E-Classroom	**NAME:**					
	Gr 7		**Date:**		**Time**	**1½ hrs**
CAPS Reference	**4-2 Surface Area and Volume of 3D objects**					
Topic	**4-2-2 Surface Area –Rectangular Prisms and Cubes**					

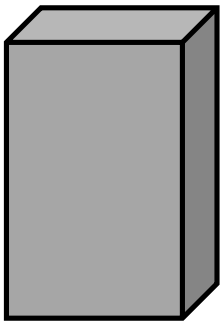
1. Got it? [10 mins]

Remember:

1.1 The area of all the outside faces of a 3D solid shape is called the surface area.

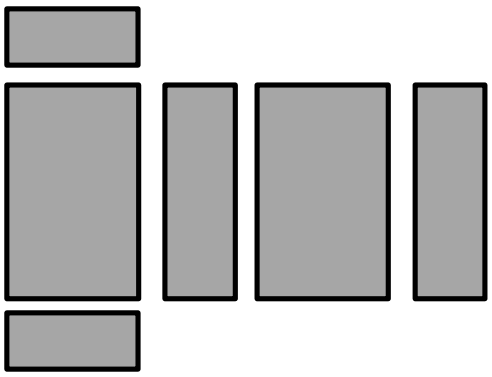
1.2 In a rectangular prism or a cube we have 6 faces. Opposite faces are the same shape: top and bottom; back and front; left and right.

The shape can be solid like a wooden block

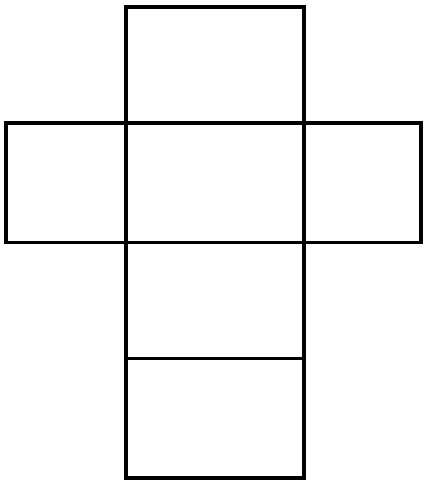


The shape can be empty inside like a box

If we painted the outside of the wooden block, we would paint the surface area. In the diagram below, we see the shapes we would paint. They will be the same as the net of a 3D shape.



If we made the box from card, the card would be the shape of the surface area. (The net)



To find the surface area of the block or the empty box, we find the area of the 6 faces and add the areas together.

Finding the surface area of a solid shape is the same as finding the area of the net of the shape.

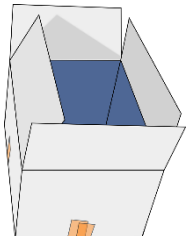
2. Go ahead! [10 mins]

2..1
You are going to paint all the surfaces of a cupboard except the back. Draw a diagram to show the surfaces you would paint.

2.2
This shipping container is to be painted. Draw a diagram to show the surfaces that will be painted. (It will be painted underneath)

2.3
Draw a net to show this empty magazine storage box with no front.

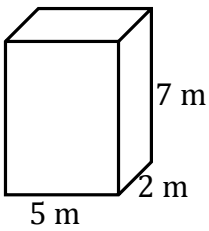
2.4
Draw a diagram of the net of this box. The flaps that fold over the top will meet in the middle of the top of the box.

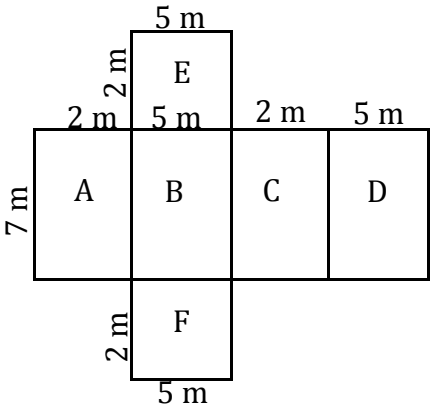


3. Got it? [10 mins]

Calculating the surface area of a rectangular prism.

Example 1 Find the surface area of this container which the following measurements: length 5m; width 2 m; height 7 m.





Step 1 Draw a diagram of the net of the shape.
Step 2 Decide on the shapes you see. Write the measurements on your diagram.
Step 3 Calculate the area of each part of the diagram.

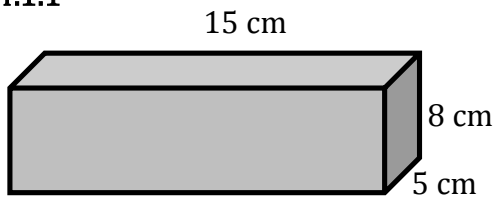
Surface Area of container = Area of A + B + C + D + E + F
$= (7 \times 2) + (7 \times 5) + (7 \times 2) + (7 \times 5) + (2 \times 5) + (2 \times 5)$
$= 14 + 35 + 14 + 35 + 10 + 10 = 118\ m^2$

Challenge: Think of other ways to draw your diagram and then calculate the surface area of the container.

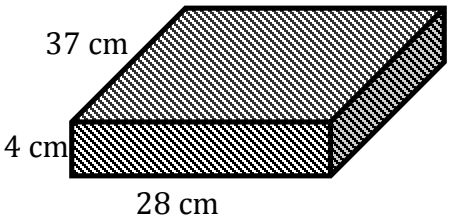
4. Go ahead! [20 mins]

4.1 Calculate the Surface area of the following boxes. Remember to first draw a diagram of the net of each box.

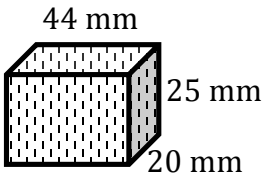
4.1.1



4.1.2

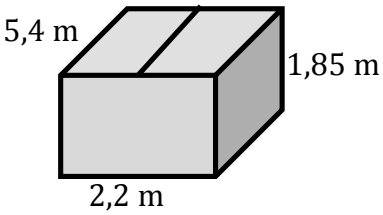


4.1.3

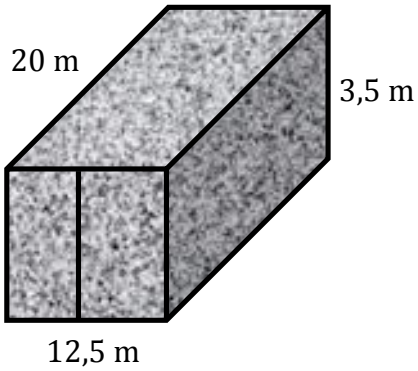


4.2 Calculate the surface area of these containers:

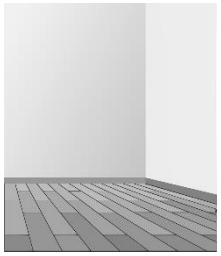
4.2.1



4.2.2



4.3 Your classroom walls and flat roof or ceiling are going to be painted, but not the floors.



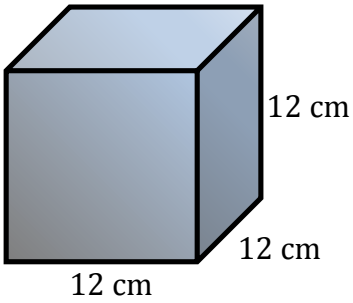
4.3.1 Draw a diagram of the surfaces of your classroom that will be painted. (Do not draw in the windows and doors.)

4.3.2 Measure your classroom in metres and calculate the surface area to be painted.

5. Check your work! [5 mins]

6. Think First! [5 mins]

6.1 What is this name of this 3D solid shape?
6.2 Draw a diagram of the net of the shape.
6.3 Calculate the surface area.
6.4 What do you notice about the surface area?
6.5 Work out a formula for the surface area of a cube.

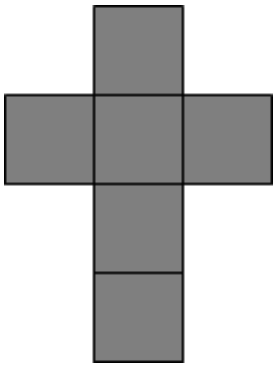


7. Got it? [5 mins]

Calculating the surface area of a cube:

6.1 What is this name of this 3D solid shape? A cube

6.2 Draw a diagram of the net of the shape.



6.3 Calculate the surface area. $12^2 \times 6 = 144 \times 6 = 864\ cm^2$

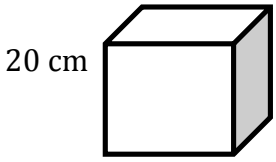
6.4 What do you notice about the surface area?
It is made up of 6 equal squares.

6.5 Work out a formula for the surface area of a cube.
Area of one face × 6

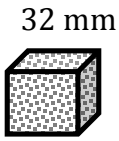
8. Go ahead! [20 mins]

8.1 Calculate the surface area of the following boxes.
Remember to first draw a diagram of the net of the 3D shape.

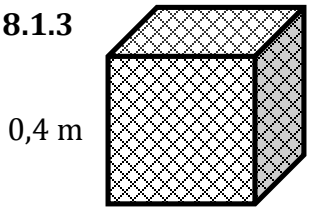
8.1.1



8.1.2

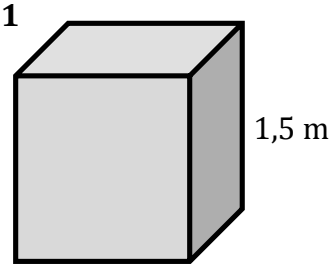


8.1.3

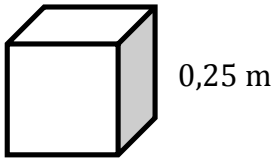


8.2 Calculate the surface area of these water tanks:

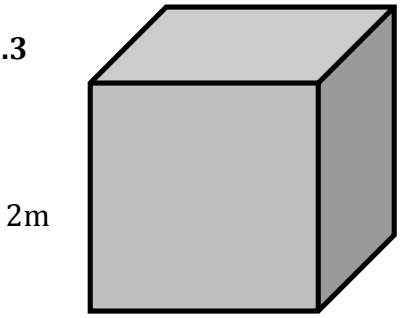
8.2.1



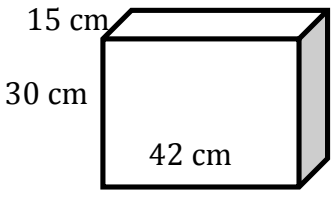
8.2.2



8.2.3

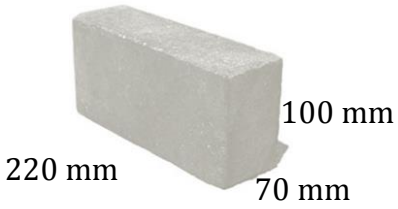


8.3.1 Jannie decides to paint this white box red. What is the surface area he will have to paint?



8.3.2 Here is a die (singular of dice). If one edge measures 8 mm, what is the surface area of the die?

8.3.3 Here is a brick. Calculate the surface area.



9. Check your work! [5 mins]

