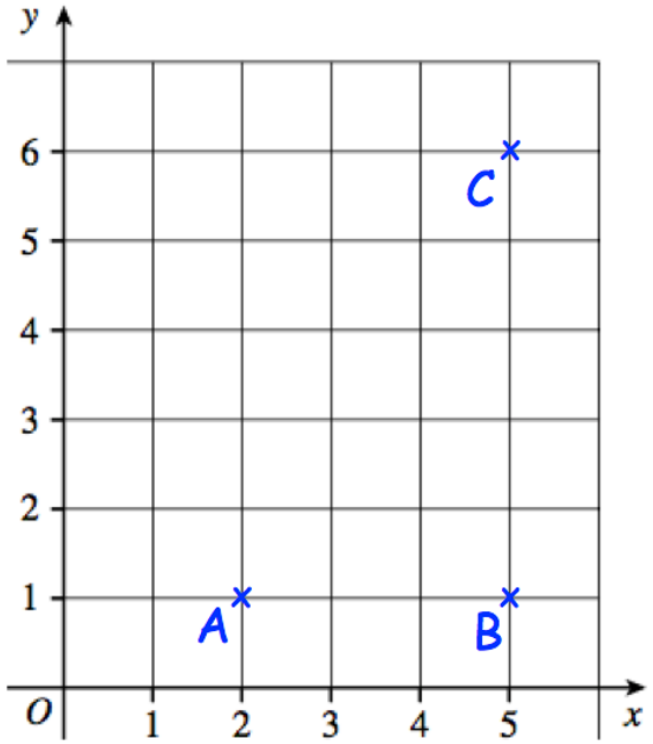
2-D and 3-D Shapes

Learning Objectives

- Understand and use common 2D representations of 3 D objects
- Draw 3 D shapes to include plans and elevations

Recap

Three points are shown on the grid.



(a) Write down the coordinates of C.

ABCD is a rectangle.

(b) Plot the point D.

(c) Write down the coordinates of D.

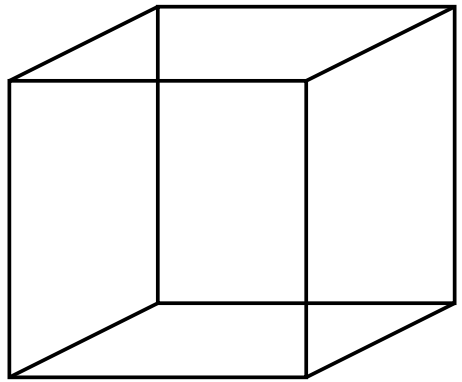
2-D and 3-D Shapes

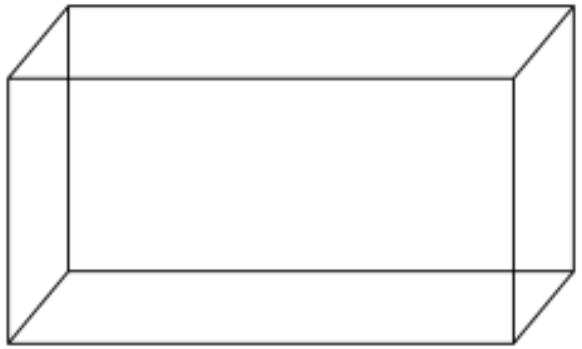
A 2d shape is….

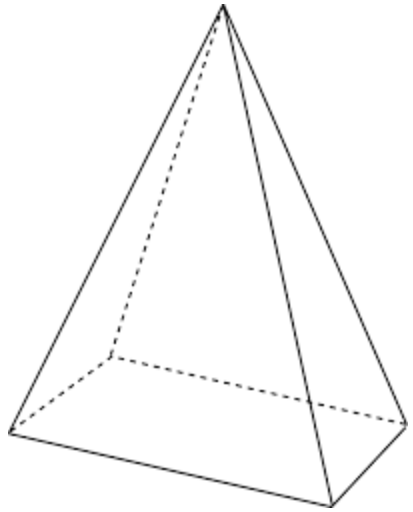
A 3d shape is….

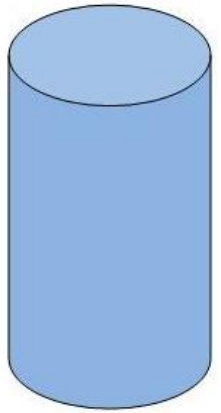
2-D and 3-D Shapes

Name These 3D shapes and identify the 2D faces.



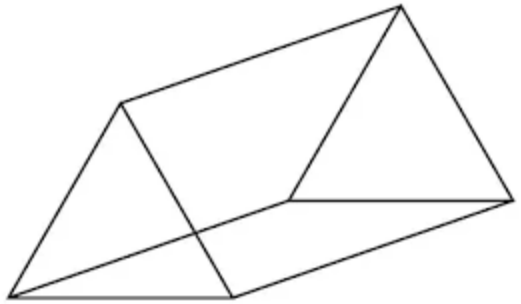


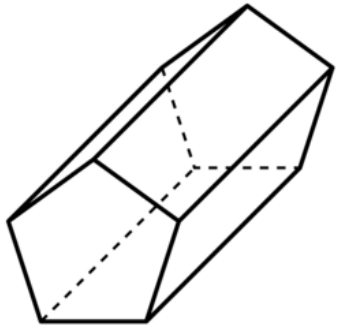




2-D and 3-D Shapes

What is a prism? How would you describe it?





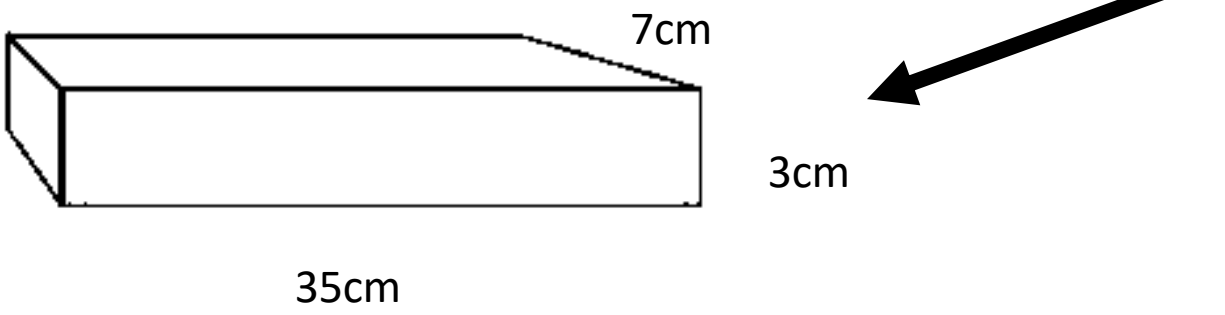
Working with dimensions

Deshaun is designing a box to hold 5 French fancies.
Each cake is maximum of 7cm long, 4cm wide and 3cm high.
Sketch a box that could hold the cream cakes. Label the dimensions.

How wide would you need the box to be?

Working with dimensions

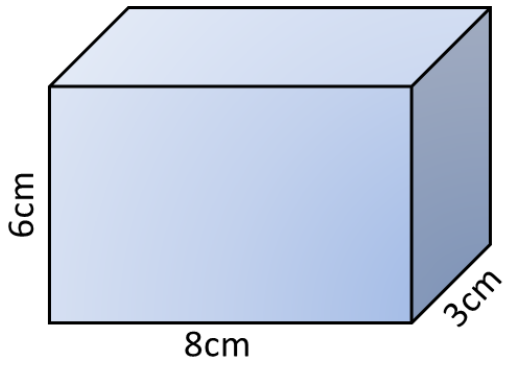
The french fancies are all **7cm long and 3cm high.**
So the box needs to be at least 7cm long and 3cm high.

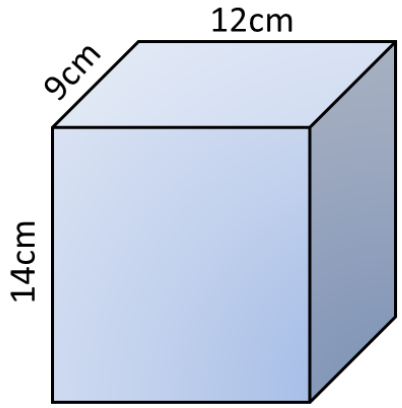


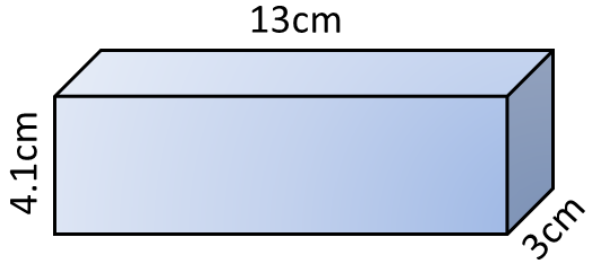
So you could sketch a box that looks like this:

Practice Question

Reginald is making a crate to fit his smaller boxes in. The boxes look this this:





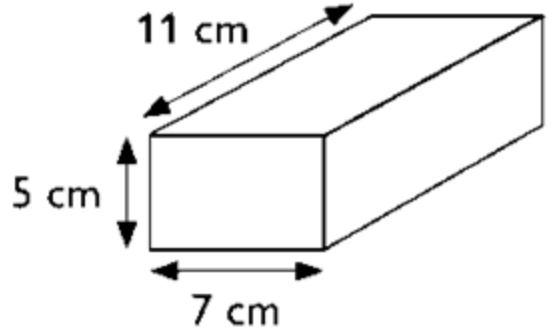


Sketch a crate that could hold all the boxes. Label the dimensions of the crate.

(3 marks)

Drawing nets for cuboids

How would you draw a net the cuboid on the right.

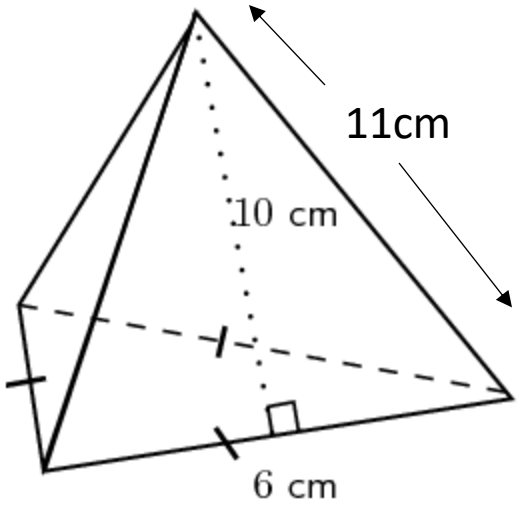


The cuboid has 6 faces, so the net for the cuboid will be made from 6 rectangles.

Lets talk through the steps:

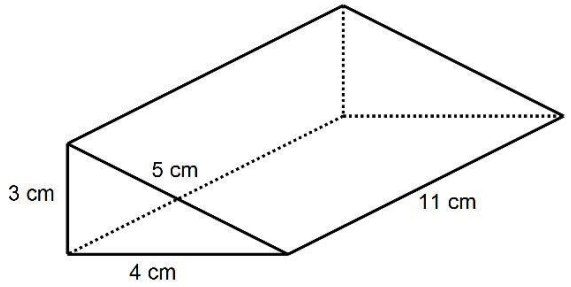
Drawing nets of pyramids

A triangle-based pyramid is drawn on the right.
The base is equilateral and the sides are isosceles.
Draw a net for this pyramid.
The pyramid has four faces, so its net should be made up of four triangles.



Drawing nets of prisms

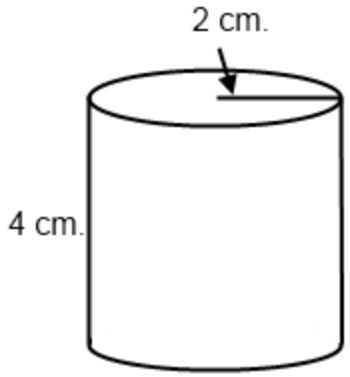
Draw a net of the triangular prism on the right.
The prism is made up of two triangles and three rectangles..



STEPS:

Drawing nets of cylinder

Draw a net of the cylinder on the right.
This is the hardest shape to draw. It is made of 2 circles and a rectangle.
How do we find the width of the rectangle?

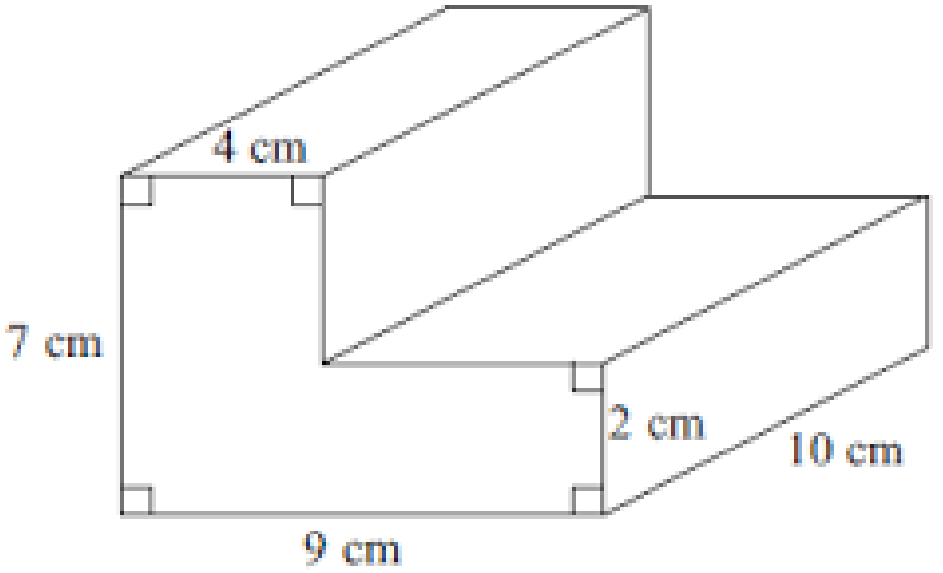


STEPS:

Plans and Elevations

Plans and Elevations are 2D Drawings of 3D Shapes

What would the **plan** of this shape look like?



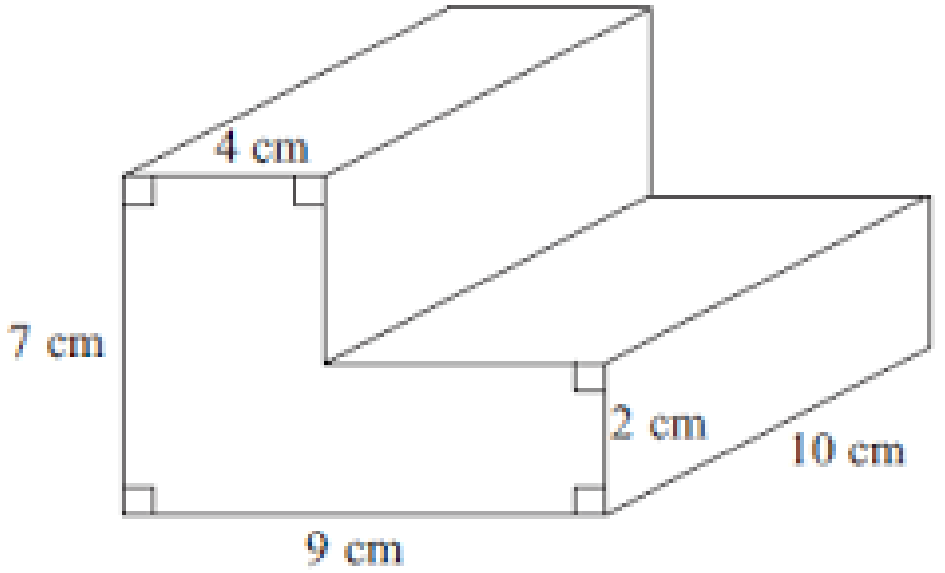
If you're looking at it from the front, it's called the **front elevation** (or **front view**).

If you're looking at it from the side,
It's called the **side elevation** (or **side view**).

Plans and Elevations

Plans and Elevations are 2D Drawings of 3D Shapes

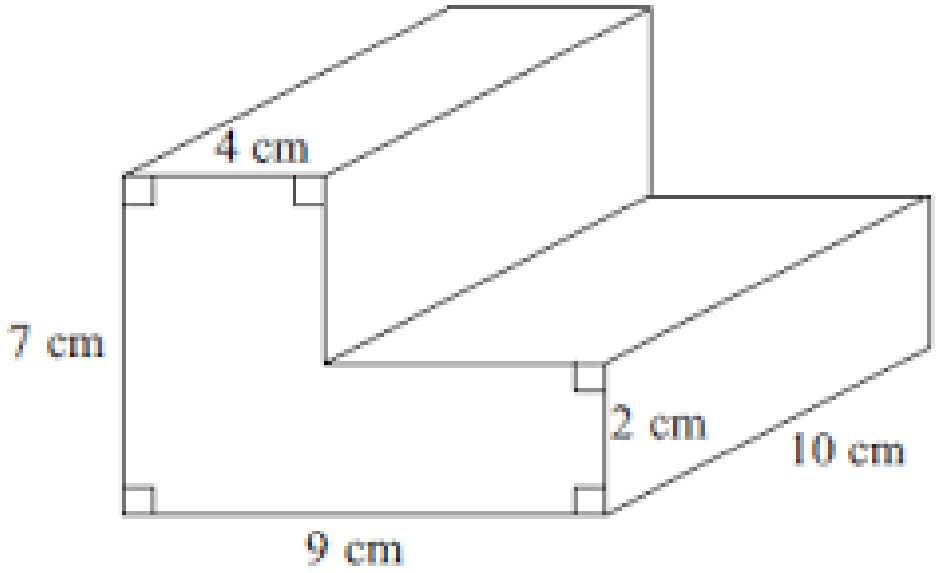
What would the **front elevation** of this shape look like?



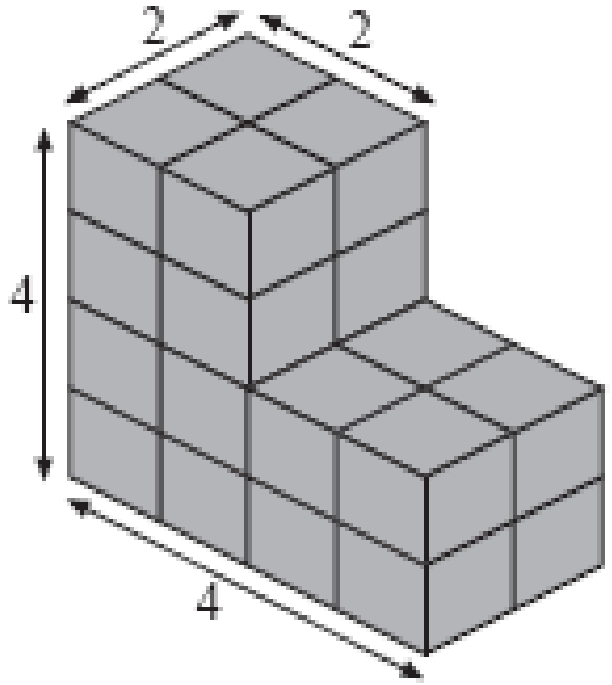
Plans and Elevations

Plans and Elevations are 2D Drawings of 3D Shapes

What would the **side elevation** of this shape look like?



Plans and Elevations



Draw the **plan elevation,** the **side elevation** and the **front elevation** for this shape.

Plans and Elevations

1. Yvonne wants to buy a newly built house.
   She finds this picture of the house she wants online.

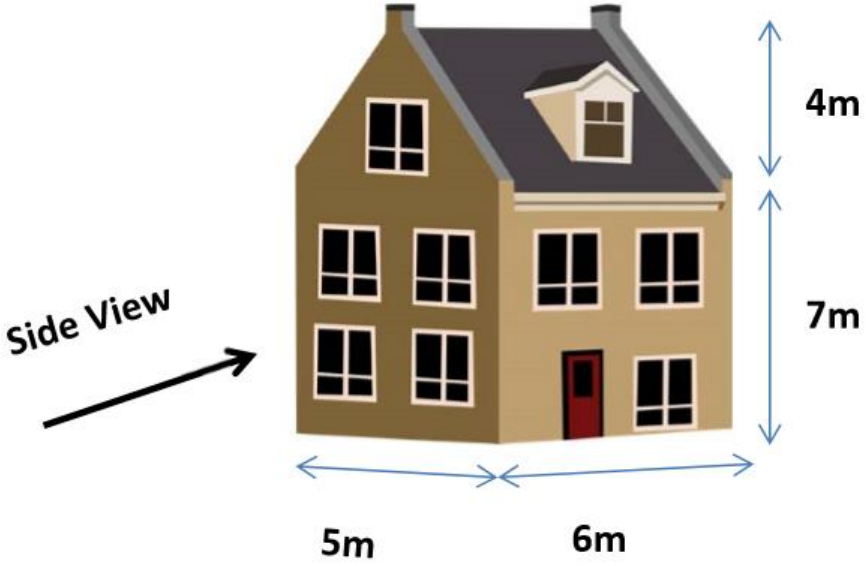


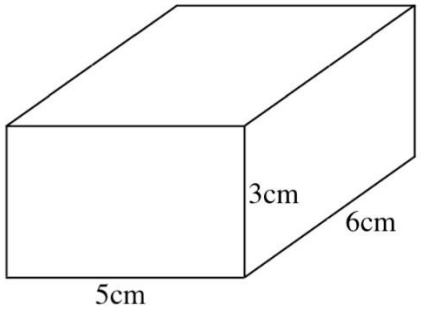
Diagram **not** accurately drawn

Yvonne wants a scale drawing of the side view of the house.
She uses a scale of 1:100
Draw the side view of the house on the grid. Remember to use the scale.

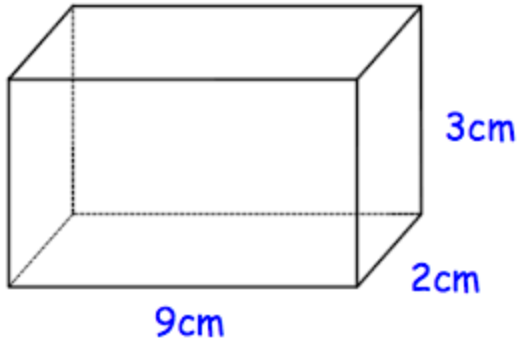
Practice Questions

1. Draw the nets of the following cuboids:

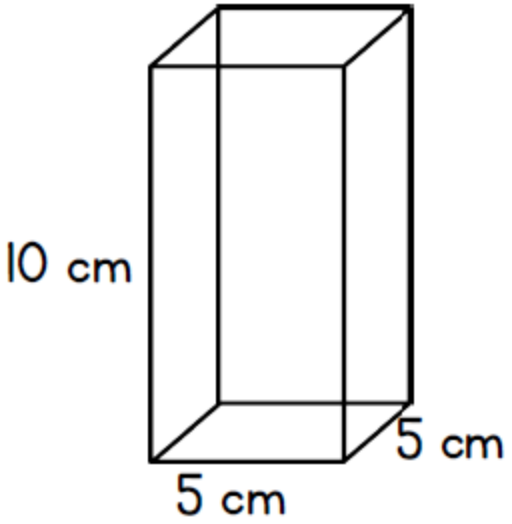
a)



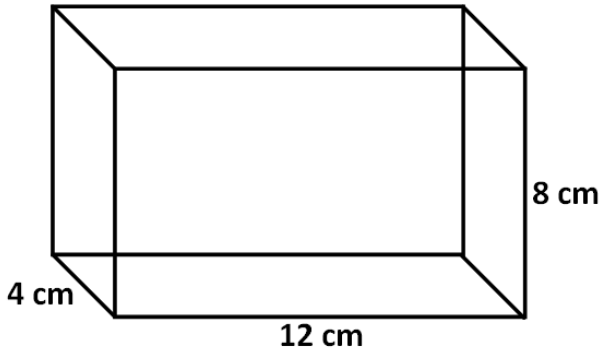
b)



c)



d)



(4 marks)

Practice Questions

Tina collects rare coins.

Tina wants to design a closing silver box for her coin.

She wants the box to be in the shape of a cuboid with

- square base of side length 5 cm
- height of 1.5 cm.

Tina needs to draw an accurate net of the box for a jeweller.

Draw an accurate net of the box for Tina.

(3)

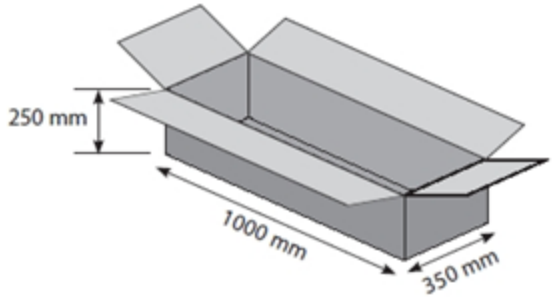
Use the grid below to draw the net.

Practice Questions

Lucas gets an order for 12 TV sound bars.
He needs to pack the TV sound bars for posting.

Each TV sound bar is in a space that is a cuboid 70 mm by 940 mm by 80 mm.

Lucas wants to pack these 12 spaces in one large space.
The large space is also a cuboid 1000 mm by 250 mm by 350 mm.



(a) Can Lucas pack the 12 TV sound bar spaces in one large space?

(4)

Use the space below to show clearly how you get your answer.

Practice Questions

Ahmed is going to get solar panels fitted to a section of the roof of his house.

The roof section is rectangular 6.7 m by 4.8 m.

Each solar panel is 1600 mm by 900 mm.
Solar panels need to be at least 30 cm away from each edge of the roof section.

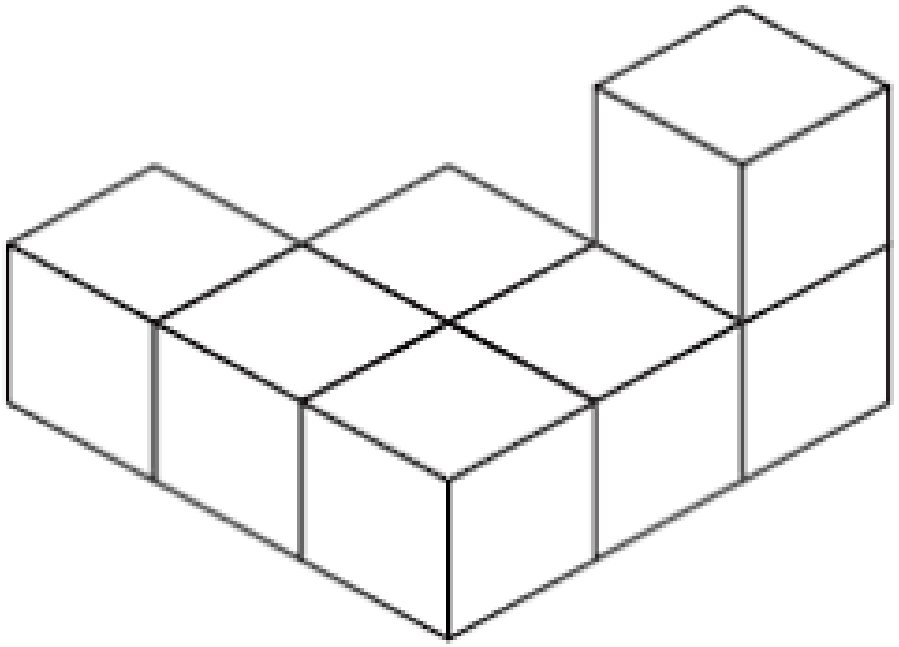
Ahmed thinks he can have 12 solar panels fitted to the roof section.

Can 12 solar panels be fitted to the roof section?
Show why you think this.

(5)

Use the space below to show clearly how you get your answer.

Practice Questions



Draw a plan, side and front elevation for the 3d shape