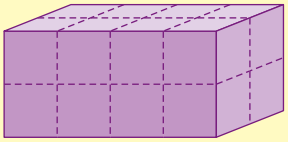
1 000 cm^3 displaces 1 000 mL
so 1 000 cm^3 = 1 000 mL
= 1 L.

6:08 Surface area / volume of prisms

Surface area = the area of the net of the solid

The surface area is the total area of all the faces of an object.

This prism has 6 faces, therefore 6 areas.



I could count the squares using a grid overlay on each face.

The areas of the opposite sides of a rectangular prism are equal.

8 cm^2 + 8 cm^2 + 8 cm^2 + 8 cm^2 + 4 cm^2 + 4 cm^2

Surface area = 40 cm^2

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