

Surface Area

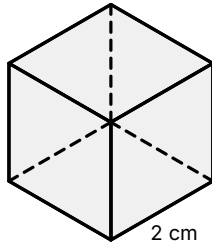
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NAME _____

DATE _____

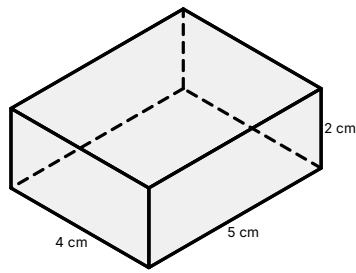
- 1 The diagram shows a cube. The dashed lines are the edges you cannot see from this side.

 EITHER PAPER 2 MARKS



Each edge of the cube is 2 cm long.

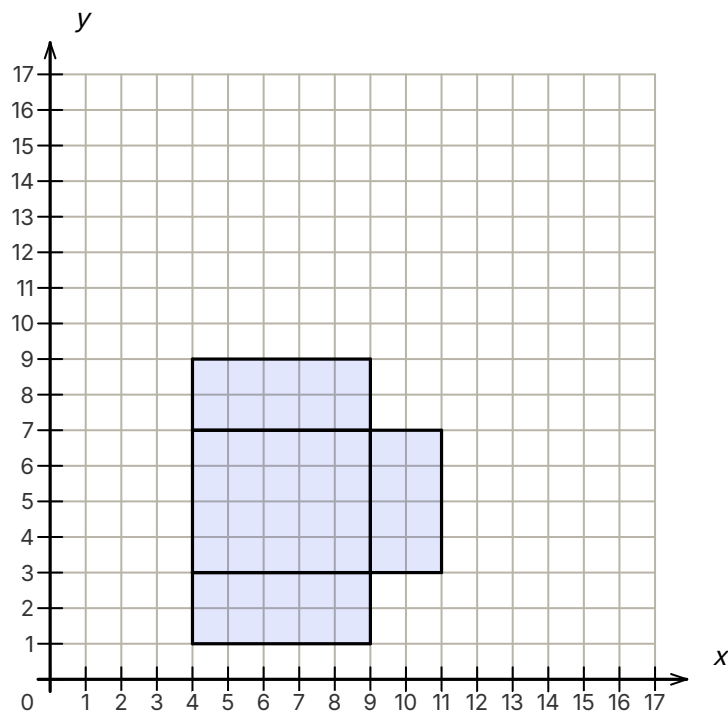
Find the total surface area of the cube.



Part of the net of the cuboid has been drawn for you on the centimetre grid. The rectangle with its bottom left corner at $(4, 3)$ is the base of the cuboid.

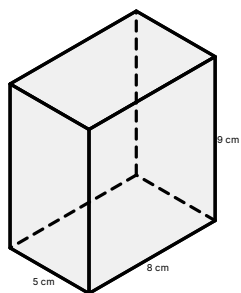
Two faces are missing. One is joined to the left edge of the base. The other is joined to the top edge of the rectangle above the base.

Complete the net: plot the four corners of each missing face on the grid, including any corner that is already a corner of the net.



3 Here is a cuboid.

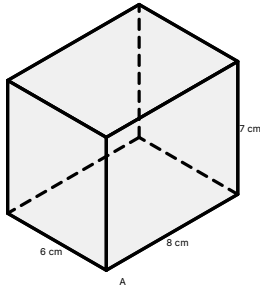
 EITHER PAPER 3 MARKS



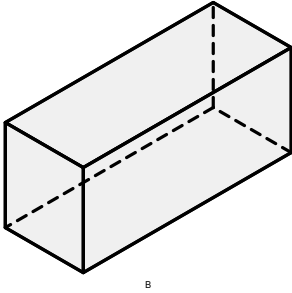
Calculate the total surface area of the cuboid.

4 Here is cuboid A .

EITHER PAPER 2 MARKS



Cuboid B is made by joining two cuboids like A , so that the faces measuring 6 cm by 7 cm are touching.



Not drawn accurately.

Volume of A : volume of $B = 1 : 2$

Callum says, "The surface area of B is more than 1.8 times the surface area of A ."

Is Callum correct?

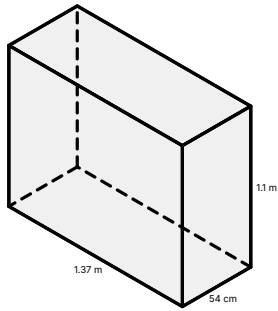
Tick one box.

Yes / No / Cannot tell

Give a reason for your answer.

5 Here is a cuboid.

 EITHER PAPER 3 MARKS

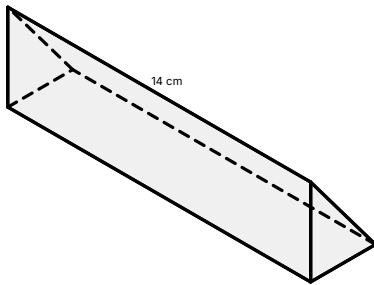


Work out the total surface area of the cuboid.

Give your answer in square metres.

6 Here is a solid prism that is 14 cm long.

 EITHER PAPER 4 MARKS

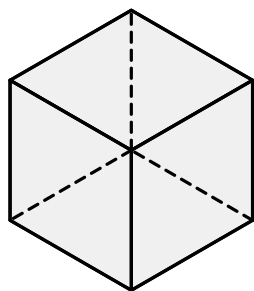


The cross-section of the prism is a right-angled triangle with sides 3 cm, 4 cm and 5 cm.
The right angle is between the 3 cm side and the 4 cm side.

Find the total surface area of the prism.

- 7 The diagram shows a solid cube placed on a horizontal table.

 EITHER PAPER 3 MARKS



The force exerted by the cube on the table is 196 newtons. The pressure on the table due to the cube is 4 newtons/cm².

$$\text{pressure} = \text{force} \div \text{area}$$

Show that the total surface area of the cube is less than 310 cm².

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- 8 A solid cube has a total surface area of 486 cm².

 EITHER PAPER 4 MARKS

Find the volume of the solid.

- 9 The diagram shows a cuboid. The height of the cuboid is h cm.

 EITHER PAPER 5 MARKS

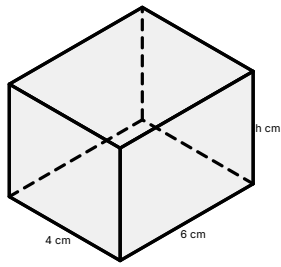


Diagram NOT accurately drawn

- (a) Assume that the total surface area of the cuboid is 108 cm^2 .

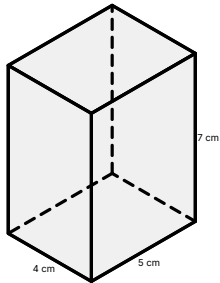
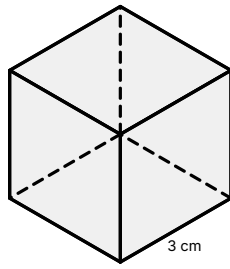
Work out the volume of the cuboid.

- (b) In fact, the total surface area of the cuboid is larger than 108 cm^2 .

What does this mean about the volume of the cuboid?

Tick one box and give a reason for your answer.

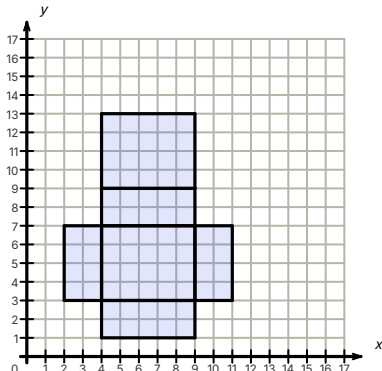
- It is bigger than the answer to part (a) - It is smaller than the answer to part (a) - It is the same as the answer to part (a) - It could be any of the above



The cube is placed on the top face of the cuboid to make a solid. The whole of the base of the cube is on the top face of the cuboid.

The diagrams are not drawn to scale.

Calculate the total surface area of the solid.

1	24 cm ²	2	Face 1: a rectangle 2 cm wide and 4 cm high to the left of the base, with opposite corners at (2, 3) and (4, 7). Face 2: a rectangle 5 cm wide and 4 cm high above the rectangle that is above the base, with opposite corners at (4, 9) and (9, 13). 
3	314 cm ²	4	No. The two faces that are joined are hidden, so $SA(B) = 2 \times 292 - 2 \times 42 = 500 \text{ cm}^2$. This is less than $1.8 \times 292 = 525.6 \text{ cm}^2$, which is 1.8 times $SA(A)$.
5	5.6816 m ²	6	180 cm ²
7	base area = $196 \div 4 = 49 \text{ cm}^2$, so total surface area = $6 \times 49 = 294 \text{ cm}^2$, and $294 < 310$.	8	729 cm ³
9	(a) 72 cm ³ (b) It is bigger than the answer to part (a), because 6 cm and 4 cm stay the same, so the volume changes only with h, which is larger	10	202 cm ²