

Max's Magnificent Volume Challenge

Learning objective: To calculate the volume of cubes and cuboids using the formula: length $\times$ width $\times$ height.

Help Max the monkey organise his store cupboard. Read the measurements carefully and use your knowledge of volume to calculate the space inside each container. Remember to use the correct units (cm^3).

Max the monkey is tidying his jungle storehouse. He has several wooden crates that need to be stacked. To make sure they fit perfectly, Max needs to know the exact volume of each crate. He knows that to find the volume of a 3D shape, he must multiply the length by the width by the height. For example, a crate with a length of 5cm, a width of 2cm, and a height of 3cm has a volume of 30cm^3 ($5\text{cm} \times 2\text{cm} \times 3\text{cm} = 30\text{cm}^3$). Max has four crates to measure today so he can finish his organisation project before the sun sets.

Word bank: Volume · Cuboid · Length · Width · Height · Centimetres cubed · Capacity · Formula

1. Max has a small wooden box that is 4cm long, 3cm wide, and 2cm high. Calculate the volume of this box. (2 marks)

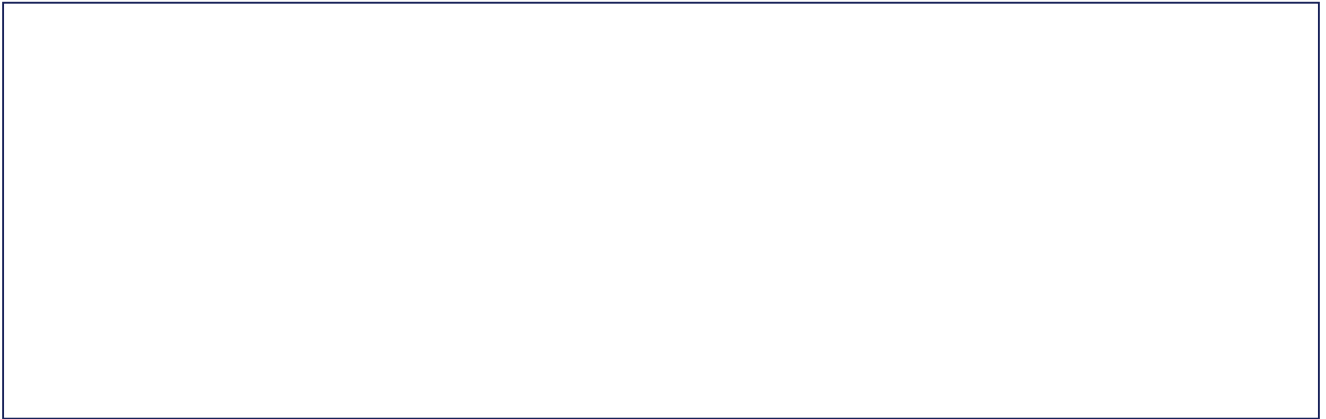
2. A larger crate has a base area of 20cm^2 and a height of 5cm. What is the total volume of this crate? (2 marks)

3. Max finds a cube-shaped container where every edge measures 6cm. Calculate the volume of the cube. (2 marks)

4. If a storage shelf has a total volume of 500cm^3 and Max fills it with boxes that are $5\text{cm} \times 5\text{cm} \times 4\text{cm}$, how many boxes will fit on the shelf? (3 marks)

5. Explain why the answer for volume is written as ' cm^3 ' instead of just 'cm'. (2 marks)

Draw: Draw a cuboid crate with a length of 5cm, a width of 2cm, and a height of 4cm. Label the dimensions on your drawing and write the total volume inside the crate.



Extension challenge: Max wants to build a new storage unit that has a total volume of $1,000\text{cm}^3$. Design three different sets of dimensions (length, width, and height) that would result in this volume.