

## Max's Busy Building Site: Measuring Volume

*Learning objective: To estimate and calculate the volume of cuboids by counting unit cubes.*

Help Max the monkey organise his wooden building blocks. Use the information below to solve the problems. Remember: Volume is the amount of space an object takes up, measured in cubic centimetres (cm<sup>3</sup>).

Max is building storage crates for his collection of fruit. Each crate is made from small, 1cm wooden cubes. Max needs to know the volume of each crate so he knows how many pieces of fruit will fit inside. To find the volume of a rectangular cuboid, you can count the cubes or multiply the length by the width by the height. Max has built three crates today. Crate A is 3cm long, 2cm wide, and 2cm high. Crate B is 4cm long, 3cm wide, and 1cm high. Crate C is a perfect cube where every side measures 3cm.

*Word bank: volume · cuboid · cubic centimetres · length · width · height · dimension · estimate*

**1. Using the dimensions provided in the passage, calculate the volume of Crate A in cm<sup>3</sup>. (2 marks)**

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**2. Which crate has the largest volume: Crate A, Crate B, or Crate C? Show your working out. (3 marks)**

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**3. Max finds a new crate that is 5cm long, 2cm wide and 4cm high. What is its volume? (2 marks)**

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**4. If each wooden cube used to make the crates costs 5p, how much did it cost Max to build Crate A? (2 marks)**

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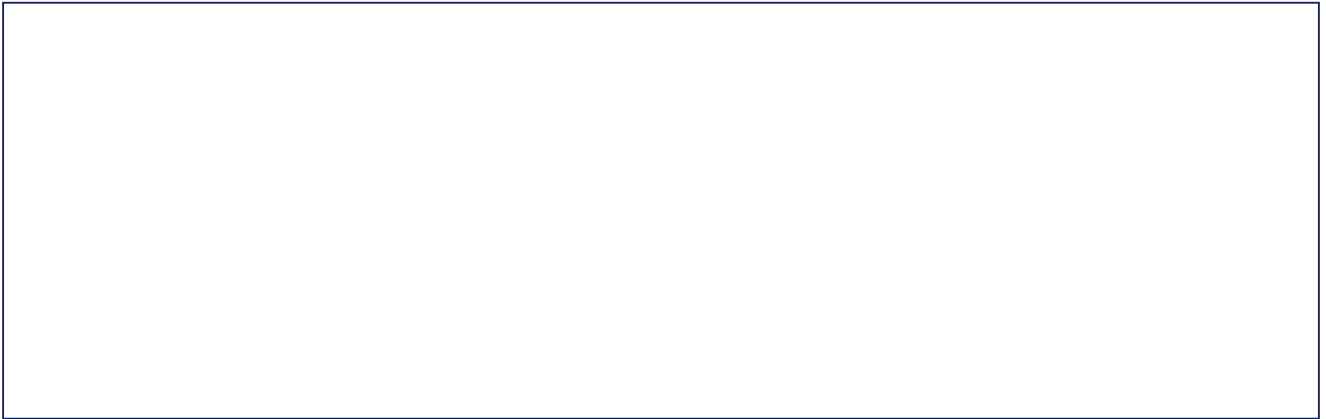
**5. Explain why multiplying the three dimensions of a cuboid gives you the same answer as counting every individual cube. (2 marks)**

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**Draw:** Draw a cuboid that is 3cm long, 2cm wide, and 4cm high on a piece of squared paper. Label the dimensions and write the total volume inside the shape.



*Extension challenge: Max wants to build a storage unit with a total volume of  $60\text{cm}^3$ . If the length is 5cm and the width is 3cm, what must the height of the unit be? Show how you found your answer.*