Max’s Magnificent Volume Challenge

Learning objective: To calculate and estimate the volume of cubes and cuboids using cubic centimetres (cm³) 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 (27cm³); 2. True; 3. 48cm³; 4. B (Length × Width × Height); 5. False; 6. 120cm³; 7. 64cm³; 8. True; 9. 100cm³; 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) 27cm³*, B) 9cm³, C) 12cm³, D) 6cm³ (1 mark)

2. True or False: Volume is measured in cubic units, such as cm³. (1 mark)

3. A cuboid has a length of 4cm, a width of 3cm, and a height of 4cm. What is its volume in cm³? (1 mark)

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)

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

6. A box has a base area of 20cm² and a height of 6cm. What is the volume? (1 mark)

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

8. True or False: You can find the volume of an irregular shape by counting the number of 1cm³ blocks used to build it. (1 mark)

9. If a cuboid has a volume of 100cm³ and a base area of 20cm², what is the height? (1 mark)

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 1cm³ blocks and label its length, width, and height.

Extension challenge: Max wants to build a storage crate with a volume of exactly 60cm³. Can you list three different sets of dimensions (length, width, height) he could use?