Composite surface area and volume

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A sample from this topic. The complete topic collection contains three different resources and worked solutions.

Read the explanation and worked example. Show your working; use a calculator only where asked.

What you will practise

• Combine solids while distinguishing enclosed volume from exposed area.

• Explain a method and check the reasonableness of a result.

Useful starting skills: Use the prerequisite operations and representations shown in the worked example.

Decompose a composite object into familiar solids. Add non-overlapping volumes or subtract cavities; ensure all dimensions use the same units.

For surface area, list exposed faces and remove joining faces from the total. A cavity may create new interior surfaces if those surfaces are part of what must be painted or lined.

Worked example

Two cubes of side 4 cm share a whole face. Find volume and external surface area.

Volume=2×4^{3}=128 cm³.

Area=$2\times6\times16-2\times16$=160 cm².

Answer: 128 cm³; 160 cm²

Try it yourself

Name: _____ Date: _____

1. A block 8×5×3 cm has a 2×2×3 cm tunnel removed. Find volume.

2. Two boxes have volumes 48 and 72 cm³ with no overlap. Find combined volume.

Answers and explanations

Check the method as well as the final answer. An alternative correct method is also valid.

1. 108 cm³

120-12.

2. 120 cm³

Add the disjoint volumes.

Curriculum reference: VC2M10M01

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