

## Volume of cubes and cuboids

### CURRICULUM ALIGNMENT

MEA.MSR.4a

determine and calculate units of measurement in fractional and/or decimal form to solve practical problems.

INTERACTIVES [Shape Measurer · display, explore](#)

### WHAT THIS LESSON TEACHES

Volume is the amount of space a solid fills, measured in cubic units by counting the unit cubes that fill the shape.

→ A 3 cm cube holds  $27 \text{ cm}^3$ .

→ A  $5 \text{ cm} \times 3 \text{ cm} \times 2 \text{ cm}$  box holds  $30 \text{ cm}^3$ .

### MODEL THIS ON THE BOARD

#### FINDING THE VOLUME OF A CUBOID

- 1 Count the cubes along the length, breadth and height.
- 2 Multiply length  $\times$  breadth  $\times$  height to get the total number of unit cubes.
- 3 Write the answer with the unit  $\text{cm}^3$ .

### ANSWER KEY

b) 24

c) 72

Q1:  $12 \text{ cm}^3$

Q2:  $40 \text{ cm}^3$

Q3:  $30 \text{ cm}^3$

Q4:  $72 \text{ cm}^3$

Q5:  $64 \text{ cm}^3$

Q6: 4 cm

a) Always — Length times breadth times height always gives the number of unit cubes.

b) Always — A cube is a special cuboid so its volume is always length cubed.

c) Never — Volume needs the height too, so it is not always the same as the base area.

d) Never — They can have different heights so the volumes are not always equal.

### EXTENSION SHEET · STRETCH ANSWERS

S1:  $46.464 \text{ m}^3$

S2:  $48.951 \text{ m}^3$

S3:  $22.2 \text{ m}^3$

S4:  $1960 \text{ cm}^3$

S5:  $792 \text{ cm}^3$