

Lesson 57 MEASURES

Volume of cuboids

CURRICULUM ALIGNMENT

MEA.MSR.4a

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

SHA.SHP.4a

construct 3-D and 2-D models or structures given defined measurements and/or specific conditions.

INTERACTIVES Shape Measurer · display, explore

WHAT THIS LESSON TEACHES

The volume of a cuboid is the space it takes up, found by counting how many 1 cm^3 unit cubes fit inside. Multiply length $\times$ width $\times$ height to get the volume in cm^3 .

→ A 4×3 base with 2 layers has volume $12 \times 2 = 24 \text{ cm}^3$

→ A cuboid 3 cm by 2 cm by 2 cm holds 12 cm^3

MODEL THIS ON THE BOARD

VOLUME OF A MODEL BOX

- 1 A building box measures 4 cm long, 3 cm wide and 2 cm high.
- 2 Base layer holds $4 \times 3 = 12$ unit cubes.
- 3 Stack 2 layers: volume = $12 \times 2 = 24 \text{ cm}^3$.

ANSWER KEY

a) 12 cm^3 b) 64 cm^3 c) 120 cm^3 Q1: 448 cm^3 Q2: 504 cm^3 Q3: 32 cm^3 Q4: 240 cm^3

a) Always : Multiplying the three edges always gives $3 \times 2 \times 2 = 12$.

b) Never : Volume needs multiplication of the three dimensions, not addition.

c) Always : $4 \times 4 \times 4$ equals 64 every time.

d) Sometimes : Different shapes can share a volume, such as $6 \times 4 \times 2$ and $8 \times 3 \times 2$ both equalling 48.

EXTENSION SHEET · STRETCH ANSWERS

S1: 12.528 m^3 S2: 22.2 m^3 S3: 46.464 m^3 S4: 48.951 m^3 S5: 23.408 m^3