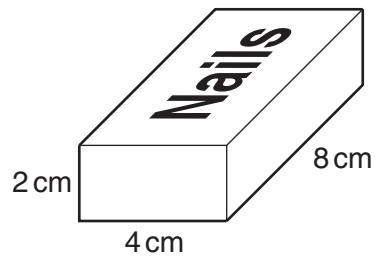**1** A DIY store sells nails in boxes, which are cuboids.

2 cm

4 cm

8 cm

Nails

Each full box of nails weighs 250 g.
The boxes are delivered in crates which are cubes of side 0.4 m.
An empty crate weighs 20 kg.

How much, in kg, would a crate full of these boxes of nails weigh?

_____ kg **[4]**

2 Ketchup is sold in two sizes of bottle, 'Standard' and 'Large'.
The 'Large' bottle and the 'Standard' bottle are similar shapes.
Their labels are also similar shapes.

(a) The width of the label on the 'Large' bottle is 1.1 times the width of the label on the 'Standard' bottle.
The perimeter of the label on the 'Large' bottle is 28 cm.

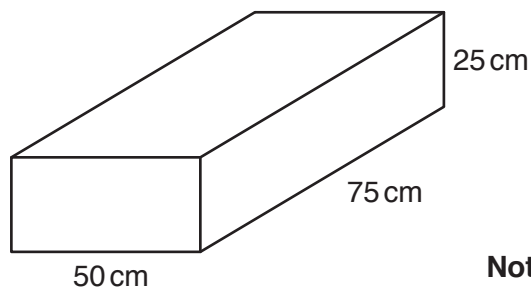Work out the perimeter of the label on the 'Standard' bottle.

(a) _____ cm **[2]**

(b) The height of the 'Large' bottle is 1.1 times the height of the 'Standard' bottle.
The volume of the 'Standard' bottle is 300 ml.

Work out the volume of the 'Large' bottle of ketchup.
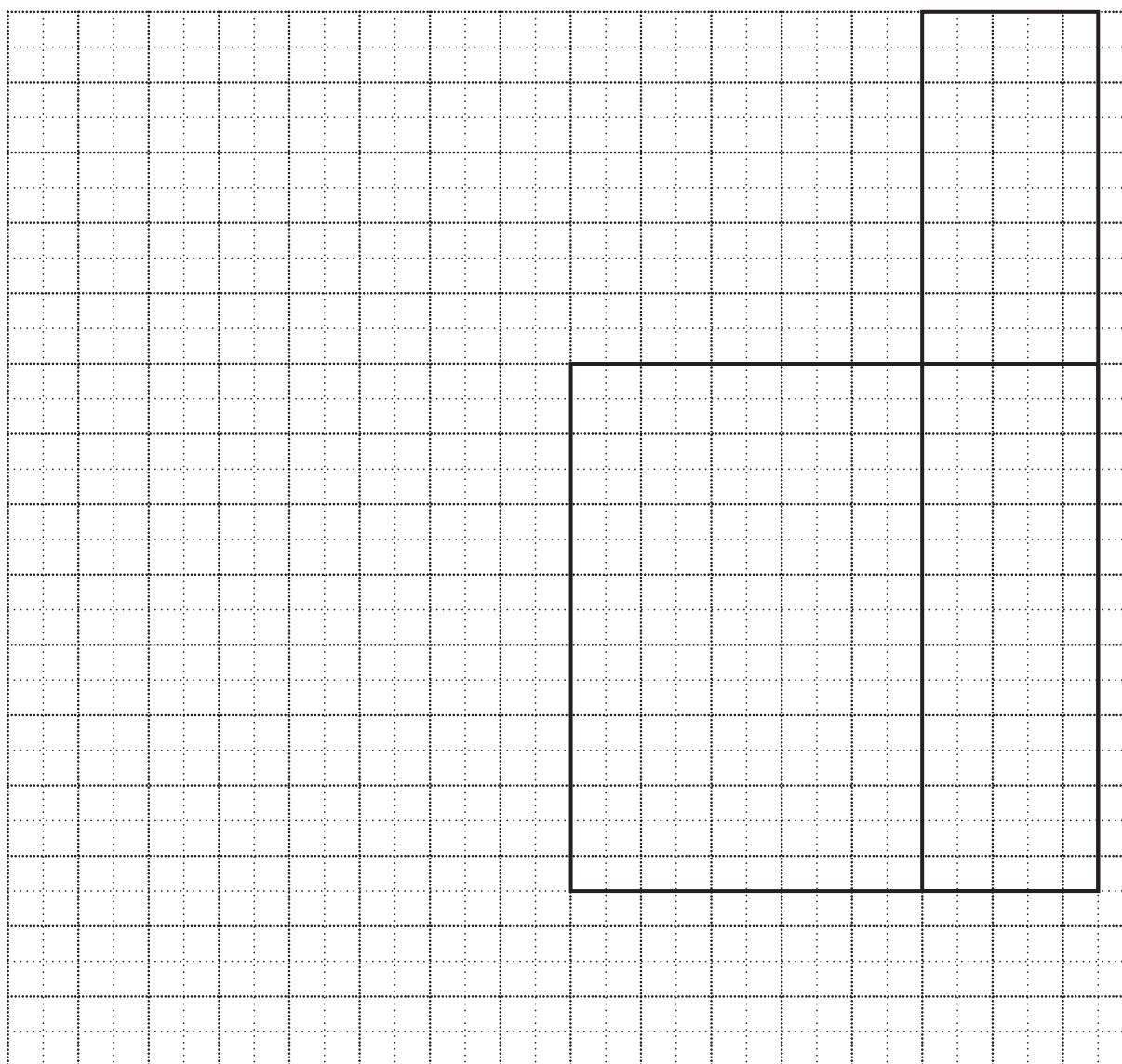Give your answer to an appropriate degree of accuracy.

(b) _____ ml **[3]**

3   A closed, empty box is a cuboid.

25 cm

75 cm

50 cm

Not to scale

(a) On the grid below, complete the net of the box.

The base and two of the sides have been drawn.

Use a scale of 1 cm to represent 10 cm.

[3]

(b) Work out the total area of the card used to make the **full size** box.

(b) .... cm² **[3]**

(c) The empty box is filled with small boxes which are all cubes of edge 5 cm.

5 cm
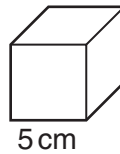
(i) Calculate the volume of one of these small boxes.

(c)(i) .... cm³ **[2]**

(ii) How many of these small boxes are needed to fill the large box?

(ii) .... **[3]**
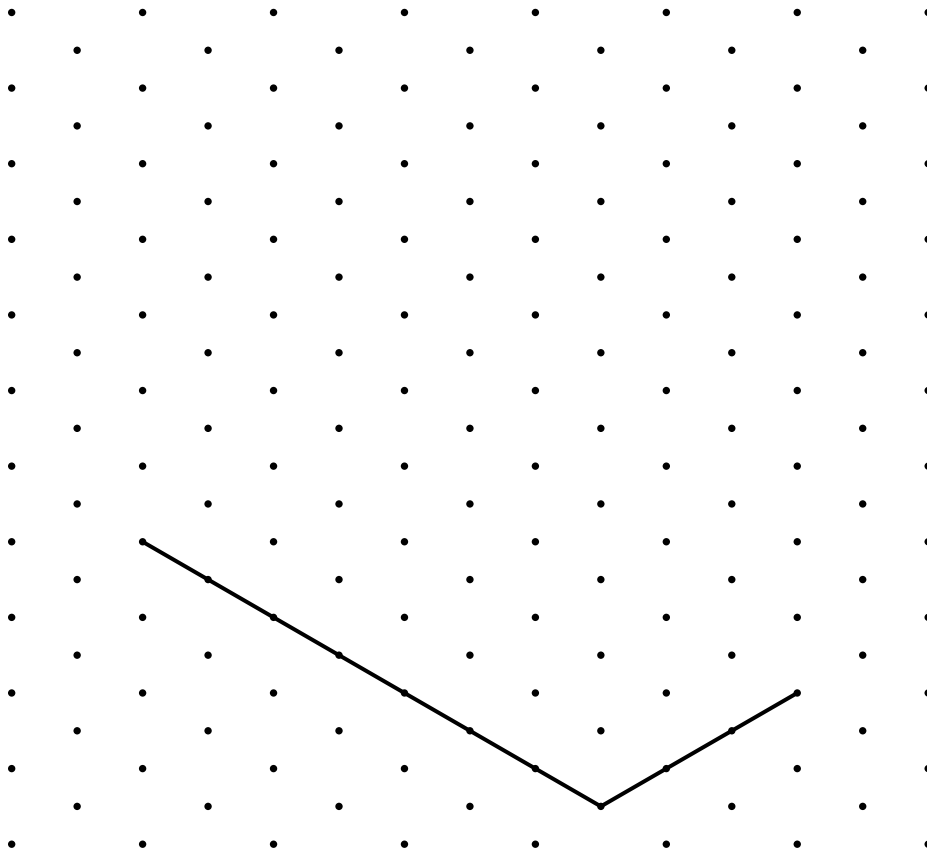
4   Here is a cuboid.

4 cm

3 cm

7 cm
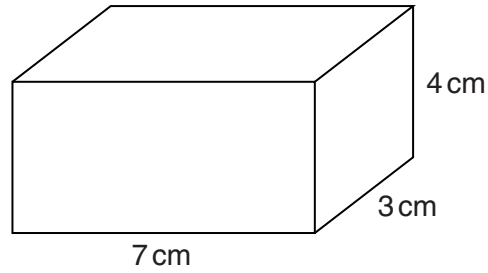
(a) Calculate the volume of the cuboid.
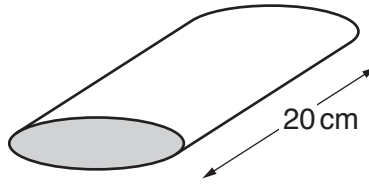
(a) _____ cm^3 **[2]**

(b) On the grid below, make an accurate isometric drawing of the cuboid.
Two of the edges have already been drawn.

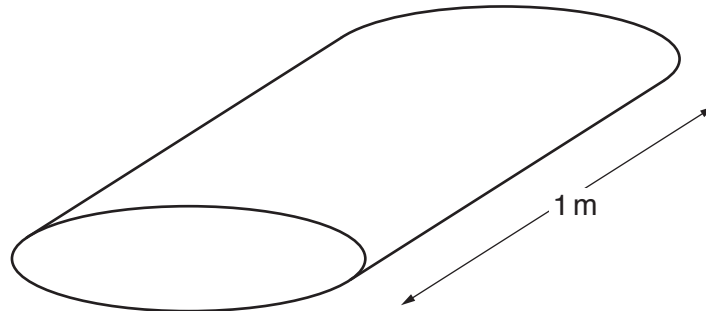**[3]**

5 (a) An oil can is a prism 20 cm long.

When full, the can contains 1.2 litres of oil.

Calculate the area of the end of the oil can, shown shaded.

(a) .... cm^2 **[3]**

(b) An oil drum, of length 1 m, is an enlargement of the oil can.

(i) Calculate the area of the end of the oil drum.

(b)(i) .... cm^2 **[3]**

(ii) Calculate the volume of oil in the drum when full.

(ii) .... litres **[2]**

6   A water tank is a closed cuboid measuring 70 cm by 55 cm by 60 cm.
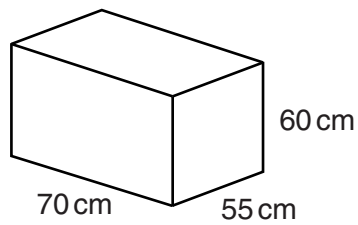
(a) Work out the total surface area of the tank.

(a) _____ cm^2 **[3]**

(b) Show that the volume of the tank is 231 litres.   **[3]**

(c) The empty tank is filled with water at a rate of 0.6 litres per second.

How long will it take to fill the tank?
Give your answer in minutes and seconds.

(c) _____ minutes _____ seconds **[3]**