Max’s Volume Masterclass: Measuring 3D Space

Learning objective: To calculate the volume of cubes and cuboids by counting unit cubes and using the formula (length × width × height).

Use these flashcards to test your knowledge of volume. Max the monkey has provided a mix of definitions and calculation challenges to help you become a master of 3D space.

Define Volume	**What is the standard unit of measurement for the volume of small objects?**
Volume is the amount of three-dimensional space an object or shape occupies, usually measured in cubic units.	Cubic centimetres (cm^3).
State the formula used to calculate the volume of a cuboid.	**If a cube has a side length of 3cm, what is its volume?**
Volume = length × width × height.	$27cm^3$ (3cm × 3cm × 3cm).
A cuboid has a length of 5cm, a width of 2cm, and a height of 4cm. Calculate its volume.	**Explain the difference between 'Volume' and 'Capacity'.**
$40cm^3$.	Volume is the space inside an object; capacity is the amount of liquid an object can hold.
If you have a shape made of 12 individual $1cm^3$ blocks, what is the total volume?	**Why do we use a 'cubed' symbol (^{3}) when writing volume?**
$12cm^3$.	Because we are multiplying three dimensions together (length, width, and height).
A box has a base area of $20cm^2$ and a height of 3cm. What is its volume?	**True or False: Two shapes with the same volume must have the same shape.**
$60cm^3$ (Base area × height).	False. They can have different dimensions but still occupy the same amount of space.
If a tank costs £1.50 per $100cm^3$ of volume to fill, how much does it cost to fill a $500cm^3$ tank?	**Max has a cuboid with a volume of $24cm^3$. Suggest three possible sets of dimensions (length, width, height).**
£7.50.	Examples include: 2×3×4, 1×1×24, 2×2×6 (cm).