Maths

Measurement

Calculating and Estimating Volume

Aim

- I can estimate and calculate the volume of cubes and cuboids.

Success Criteria

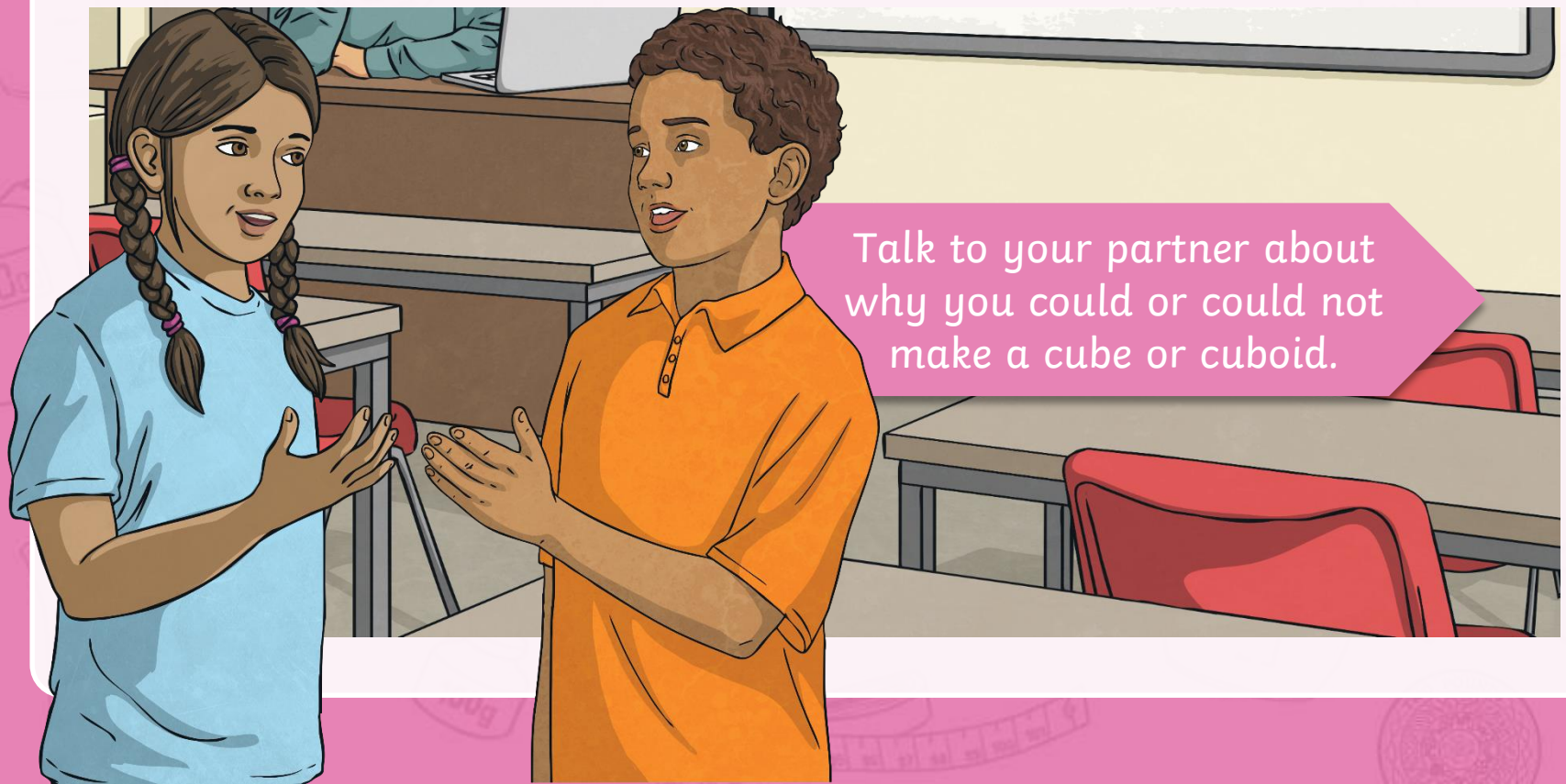
- I can count cubes in a layer to help me estimate the volume of cubes and cuboids.
- I can use a formula to calculate volume of cubes and cuboids.

Make the Shape

Roll a dice 3 times. Multiply the numbers you roll.
Make a 3D shape with this number of small cubes.

?

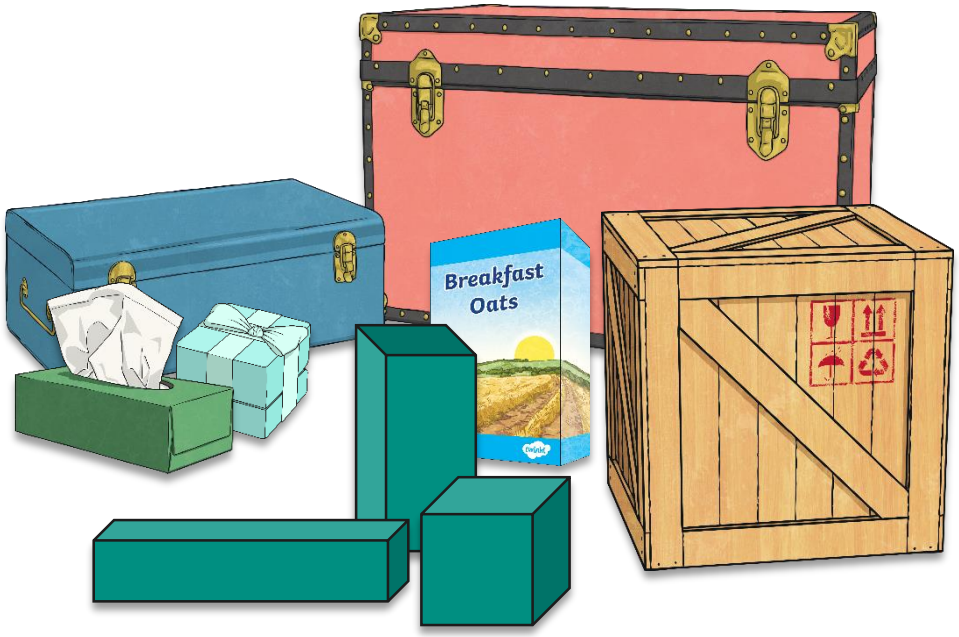
Were you able to make a cube or a cuboid?



What Is Volume?

With your partner, write a definition for volume.

Volume = the amount of 3D space taken up by something.

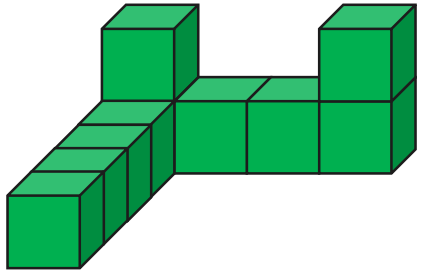


When measuring the volume of a fixed object (where the shape doesn't change), we use cubic units. Today we are going to use cubic centimetres and cubic metres to measure and estimate the volume of cubes and cuboids.

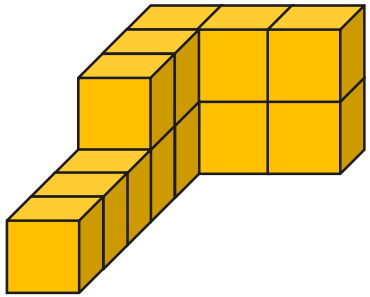
What Is Volume?

We can find the volume of these shapes made from $1cm^3$ multilink cubes by counting the number of $1cm^3$ cubes that make up each shape.

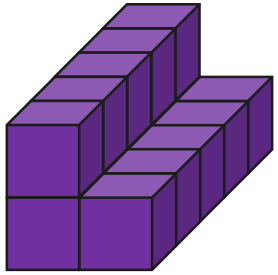
Remember that some shapes have cubes that are hidden from sight!



$10cm^3$



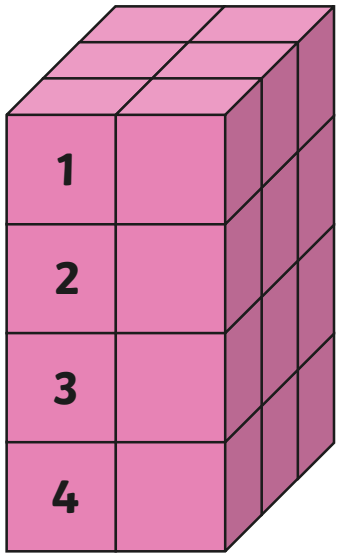
$13cm^3$



$15cm^3$

Calculating Volume of Cubes and Cuboids

We can calculate the volume of cubes and cuboids by counting cubes in layers:



In the top layer, there are 6 cubes (3×2).

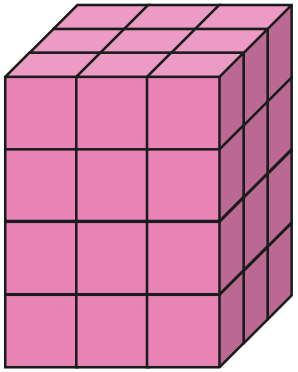
There are 4 layers.

$3 \times 2 \times 4 = 24$

If each cube were a cubic centimetre, this would be 24 cubic centimetres, which we could write as $24cm^3$.

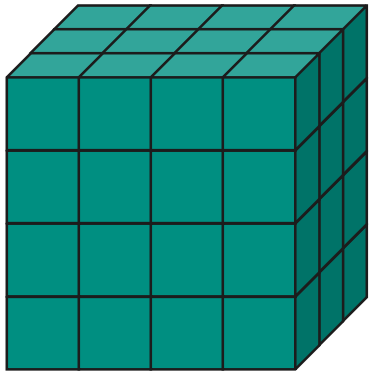
Calculating Volume of Cubes and Cuboids

Count the top layer of each shape and calculate the volume.
The unit measurement is shown underneath.



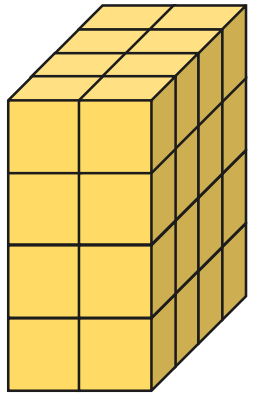
cubic centimetres

$36cm^3$



cubic metres

$48m^3$



cubic centimetres

$32cm^3$

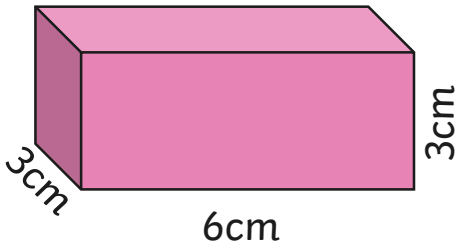
Calculating Volume of Cubes and Cuboids

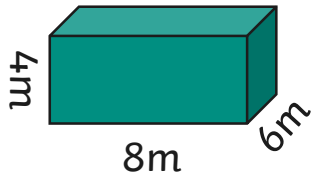
Whole Class

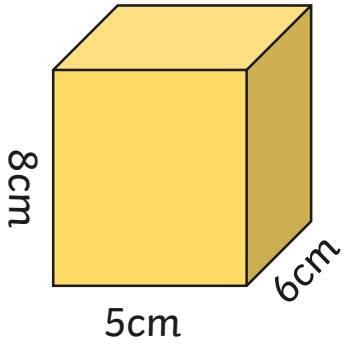
Do you know another way to calculate the volume of cubes

length × width × height

Use the formula to calculate the volume of the following shapes.







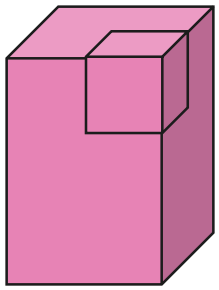
$54cm^3$

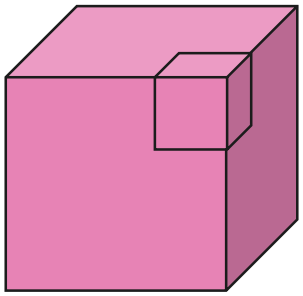
$192m^3$

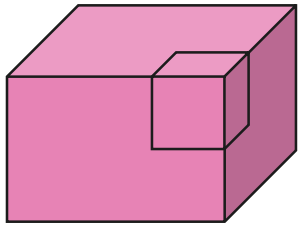
$240cm^3$

Calculating Volume of Cubes and Cuboids

On these shapes, one cube has been drawn.
Each cube is a cubic centimetre. Estimate the volume.





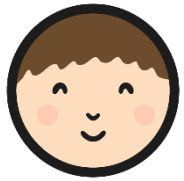


$12cm^3$

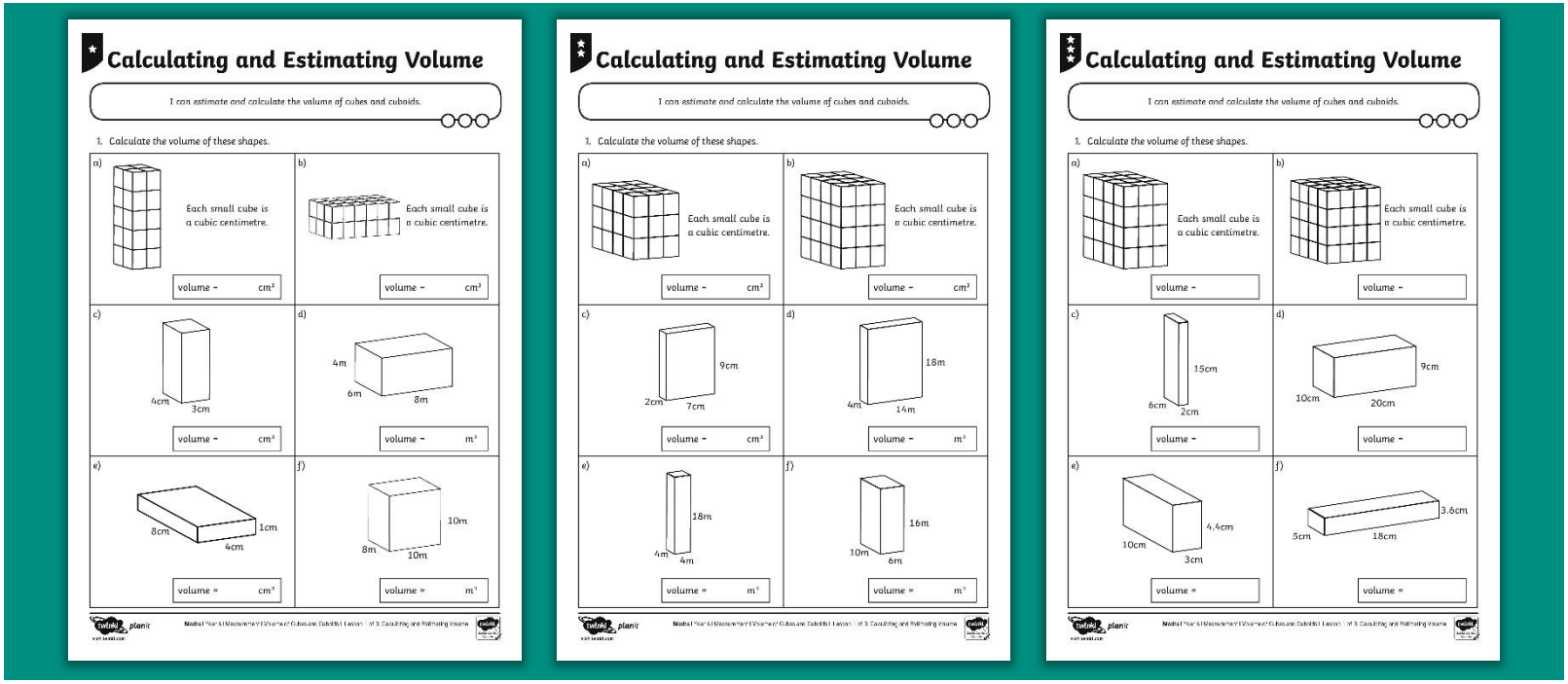
$27cm^3$

$18cm^3$

Calculating and Estimating Volume

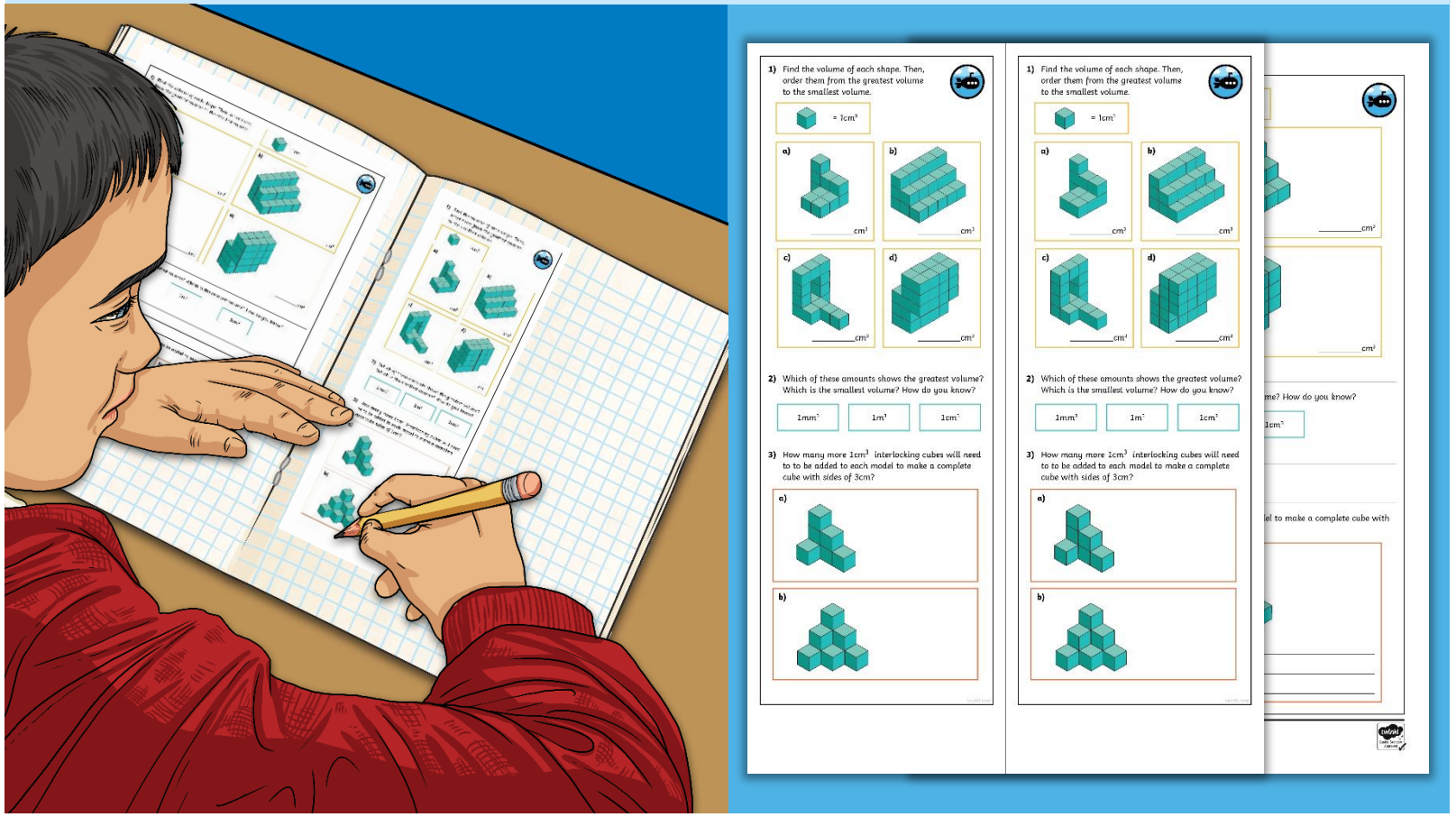


Use your fabulous calculation and estimation skills to complete these activity sheets.

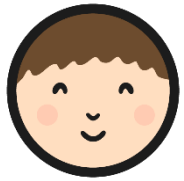


Diving into Mastery

Dive in by completing your own activity!

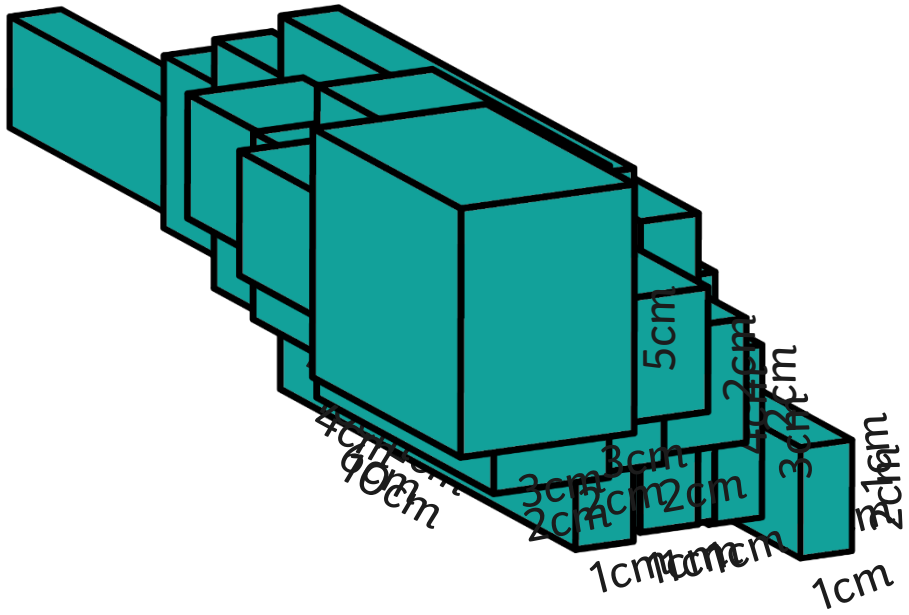


Draw That Shape!



Lewis has estimated that a shape has a volume of 60cm^3.
On your isometric paper, draw a cube or cuboid which would have a volume of 60cm^3.

There are many possible solutions.



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