

## Max's Magnificent Volume Challenge

*Learning objective: To calculate and estimate the volume of cubes and cuboids using cubic centimetres (cm<sup>3</sup>) and understand the concept of space occupied by 3D shapes.*

Help Max the monkey solve these volume puzzles. Remember: Volume = length × width × height. Show your working out!

Answer Key: 1. A (27cm<sup>3</sup>); 2. True; 3. 48cm<sup>3</sup>; 4. B (Length × Width × Height); 5. False; 6. 120cm<sup>3</sup>; 7. 64cm<sup>3</sup>; 8. True; 9. 100cm<sup>3</sup>; 10. A (The amount of space inside a 3D object).

*Word bank: Volume · Cubic · Centimetres · Capacity · Dimensions · Cuboid · Space*

**1. Max has a cube with sides of 3cm. What is the volume? A) 27cm<sup>3</sup>\*, B) 9cm<sup>3</sup>, C) 12cm<sup>3</sup>, D) 6cm<sup>3</sup> (1 mark)**

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**2. True or False: Volume is measured in cubic units, such as cm<sup>3</sup>. (1 mark)**

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**3. A cuboid has a length of 4cm, a width of 3cm, and a height of 4cm. What is its volume in cm<sup>3</sup>? (1 mark)**

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**4. Which formula is correct for finding the volume of a cuboid? A) Length + Width + Height, B) Length × Width × Height\*, C) Length × Width, D) 2 × (Length + Width) (1 mark)**

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**5. True or False: A shape with a larger surface area always has a larger volume. (1 mark)**

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**6. A box has a base area of 20cm<sup>2</sup> and a height of 6cm. What is the volume? (1 mark)**

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**7. What is the volume of a cube with side lengths of 4cm? (1 mark)**

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**8. True or False: You can find the volume of an irregular shape by counting the number of 1cm<sup>3</sup> blocks used to build it. (1 mark)**

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**9. If a cuboid has a volume of 100cm<sup>3</sup> and a base area of 20cm<sup>2</sup>, what is the height? (1 mark)**

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10. What is the definition of volume? A) The amount of space inside a 3D object\*, B) The distance around the outside, C) The weight of an object, D) The cost of the object in £. (1 mark)

**Draw:** Draw a cuboid made of 12 small  $1\text{cm}^3$  blocks and label its length, width, and height.



*Extension challenge: Max wants to build a storage crate with a volume of exactly  $60\text{cm}^3$ . Can you list three different sets of dimensions (length, width, height) he could use?*