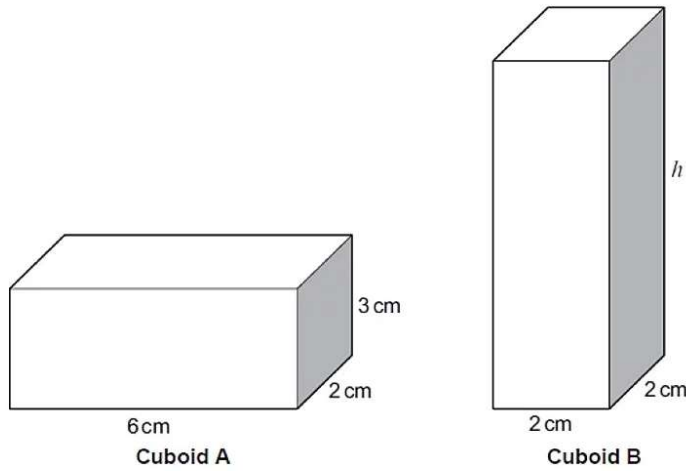


Intermediate Maths Nov 2017 P1 Q3a

(a) In this part of the question, you will be assessed on the quality of your organisation, communication and accuracy in writing.

The two cuboids shown below have equal volumes.



Diagrams not drawn to scale

Calculate the height  $h$  of Cuboid B.  
You must show all your working.

[4 + 2 OCW]

Intermediate Maths Sample 1 P1 Q3c

(c) The volume of the cuboid shown below is

$30 \text{ m}^3$

$10 \text{ m}^3$

$31 \text{ m}^3$

$62 \text{ m}^3$

$235 \text{ m}^3$

[1]

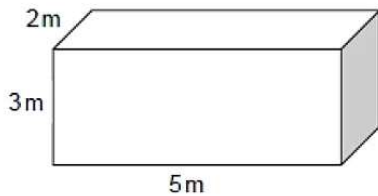


Diagram not drawn to scale

Intermediate Maths Sample 1 P2 Q4

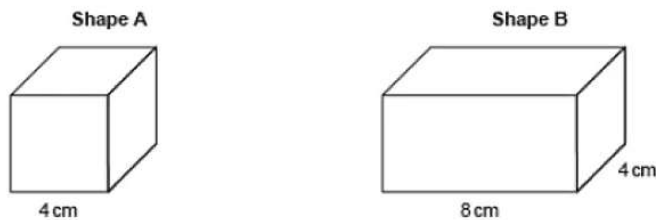
Shape A is a cube.

Shape B is a cuboid.

Both shape A and shape B have the same volume.

What is the height of shape B?

[4]



Diagrams not drawn to scale

Intermediate Maths Nov 2017 P2 Q5

Calculate the area of the trapezium shown below.  
You must give the units of your answer.

[3]

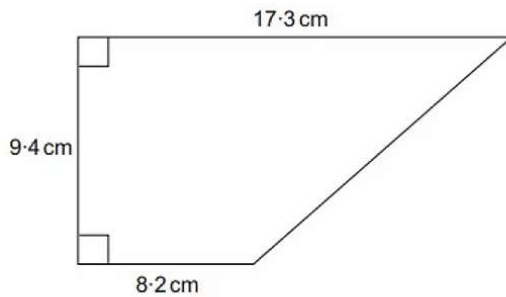


Diagram not drawn to scale

Intermediate Numeracy Summer 2019 P1 Q5

Rupert Shoes sells shoes online.

- (a) The designer has drawn a sketch of a new label to stick on the shoeboxes.

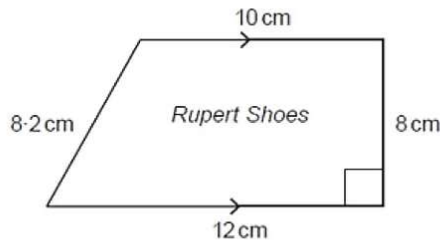


Diagram not drawn to scale

She takes the sketch to the printers.  
The table shows the costs for printing 100 labels.

Area of label, to the nearest $\text{cm}^2$	Cost to print 100 labels
Up to $80 \text{ cm}^2$	£1.15
$81 \text{ cm}^2$ to $85 \text{ cm}^2$	£1.25
$86 \text{ cm}^2$ to $89 \text{ cm}^2$	£1.50
$90 \text{ cm}^2$ or more	£1.75

How much will it cost to have 500 of the designer's label printed?  
You must show all your working.

[4]

- (b) Pairs of shoes are packed in shoeboxes.  
The dimensions of the shoebox used are given on the diagram below.

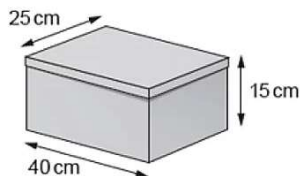


Diagram not drawn to scale

- (i) What is the area of the smallest face of the shoebox?  
Circle your answer.

[1]

$40 \text{ cm}^2$        $225 \text{ cm}^2$        $375 \text{ cm}^2$        $800 \text{ cm}^2$        $1000 \text{ cm}^2$

Intermediate Numeracy Summer 2017 P2 Q6bi

- (b) Gustav also makes a birthday cake for his sister.  
The top face of the cake is in the shape of a trapezium.

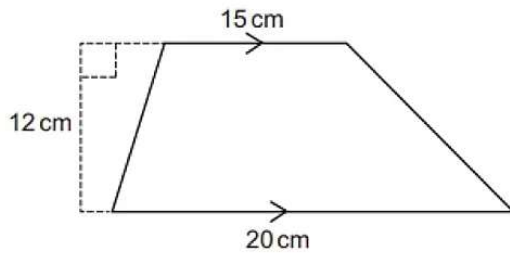


Diagram not drawn to scale

Gustav plans to ice the top face of the cake.  
Each packet of icing costs £1.35 and is enough to cover  $65\text{ cm}^2$ .  
He has to buy complete packets of icing.

- (i) Calculate the area of the top face of the cake Gustav has made. [2]

Intermediate Numeracy Summer 2019 P2 Q7a

- (a) (i) The internal measurements of a tin of baked beans are:
- radius 3.6 cm,
  - height 9.3 cm.



Calculate the internal volume of the tin.

[2]

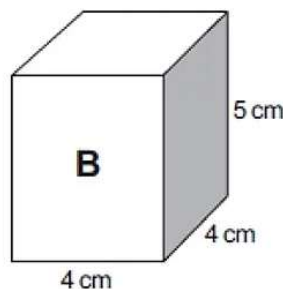
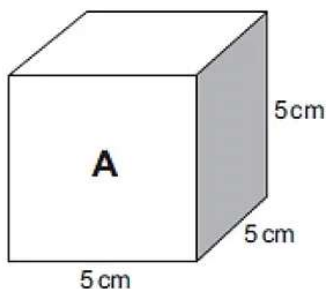
- (ii) Every  $1\text{ cm}^3$  of baked beans in a tin has a mass of 1 g.  
A portion of baked beans is  $\frac{1}{2}$  a tin.  
What is the mass of a portion of baked beans?

[1]

Intermediate Maths Summer 2018 P2 Q8

*In this question, you will be assessed on the quality of your organisation, communication and accuracy in writing.*

Cube A and cuboid B are shown below.



Diagrams not drawn to scale

Express the volume of B as a percentage of the volume of A.  
You must show all your working.

[4 + 2 OCW]

Intermediate Maths Nov 2017 P2 Q8

In this question, you will be assessed on the quality of your organisation, communication and accuracy in writing.

$AB$  is the diameter of a circle, centre  $O$ , with radius  $OA = 4.2$  cm.  
 $ABCD$  is a square.

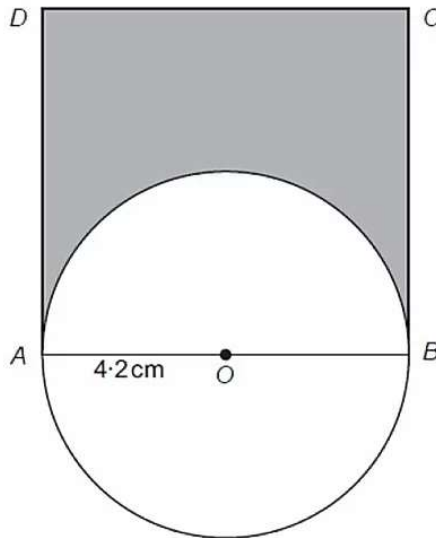


Diagram not drawn to scale

Calculate the area of the shaded region.  
 You must show all your working.

[5 + 2 OCW]

Intermediate Numeracy Sam 2 P1 Q8ab

Derek works for a company which designs and fits kitchen cupboards.  
 Kitchen cupboards and worktops are usually measured in mm.



(a)(i) A worktop is 4500 mm long.  
 How much is this in metres?

[1]

(ii) A rectangular worktop needs to be covered in a special varnish.  
 The worktop measures 3000 mm long by 700 mm wide.  
 Calculate the area of the top surface of the worktop in  $m^2$ .

[2]

- (b) A kitchen cupboard is in the shape of a cuboid.  
Its capacity is  $420\,000\text{ cm}^3$ .  
Internally, the cupboard measures 60 cm wide and 70 cm deep.  
Calculate the internal height of the cupboard in cm.

[2]

---

Intermediate Numeracy Summer 2018 P1 Q8a

- (a) *In this part of the question, you will be assessed on the quality of your organisation, communication and accuracy in writing.*

The concrete base of Miss Morgan's new bungalow is shown below.

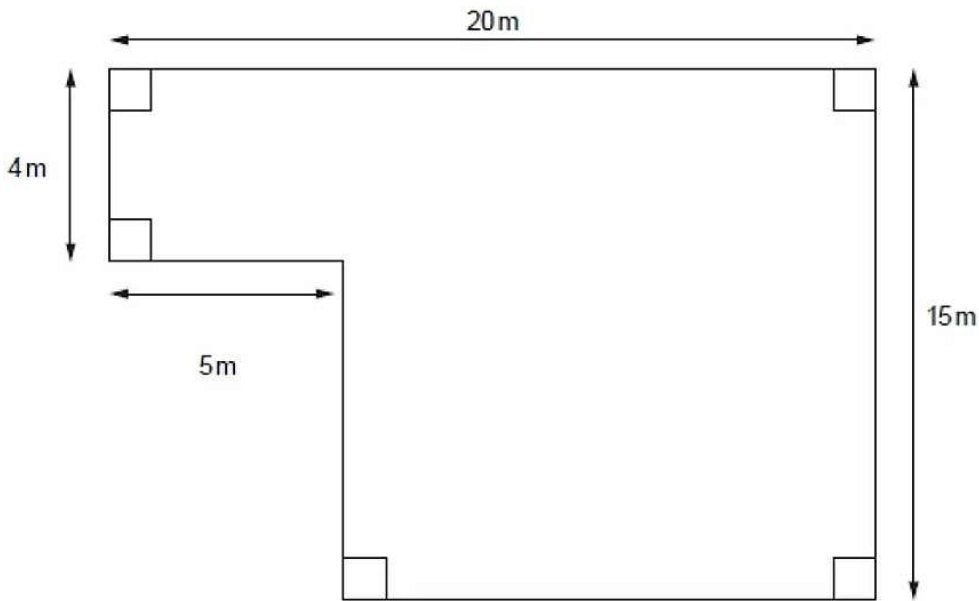


Diagram not drawn to scale

The concrete base of Miss Morgan's bungalow is 0.2m thick.

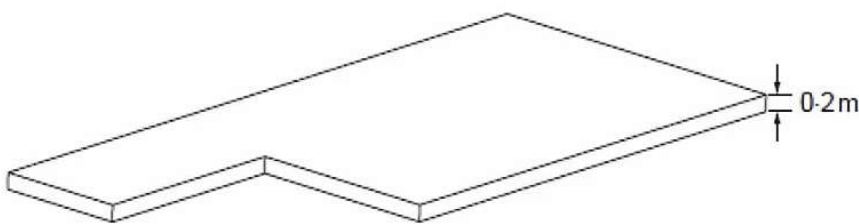


Diagram not drawn to scale

Calculate the volume of the concrete base.  
You must show all your working.

[4 + 2 OCW]

Intermediate Numeracy Summer 2019 P1 Q9b

You are given that:

1 gegalitre = 1 000 000 m<sup>3</sup>

1 megalitre = 1 million litres

- (b) Lake Vyrnwy has a surface area of approximately 4540000 m<sup>2</sup>.  
Lake Vyrnwy contains 59.7 gegalitres of water.

Calculate an estimate of the average depth of the lake.  
Give your answer in metres.



[3]

Intermediate Numeracy Nov 2018 P2 Q9a

- (a) Luned's tent is in the shape of a triangular prism.  
The cross-section of her tent is an isosceles triangle.

She noted a few measurements on a diagram of her tent, as shown below.

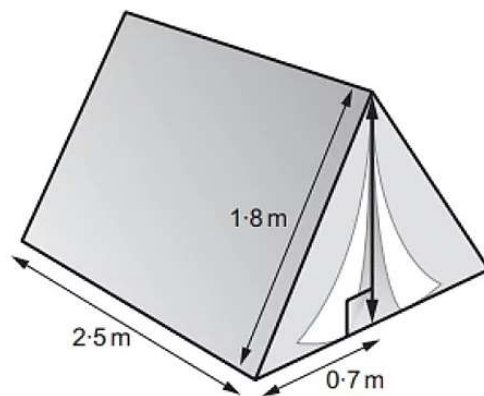


Diagram not drawn to scale

Calculate the volume of Luned's tent.  
Give your answer in m<sup>3</sup>.  
You must show all your working.

[5]

Intermediate Numeracy Nov 2018 P2 Q10

Cycle frames are made from steel, aluminium or carbon fibre.  
The table below gives the density of steel, aluminium and carbon fibre.

Material	Density (g/cm <sup>3</sup> )
Steel	7.8
Aluminium	2.7
Carbon fibre	1.6



Owain has a cycle frame made from aluminium.  
His cycle frame has a mass of 9450 g.



- (a) Calculate the volume of aluminium in Owain's cycle frame.  
Give your answer in cm<sup>3</sup>.

[3]



- (b) Bethan has a cycle frame that is identical to Owain's cycle frame. However, her cycle frame is made from carbon fibre. Calculate the mass of this frame. Give your answer in grams.

[3]

Intermediate Numeracy Sam 1 P2 Q10a

Pack4 is a company that makes cardboard boxes.

- (a) One of their boxes, in the shape of a triangular prism, is shown below.

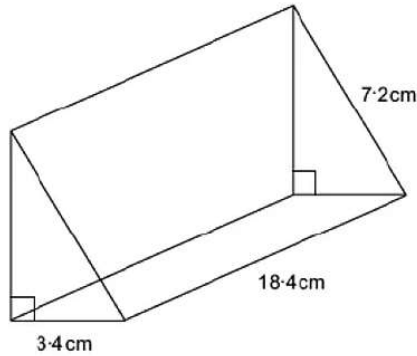


Diagram not drawn to scale

A customer wants a box with a volume of 0.2 litres.

- (i) State by how much the volume is greater or less than 0.2 litres, giving your answer in  $\text{cm}^3$  correct to 2 significant figures. [6]
- (ii) Explain why this may not be a suitable box for the customer. [1]

Intermediate Numeracy Summer 2018 P2 Q10

A grass racetrack is shown in the diagram below.

This is the region shaded in the diagram.

Each end of the grass racetrack is created from semicircles.

The inner semicircles have a radius of 15 m.

The outer semicircles have a radius of 20 m.

Each of the straight sections of the racetrack has a length of 65 metres.

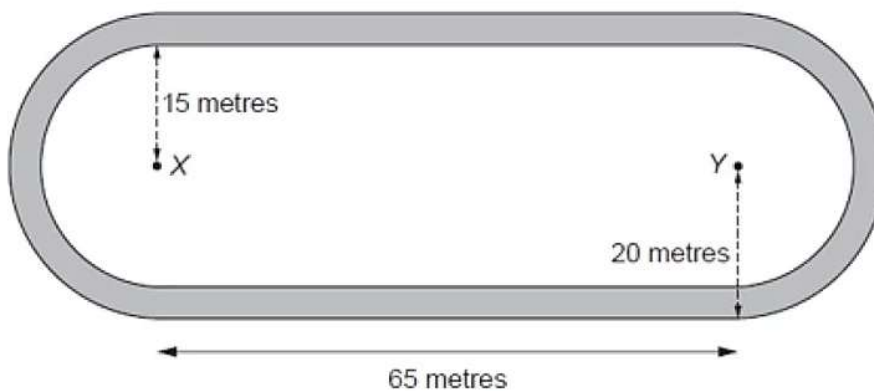


Diagram not drawn to scale

- (a) What is the total area of grass in the two **straight** sections of the racetrack?  
You must show all your working. [2]
- (b) Calculate the area of the grass racetrack.  
You must show all your working. [4]
- (c) The grass is to be treated with a fertiliser.  
It costs 20p to treat each 3 m<sup>2</sup> of grass.  
How much will it cost to treat the grass racetrack?  
Give your answer correct to the nearest pound.  
You must show all your working. [2]

Intermediate Numeracy Nov 2016 P2 Q10b

- (b) Rhodri studies a cylindrical cell under his microscope.  
The height of the cell is 2 microns.  
The circumference of the cell is 5 microns.  
  
Calculate the volume of the cell he sees under the microscope.  
Give your answer in microns<sup>3</sup>, correct to 1 significant figure. [5]

Intermediate Maths Nov 2017 P2 Q12

A triangular prism of length 2 metres is shown below.

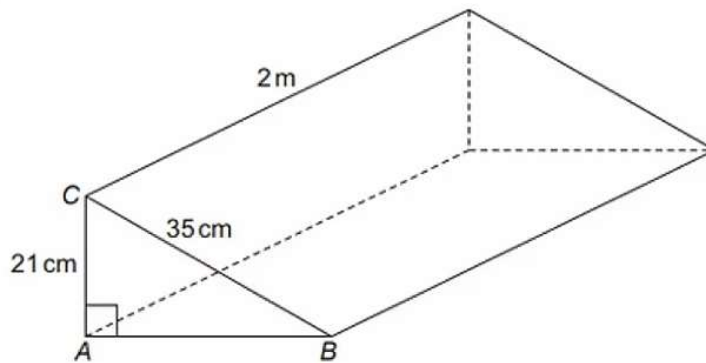


Diagram not drawn to scale

$AC = 21 \text{ cm}$ ,  $BC = 35 \text{ cm}$  and  $\hat{BAC} = 90^\circ$ .

- (a) *In this part of the question, you will be assessed on the quality of your organisation, communication and accuracy in writing.*  
Calculate the area of triangle ABC.  
Give your answer in cm<sup>2</sup>.  
You must show all your working. [5 + 2 OCW]
- (b) Calculate the volume of the prism.  
You must give the units of your answer. [3]



The diagram below shows an empty cylinder, with radius 10 cm and height 20 cm.

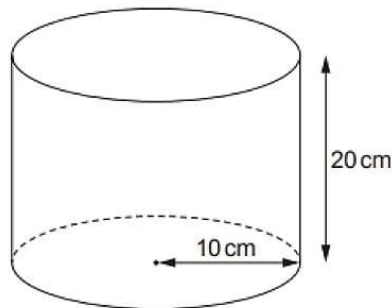


Diagram not drawn to scale

- (a) Using  $\pi = 3.14$ , calculate the volume of the cylinder. [2]
- (b) What is the greatest **whole** number of litres that this cylinder can hold? [1]

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Intermediate Numeracy Summer 2017 P2 Q14

In this question, you will be assessed on the quality of your organisation, communication and accuracy in writing.

Elin's old fish tank is leaking.



Diagram not drawn to scale

This old fish tank is in the shape of a cuboid.  
The base of this tank measures 60 cm by 40 cm.  
Before the leak, the height of the water level in Elin's old fish tank was 45 cm.  
Elin decides to replace her fish tank with a cylindrical one.

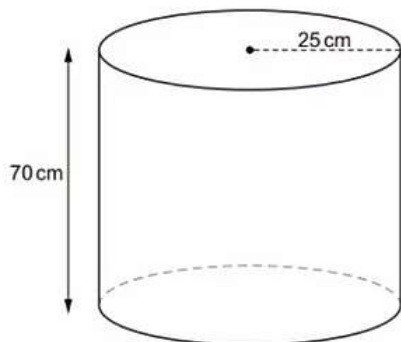


Diagram not drawn to scale

She selects a new cylindrical fish tank that has a radius of 25 cm and a height of 70 cm.

Will all the original contents, including the water and the fish, fit into this cylindrical tank?  
You must show all your working. [4 + 2 OCW]