Planner

Nets and 3-D shapes

- Constructing a net for a cube or cuboid
- Finding the surface area of a cube or cuboid
- Constructing the net for a triangular prism
- Constructing the net for a square-based pyramid

Keywords

You should know

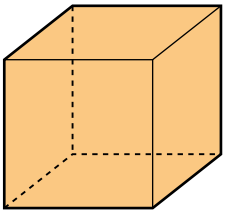
explanation 1

1 For each of the following shapes write down

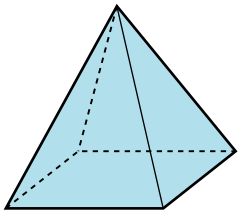
i how many faces it has **ii** how many edges it has

iii how many vertices it has

a

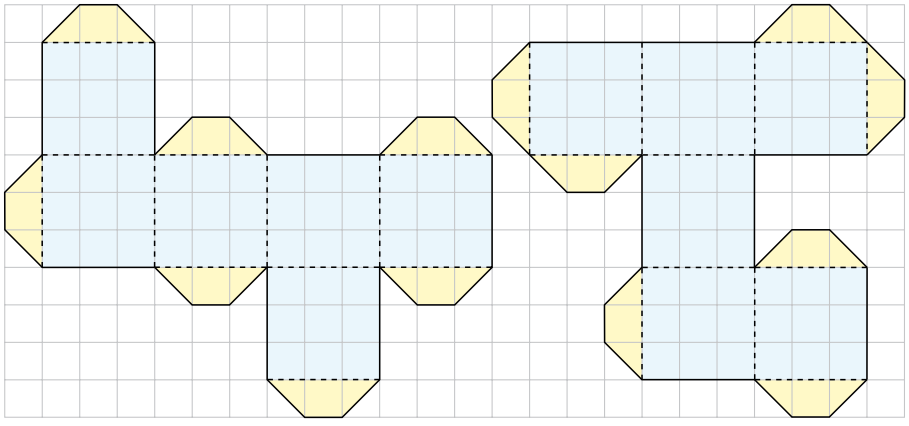


b



explanation 2

2 **a** Copy these diagrams onto centimetre-squared paper and cut them out.



b Fold them along the dotted lines. Which diagram makes a cube?

c Why does the other diagram not make a cube?

d How could you move one square on this diagram so that it will make a cube?

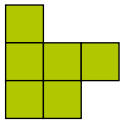
3 Look at the cube you have made in question **2**.

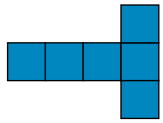
a How many faces does it have?

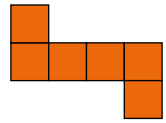
b How many edges does it have?

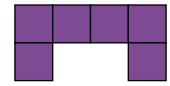
c How many vertices does it have?

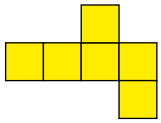
4 Which of these diagrams are nets for a cube?

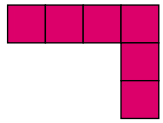
a 

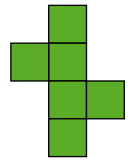
b 

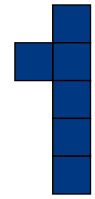
c 

d 

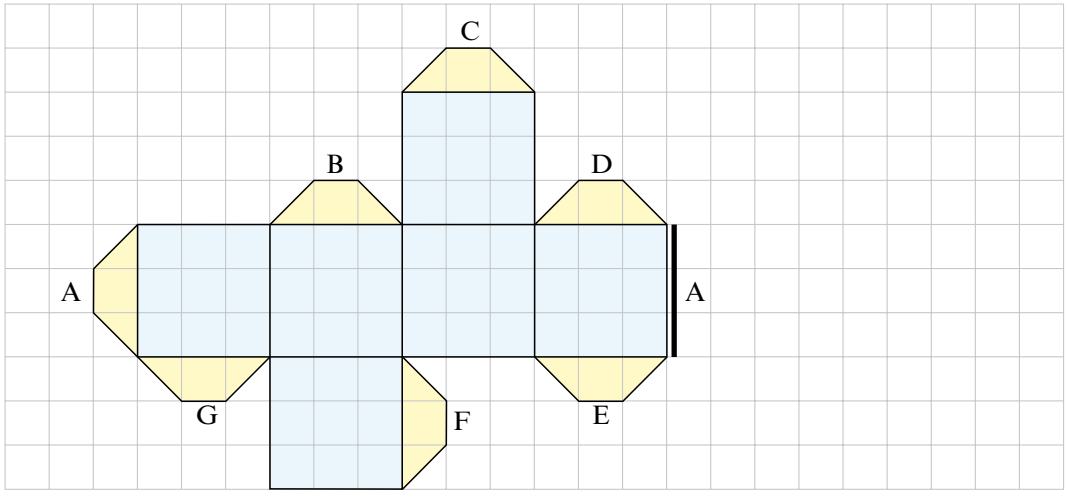
e 

f 

g 

h 

5 The diagram shows the net of a cube.



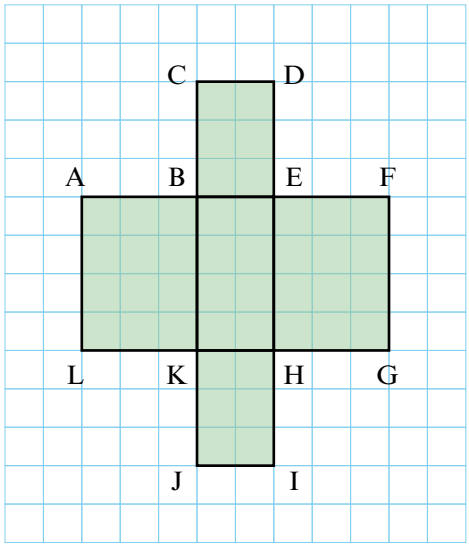
a Copy the net.

b Mark the edges which will meet the flaps when the net is folded into a cube.

The first one is done for you.

explanation 3

6 The diagram shows a partly completed net for a cuboid drawn on a grid of 1 cm squares.



a What shape is needed to complete the net? What is the size of this shape?

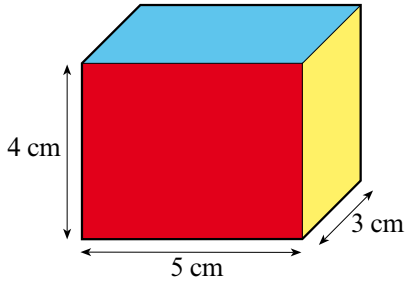
b Copy the diagram and add the missing shape to complete the net.

c Which other edges could you have attached the missing shape to?

d When the cuboid is made, which of the labelled points will meet A?

explanation 4

7 **a** Use the net of this cuboid to find the area of

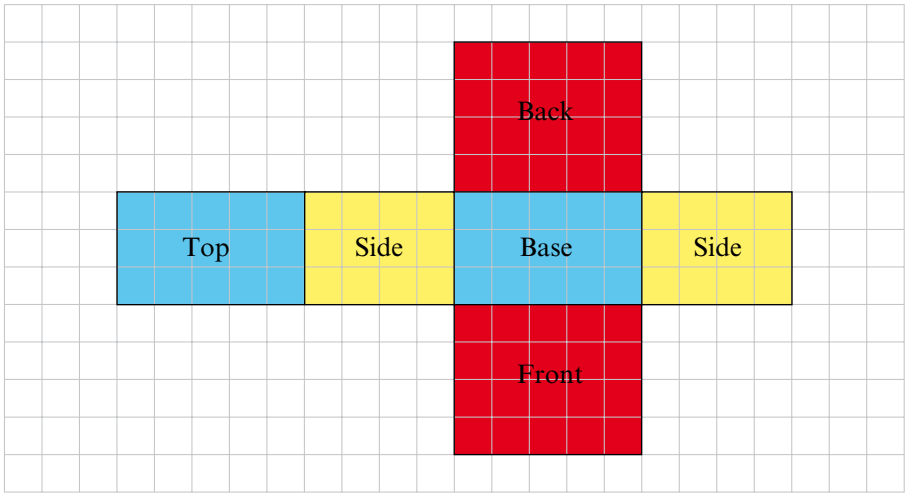


i a red rectangle

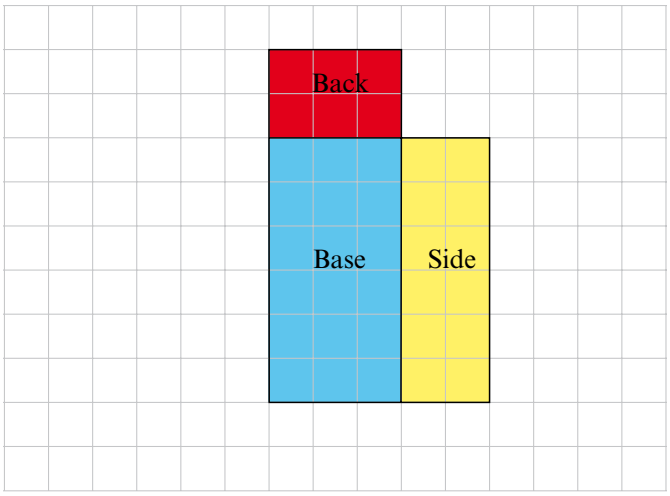
ii a blue rectangle

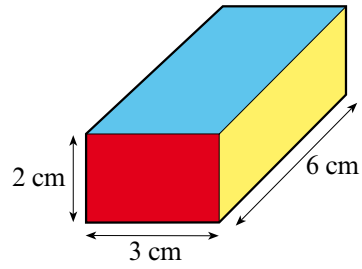
iii a yellow rectangle

b Explain why the surface area is 94 cm^2.



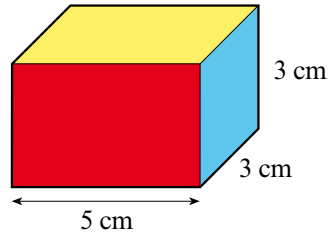
8 **a** Complete the net for this cuboid.
(You do not need to include flaps.)





b Use your net to find the surface area of the cuboid.

9 Find the surface area of this cuboid.

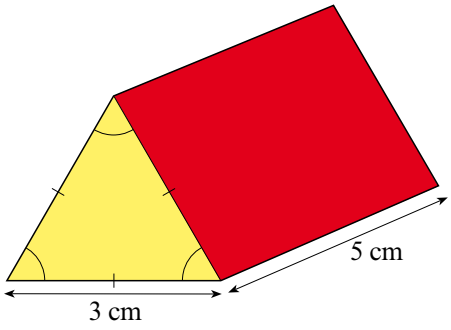


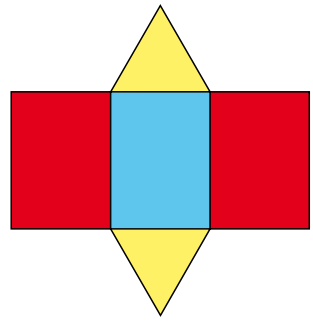
10 **a** Find the area of one face of a cube with side length 5 cm.

b Find the surface area for a cube with side length 5 cm.

explanation 5

***11** The diagrams below show a triangular prism and a sketch of its net.
The cross-section of the triangular prism is an equilateral triangle.

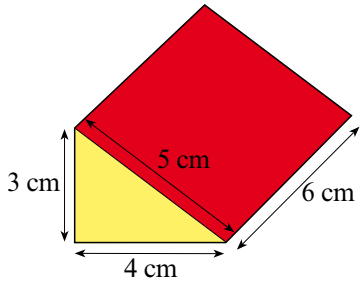


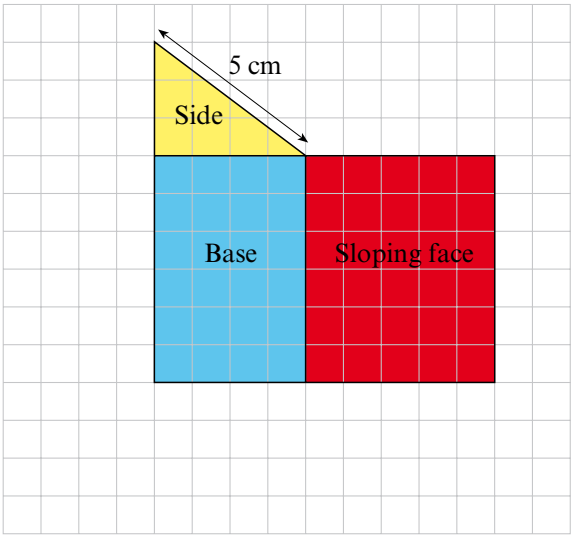


a What do you know about the sides and angles of an equilateral triangle?

b What is the surface area of the blue rectangle (the base)?

12 Here is a partly completed diagram of a net for this triangular prism.





a Copy and complete the diagram by adding the two missing sides (a triangle and a rectangle).

b Cut out the net and make the triangular prism.

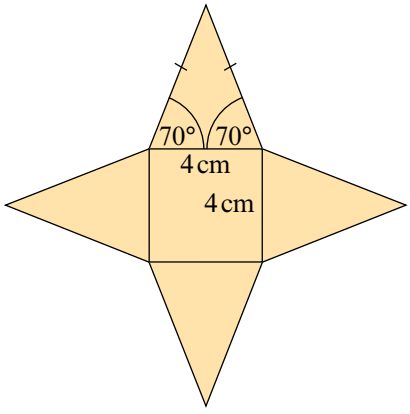
c Find the number of vertices, faces and edges of a triangular prism.

d Given that the two yellow triangles make a 3 cm by 4 cm rectangle, show that the surface area of the triangular prism is 84 cm^2.

explanation 6 — online

***13** **a** **i** In the centre of a piece of paper draw a square that is 4 cm by 4 cm.

ii Using a ruler and protractor construct an isosceles triangle on each side of the square to make the net shown.



b Add flaps to your net and then cut it out to make a square-based pyramid.

c Find the number of vertices, faces and edges of the pyramid.