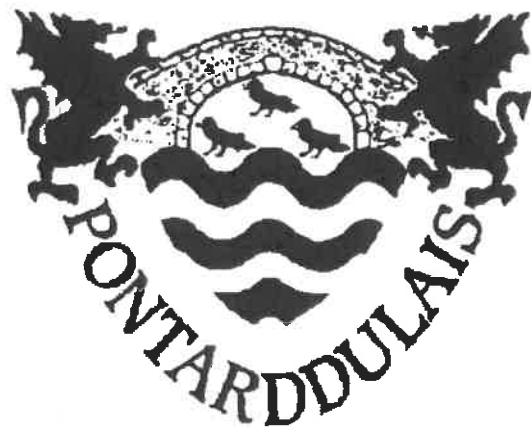


NUMERACY  
INTERMEDIATE  
REVISION  
BOOKLET



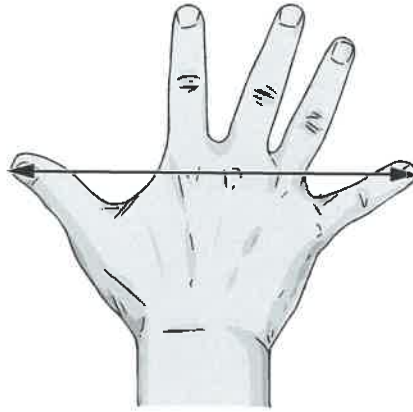
# Sampling

I+H Maths Num 42<sup>22</sup> June 2017

Examiner  
only

15. Simon plans to make gloves.

- (a) One morning, Simon decided to carry out a survey to find the mean hand span of people in Wales.



He decided to sample systematically.

He decided to sample from the first 240 people who pass him in the street during the morning.

He wanted to take 20 people's hand span measurements.

Explain how Simon could use systematic sampling to obtain 20 measurements. [1]

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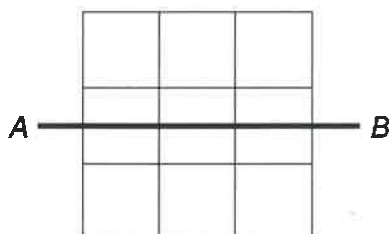


# 2D and 3D Shapes

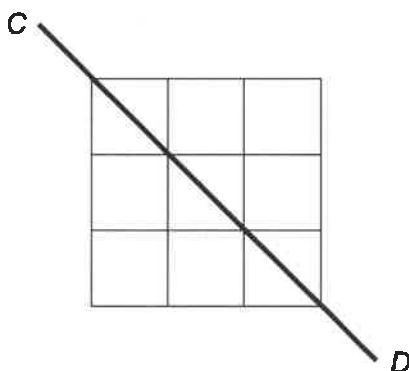
F Maths Nov 2017 U1

Examiner  
only

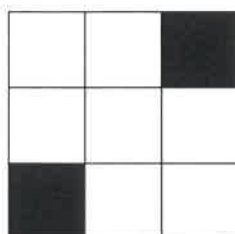
8. (a) Shade exactly two squares so that  $AB$  is the only line of symmetry for this diagram. [1]



- (b) Shade exactly one square so that  $CD$  is the only line of symmetry for this diagram. [1]



- (c) Shade exactly two more squares so that this diagram still has rotational symmetry of order 2. [1]



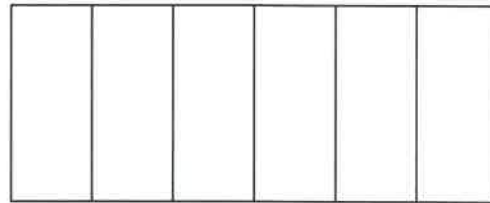
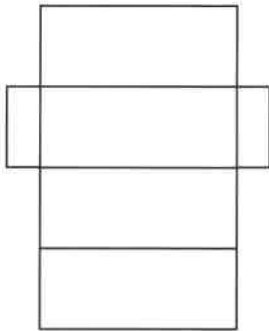
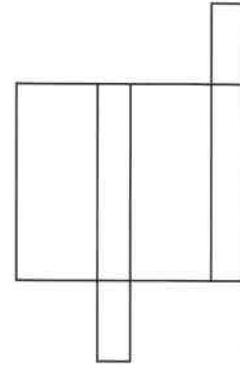
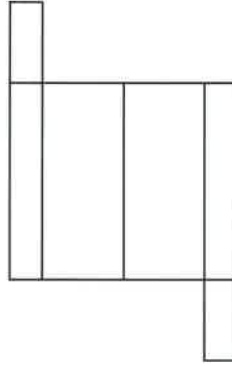
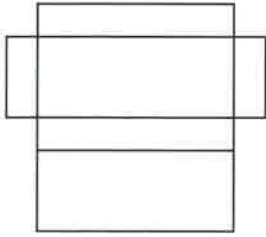
08

F Num Nov 2017<sup>7</sup> U1

Examiner  
only

- (d) Many of the boxes that *BoxCymru* use are cuboids.  
Which of the following nets can be used to make the boxes?  
Circle your answers.

[2]






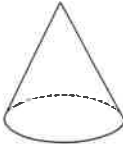

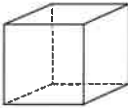


3310U101  
20



07

3. Delyth runs her own business making and selling candles. She makes and sells four types of candle.

Type	Picture of candle	Diagram	Name of the 3-D solid	Volume of candle (cm <sup>3</sup> )
A			.....	240
B			.....	283
C			CONE	270
D			CUBE	120

(a) Fill in the names of the 3-D solids in the table above. [2]

(b) Delyth uses a formula to work out the mass of wax that is needed to make one candle.

$$\text{Mass of wax in grams} = \frac{3 \times \text{volume of candle}}{5}$$

(i) What mass of wax will be needed to make a candle of type C? [2]

.....

.....

.....

Mass of the wax of a candle of type C is ..... grams

(ii) Delyth has enough wax to make 50 candles of type A. How many type D candles can she make with the same amount of wax? [2]

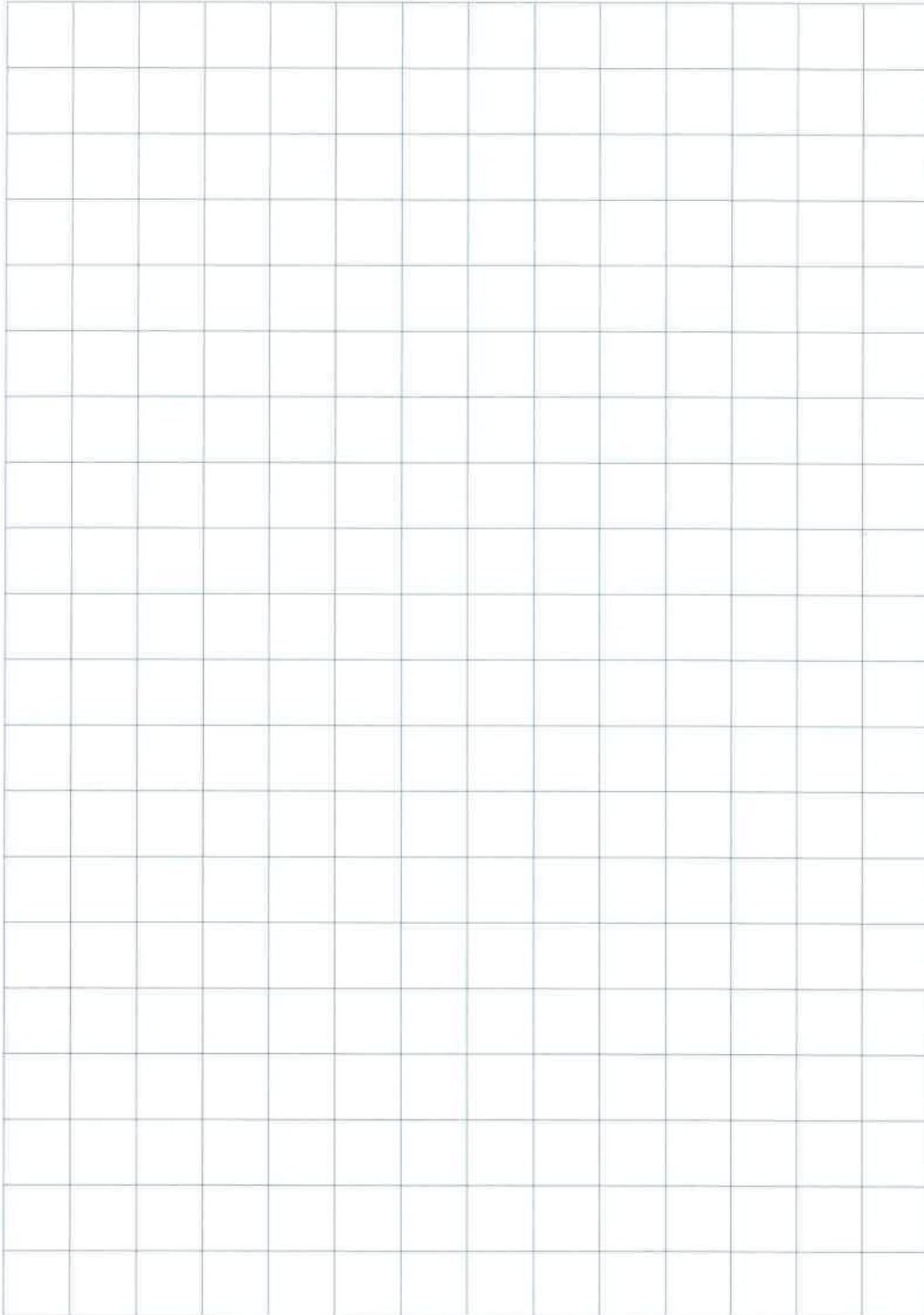
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- (c) Delyth also makes small candles.  
One of these candles fits in a box with a lid.  
The box is a cube with sides of length 3 cm.  
Use the centimetre squared paper to draw a net of the box, including the lid. [2]



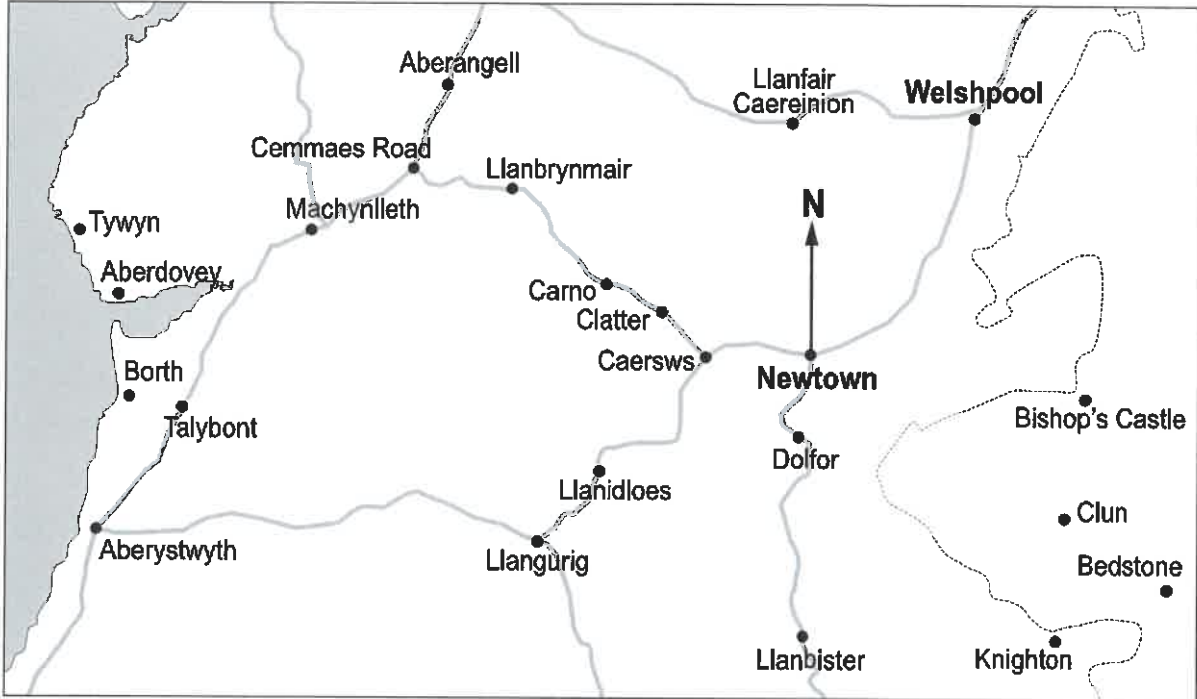


# Angles

F+I Maths Num 41 Nov 2016

Examiner only

4. The map shows a part of Wales.  
The position of Newtown is shown on the map.



- (a) Write down the bearing of Welshpool from Newtown. [1]

.....°

- (b) Name the place on the map that is on a bearing of  $235^\circ$  from Newtown. [2]

.....



06



F+I Maths Num 11 Nov 2016

Examiner only

(c) The distance from Newtown to Welshpool is approximately 14 miles by road.

(i) Estimate the distance by road from Welshpool to Llanfair Caereinion in miles. [1]

.....  
.....

..... miles

(ii) Megan lives in Cemmaes Road.  
To travel to work, she starts by heading towards Machynlleth.  
Her journey to work is approximately 40 km.

Convert 40 km to miles. [2]

.....  
.....  
.....  
.....

..... miles

In which town or village could Megan work? [1]

.....

(d) A different map has a scale of 1 : 10 000.  
Megan measures 3 cm on this map.  
What distance does this represent in metres?

[2]

.....  
.....  
.....  
.....

..... metres

3310U30-1  
07

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07

1288

7. Kari is making a jigsaw puzzle. She has designed the pattern on a piece of paper. Kari plans to make each piece of the jigsaw a different colour.

Part of her plan is shown below.

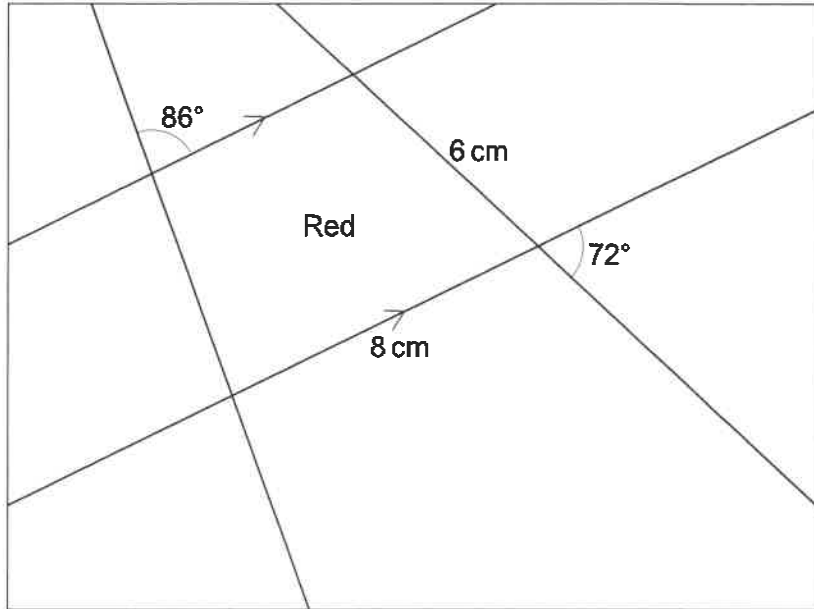


Diagram not drawn to scale

Kari now sketches a diagram of the red piece of the jigsaw, which is shown below. She shows some extended lines and indicates all the angles she needs to find.

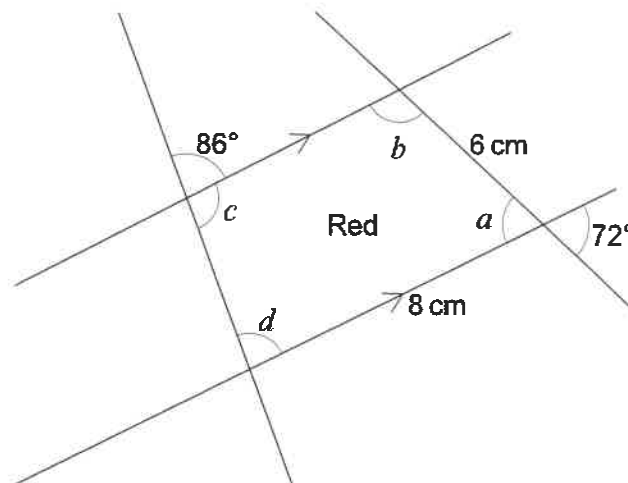


Diagram not drawn to scale



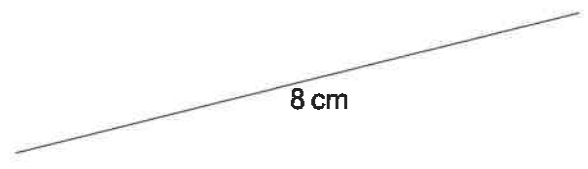
Find the 4 missing angles in the red piece of the jigsaw.  
Draw the red piece of Kari's jigsaw accurately.  
One side has been drawn for you.

[6]

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.....  
.....

$a = \dots\dots\dots^\circ$ ,  $b = \dots\dots\dots^\circ$ ,  $c = \dots\dots\dots^\circ$ ,  $d = \dots\dots\dots^\circ$

Space for drawing the red piece of jigsaw:



130 10

10. Sara is carrying out a survey of the three villages, Cwm, Allthir and Gwyndir. The diagram below shows the positions of the three villages.

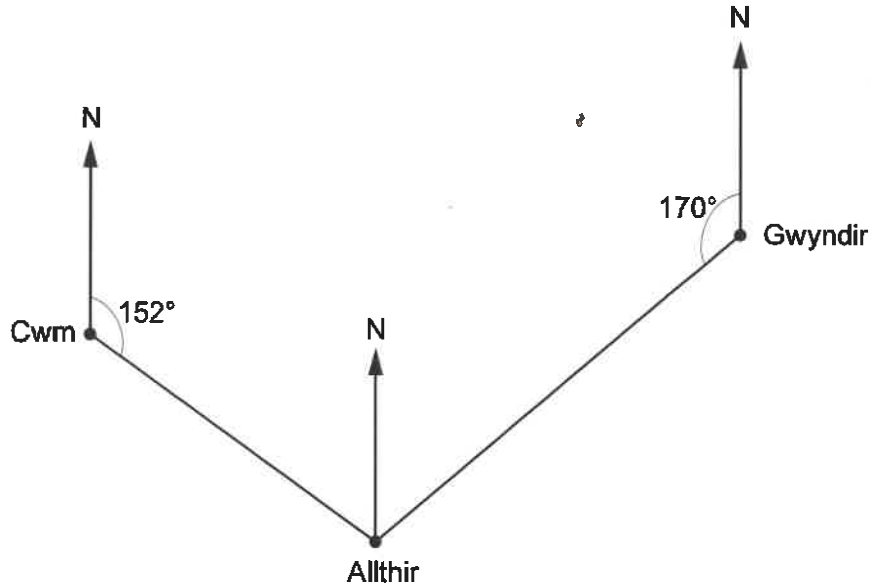


Diagram not drawn to scale

(a) What is the bearing of Allthir from Gwyndir?  
Circle your answer.

[1]

- 010°
- 170°
- 180°
- 190°
- 200°

.....

.....

(b) What is the bearing of Cwm from Allthir?  
Circle your answer.

[1]

- 028°
- 152°
- 242°
- 332°
- 352°

.....

.....



Handwritten marks: a scribble, '181', and '11'.

(c) The area of the land covered by the three villages is  $200 \text{ km}^2$ .  
The total population of the three villages is 8400 people.

(i) What is the population density of the three villages?  
Give your answer in population/ $\text{km}^2$ .

[2]

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(ii) The populations of Cwm, Allthir and Gwyndir are in the ratio 3 : 4 : 5.  
Calculate the population of Gwyndir.

[2]

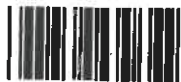
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10. (a) On the diagram, mark the point  $A$  with a cross so that:

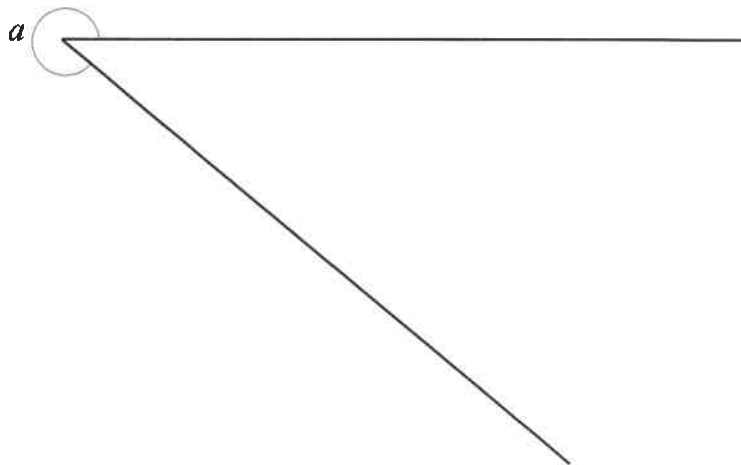
[2]

- $\widehat{XYA} = 63^\circ$ , and
- $YA = 7.2$  cm.



(b) Using a protractor, find the size of angle  $a$ .

[1]



$a = \dots\dots\dots^\circ$

133

13



6. (a) The number 43 728 is to be written correct to the nearest thousand. Circle the correct answer. [1]

- 44 730      43 000      40 000      43 700      44 000

(b) One of these numbers is both a square number and a factor of 63. Circle the correct answer. [1]

- 3      21      9      16      7

7. Work out the size of angle  $y$ . [2]

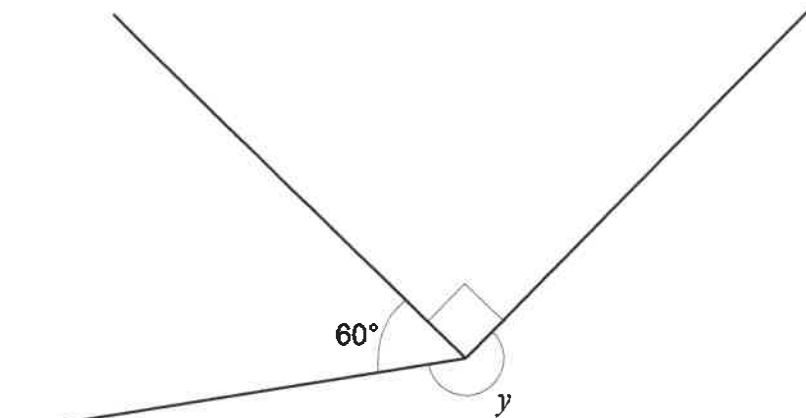


Diagram not drawn to scale

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$y = \dots\dots\dots^\circ$



134 14

4. A number of paths are to be laid to join three new office buildings. A sketch of the architect's plan is shown below.

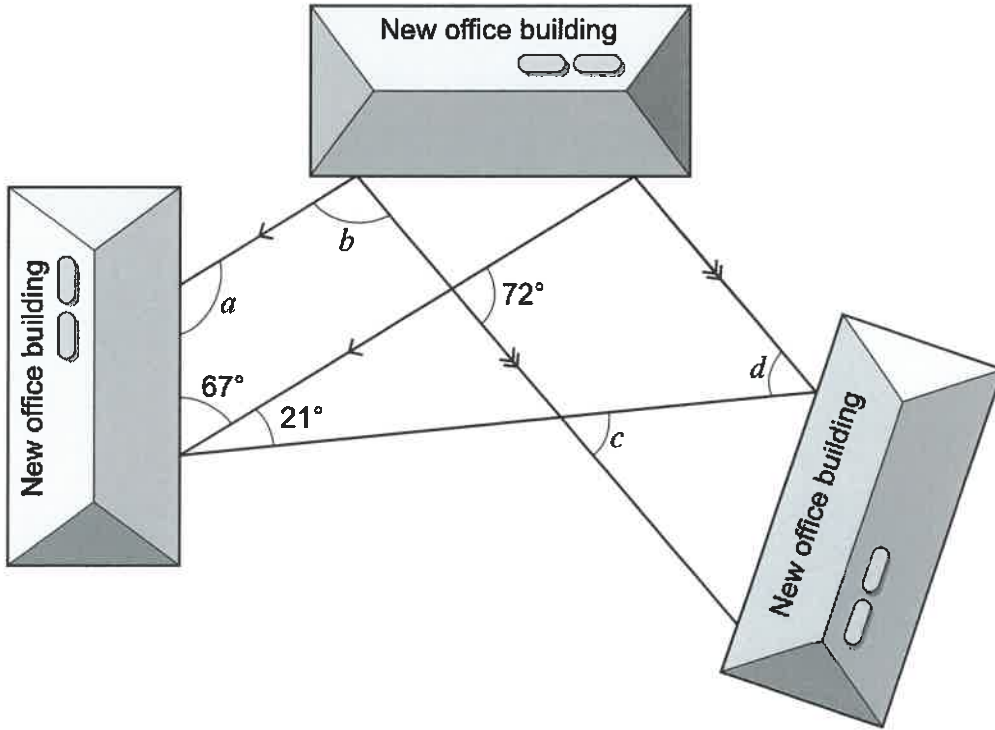


Diagram not drawn to scale

The architect has shown a number of the angles in his planning for the new paths.

Calculate the size of each of the angles  $a$ ,  $b$ ,  $c$  and  $d$ .

[4]

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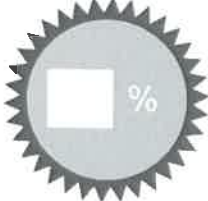
$a = \dots\dots\dots^\circ$      $b = \dots\dots\dots^\circ$      $c = \dots\dots\dots^\circ$      $d = \dots\dots\dots^\circ$



135 15



- (b) David aims to raise £200 for his chosen charity. He set up a "Sponsor me please" page on social media. This is David's page at the end of the first week. The percentage has been blanked out.

<p><b>David's Page</b> David is raising money for a charity. Please help him to reach his target of £200.</p> <p><b>Donate</b></p>	<p><b>Current total raised</b> <b>£32.00</b></p>	
--	--	---

- (i) How much more money did David need in order to reach his target? [1]

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- (ii) David thought he had raised more than 15% of his target. Was he correct? Show your working. [2]

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- (iii) After two weeks, David had raised 57% of his target. What percentage of his target was still to be raised? [1]

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136 16

7. (a) Sam's Garden Centre buys trees to sell.

Sam bought 200 trees.  
Each tree cost Sam £25.

22% of the trees were not sold.  
Sam sold all the other trees for £40 each.

How much profit did Sam make?

You must show all your working.

[5]

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(b) The trees are planted in identical pots. They each have a uniform cross-section in the shape of a regular hexagon.

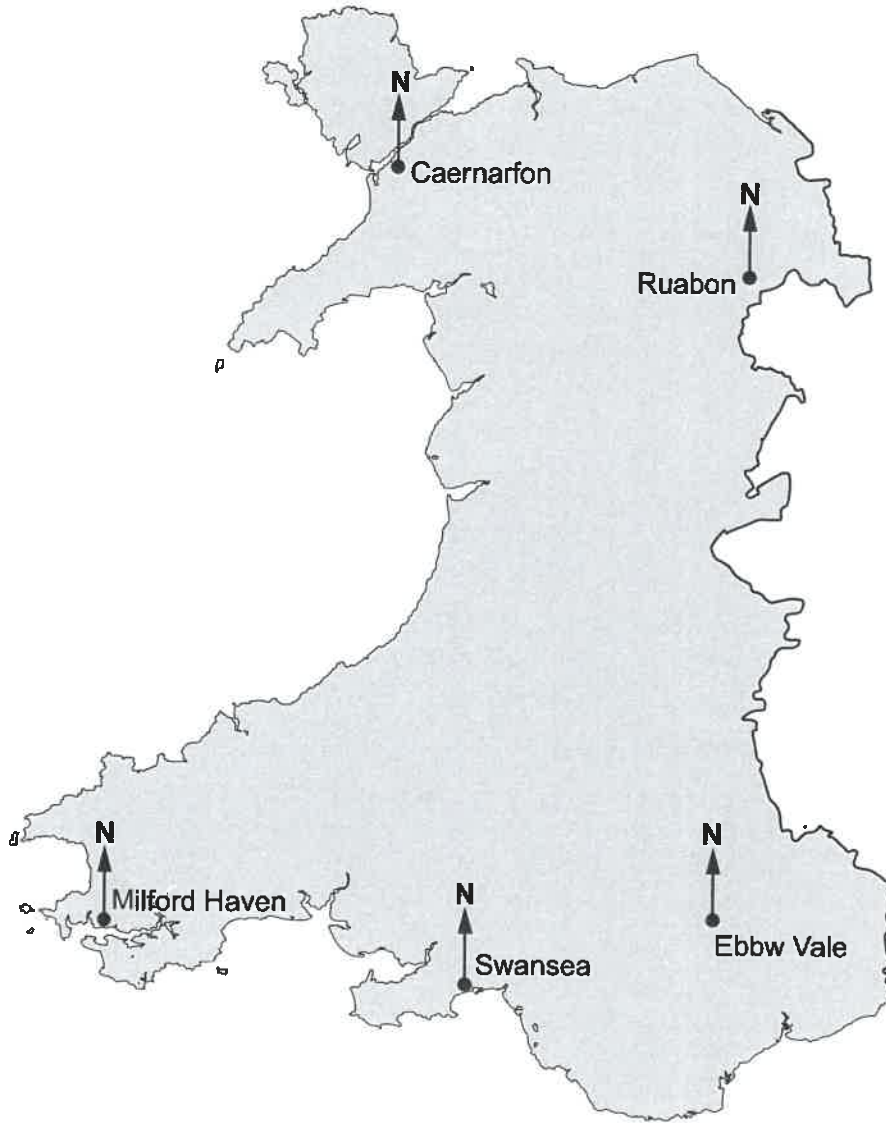
Show that these pots will tessellate.

[1]

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8. A helicopter pilot is planning a route from Milford Haven to Ruabon and then on to Swansea.
- (a) To plan the flights, the pilot needs to find the bearings from a map.



- (i) Find the bearing of Ruabon from Milford Haven. [1]

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- (ii) Find the bearing of Swansea from Ruabon. [1]

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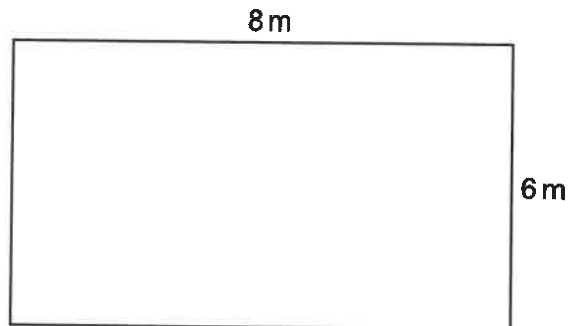


# Perimeter, Area and Volume

F maths Num 12 Nov<sup>11</sup> 2016

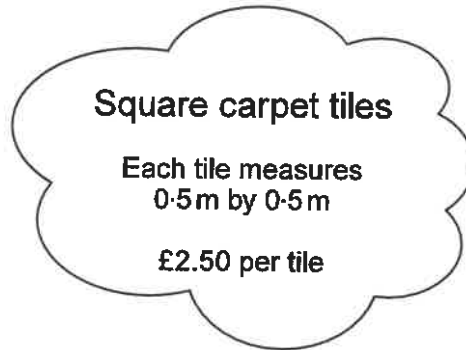
Examiner  
only

6. The diagram shows the plan of the floor of Nick's room.



*Diagram not drawn to scale*

Nick is going to fit square carpet tiles to cover the floor.



How much will it cost Nick to cover his floor with these carpet tiles?  
You must show all your working.

[4]

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19

10. Rhodri has carried out an experiment to measure the diameters of 20 spherical dust particles, in microns.

Here are his results.

Diameter, $d$ (microns)	Frequency
$1 \leq d < 2$	2
$2 \leq d < 4$	6
$4 \leq d < 5$	8
$5 \leq d < 9$	4

(a) (i) Calculate an estimate of the mean diameter of a dust particle. [4]

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(ii) Rhodri measures the diameters of another 25 dust particles.

Rhodri is told,

**'The ratio of dust particles with diameters less than 4 microns to those with diameters greater than or equal to 4 microns is 7 : 8.'**

He finds this fact is true when he considers all 45 dust particles.

How many of the extra 25 dust particles have a diameter of less than 4 microns?  
You must show your working. [3]

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7. (a) The Headteacher of Ysgol Bro Gwyn is building a new bike shed.

Bike sheds are built on a rectangular base of width  $x$  metres and length  $y$  metres.

(i) Which is the correct expression for the perimeter of the bike shed?  
Circle your answer. [1]

- $xy$  metres       $xy$  square metres       $x + y$  metres       $2x + y$  metres       $2x + 2y$  metres

(ii) The Headteacher is given a formula for working out the number of bikes,  $b$ , that can be stored in a bike shed that has a base of width  $x$  metres and length  $y$  metres.

- He is told the formula only works when
- $x$  and  $y$  are whole numbers
  - $x$  is greater than 3
  - $y$  is greater than 5

The formula is as follows:

$$b = \frac{6xy}{5}$$

• According to the formula, how many bikes can be stored in a bike shed 5 metres wide and 8 metres long?  
Circle your answer. [1]

- 3                      7                      42                      48                      240

• A bike shed  $x$  metres wide and  $y$  metres long can hold  $b$  bikes.  
What is the formula for calculating the length,  $y$  metres?  
Use the details the Headteacher has been given.  
Circle your answer. [1]

- $y = \frac{b-5}{6x}$        $x = \frac{6b}{5y}$        $y = \frac{b+5}{6x}$        $y = \frac{5b}{6x}$        $y = \frac{6x}{5b}$



8. Bethan builds a rectangular sheep pen.



(a) The perimeter fence of the sheep pen is 18 m long.  
It costs her £1.10 for every 0.5 metres of fencing used to make the sheep pen.

(i) Calculate the cost of the fencing used to make this sheep pen.

[2]

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Cost is £ .....

(ii) The length of Bethan's sheep pen is two times its width.  
Find the length and width of this sheep pen.  
You must show your working.

[2]

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Length is ..... metres

Width is ..... metres





- (b) Bethan decides to build a new sheep pen.  
The perimeter fence of the new sheep pen is 16 m long.  
The length of the new sheep pen is 3 metres longer than the width.

Form an equation and solve it to find the dimensions of this new sheep pen. [3]

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Length is ..... metres

Width is ..... metres



12 24

4. Lazar wants to send a package to Germany. He looks at pricing charts for three different companies, *ParcelMax*, *DirectGo* and *Pack2save*.

<p><b>ParcelMax</b>                  Total cost =                  Sum of the 3 dimensions in cm <math>\times</math> £0.60</p> <p><b>DirectGo</b>                  Total cost =                  Volume measured in <math>\text{cm}^3 \times</math> £0.01</p> <p><b>Pack2save</b>                  Total cost =                  Total area of all 6 faces measured in <math>\text{cm}^2 \times</math> £0.02</p>
--

Lazar's parcel is a cuboid measuring 10 cm by 20 cm by 30 cm.

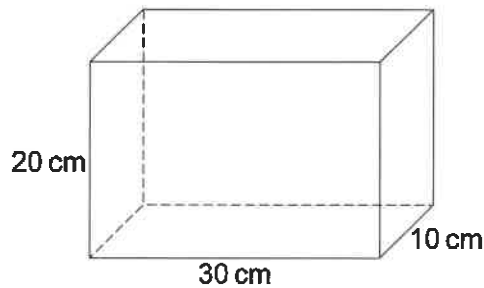


Diagram not drawn to scale

- (a) Find the cost of sending the parcel for each of the three different companies. Give each of your answers in pounds (£).

(i) *ParcelMax* [2]

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(ii) *DirectGo* [3]

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(iii) Pack2save

[4]

(b) What is the **percentage saving** that Lazar will make by choosing the cheapest option rather than the most expensive option? [2]



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



### Maes Alun Camping Charges



Tents covering ground area:

- less than or equal to 12 m<sup>2</sup> cost £14 per night
- greater than 12 m<sup>2</sup> cost £16 per night

AND

Charge per person: £4 per night

Stay 5 nights and get the next night completely free.  
This means no charge for tents or people on every 6<sup>th</sup> night.

Rhodri and Lars are planning a camping holiday, staying at *Maes Alun Camping*.

They are going to

- take only one tent between them,
- take a tent covering a rectangular ground area, measuring 2.5 metres by 4.4 metres,
- both stay for a total of 12 nights.

Their holiday is just 8 weeks away.

They each plan to save £15 per week from now until their holiday in 8 weeks' time.

Will the amount they save be enough to pay for their holiday?

You must show all your working.

[8 + 2 OCW]

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F+I Maths Num w/ June 2017

Examiner  
only

A large rectangular area with horizontal dotted lines for writing.

3310U301  
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46 28  
(3310U30-1)

Turn over.

14. Elin's old fish tank is leaking.

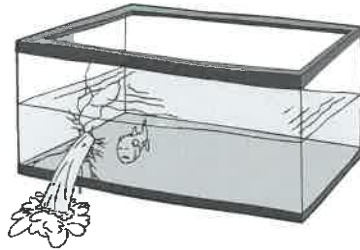


Diagram not drawn to scale

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.

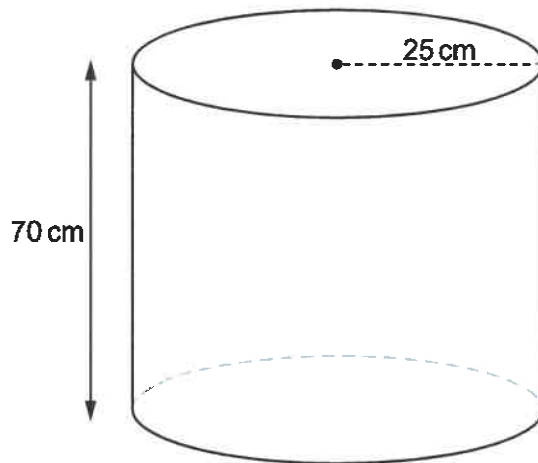


Diagram not drawn to scale

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]

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I+H Maths Num U2<sup>21</sup> June 2017

Examiner  
only

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21

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18  
(3310U40-1)

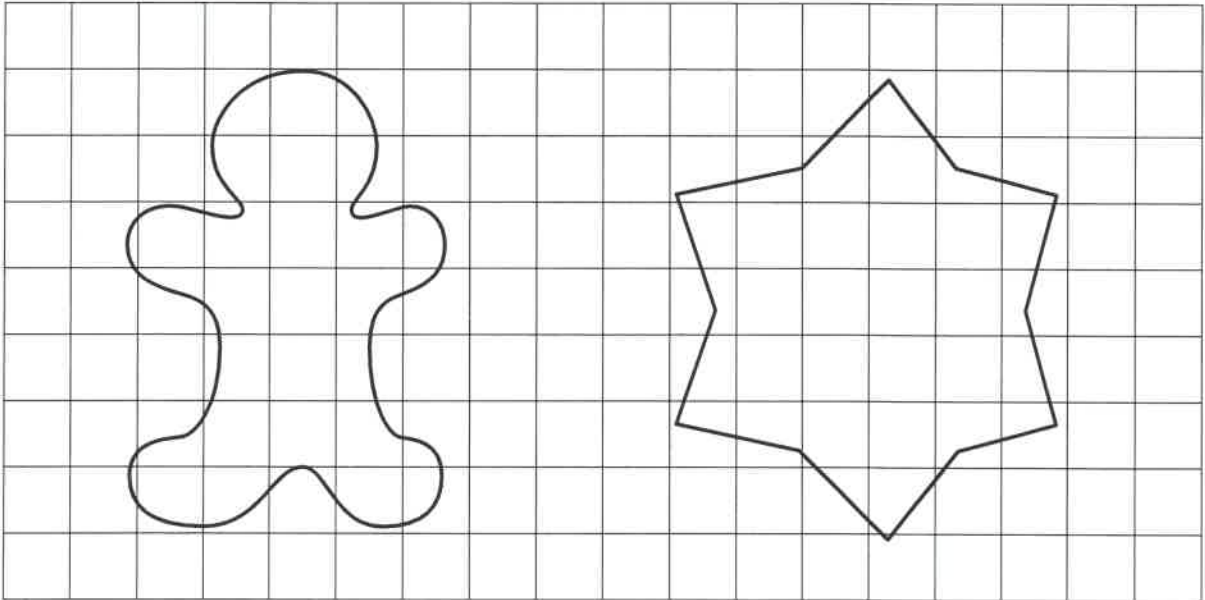
30

Turn over.

2. (a) Tamsin and Sophie make biscuits.  
They plan to cover the top surface of each biscuit with the same thickness of chocolate.  
The biscuits are shown on the centimetre squared grid below.

Tamsin's biscuit

Sophie's biscuit



Tamsin thinks that Sophie's biscuit will need more chocolate to cover it.  
Estimate the area of each biscuit.  
Decide whether or not Tamsin is correct.  
Show all your working.

[3]

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

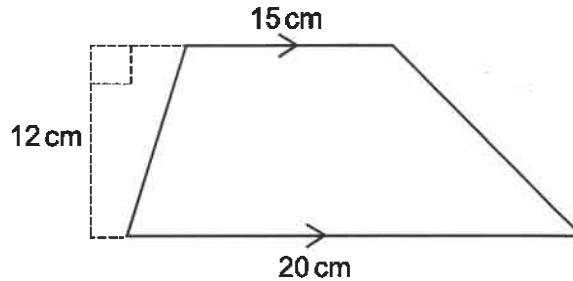


Diagram not drawn to scale

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]

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- (ii) How much will it cost Gustav to ice the top face of the cake? You must show all your working. [3]

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- (iii) Gustav also plans to decorate the cake with small pieces of marzipan shaped as shown below. The top face of each piece of marzipan is a rhombus. Will these pieces of marzipan tessellate?



Yes  No

Draw a simple diagram to support your answer. [1]



4. 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.

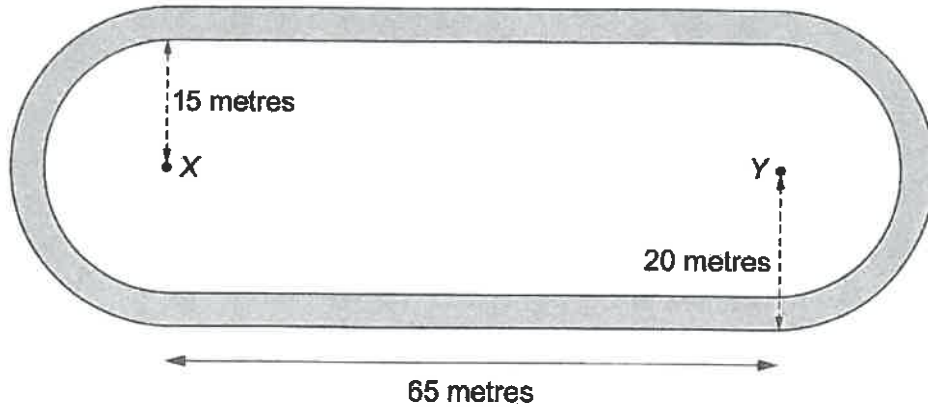


Diagram not drawn to scale

- (a) What is the total area of grass in the two **straight** sections of the racetrack? You must show all your working.

[2]

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8. (a) The concrete base of Miss Morgan's new bungalow is shown below.

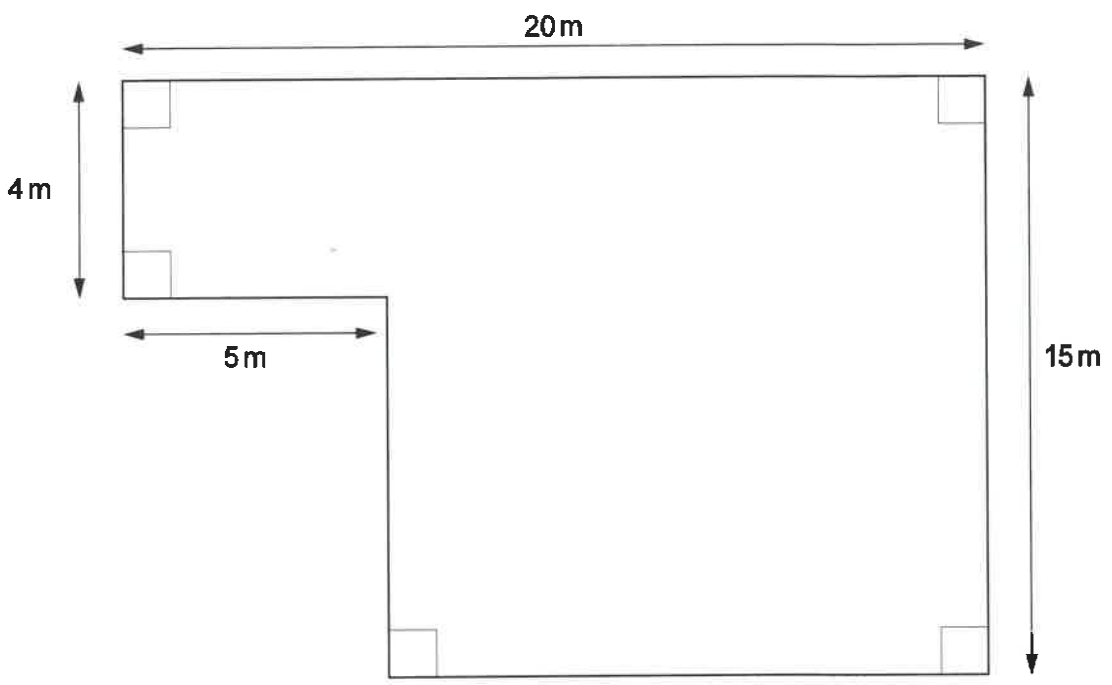


Diagram not drawn to scale

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

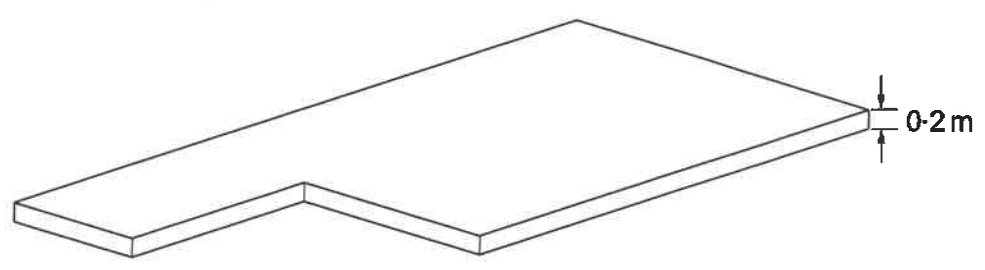


Diagram not drawn to scale

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

[4]

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Volume of concrete is ..... m<sup>3</sup>

(b) Mr Graham is building a garage.

A concrete mixer lorry holds a maximum load of 6 m<sup>3</sup> of concrete.  
There is a fixed standard delivery charge of £35 per load.  
The concrete costs £45 per m<sup>3</sup>.



Mr Graham orders  $\frac{2}{3}$  of the maximum load of concrete for the base of his garage floor.

What is the total cost of Mr Graham's order? [4]

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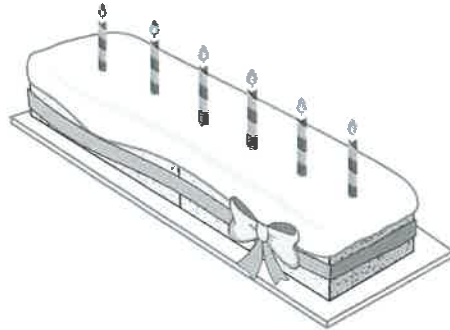
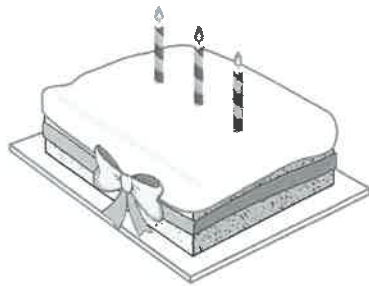
Total cost is £ .....





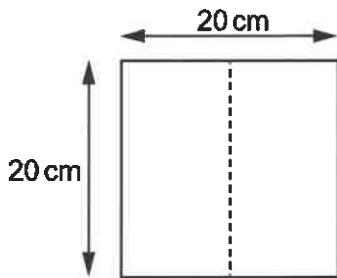


6.



Delyth makes birthday cakes.

To make a rectangular cake, Delyth cuts a 20 cm square cake in half, and joins the two pieces together, as shown in the diagram below.



Square cake



Rectangular cake

Delyth puts ribbon around the edge of her cakes as shown in the pictures above.

How much more ribbon does Delyth need for the rectangular cake than for the square cake?  
You must show all your working. [3]

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- 2. Declan has two pet rabbits.  
He wants to buy a new rabbit hutch.



Declan finds a rule to work out the amount of floor space that each rabbit should have in the hutch.

$$\text{Floor space needed} = \text{mass of rabbit} \times 1800$$

Floor space is measured in  $\text{cm}^2$ .  
Mass is measured in kg.

- (a) Declan's larger rabbit weighs 3.2 kg.  
What floor space should this rabbit have in the hutch? [2]

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- (b) Declan works out that his smaller rabbit needs  $4860 \text{ cm}^2$  of floor space.  
What is the mass of the smaller rabbit? [2]

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# Num Nov 2017<sup>9</sup> 42

Examiner  
only

- (c) Declan sees a hutch with a rectangular floor that measures 150 cm by 80 cm. Show that this hutch has enough floor space for the two rabbits. You must show all your working. [3]

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3310U201  
09



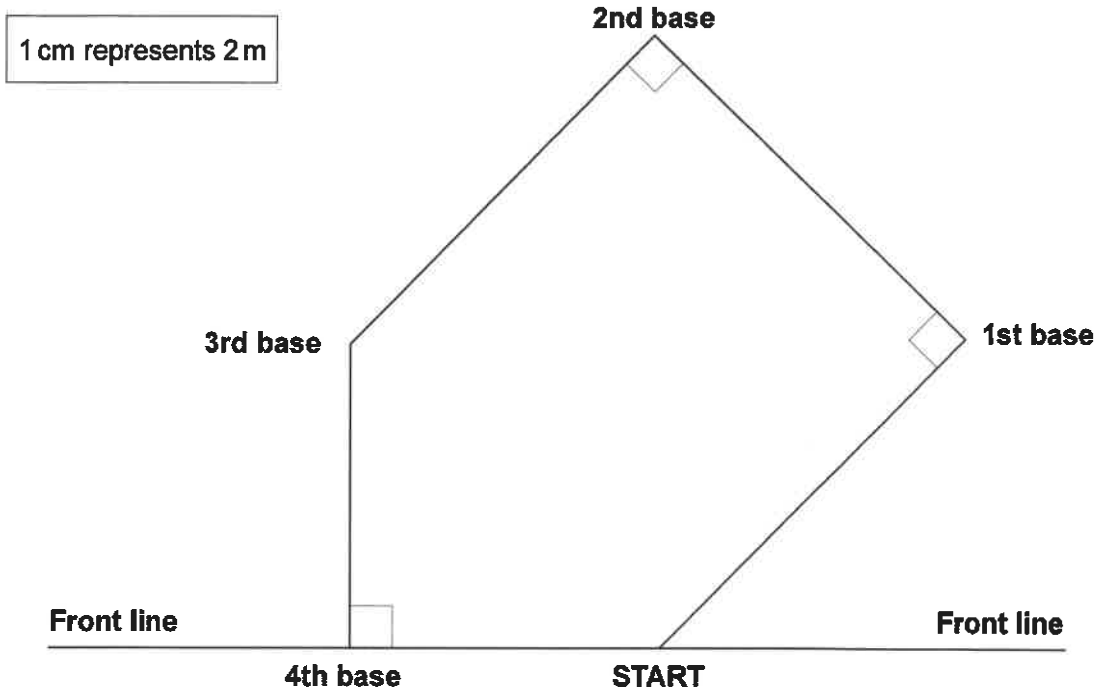
09

29 41

F Num June 2018 7

Examiner only

4. The diagram below shows a scale drawing of the pitch used in a game of rounders. The scale of the drawing is 1 cm represents 2 m.



- (a) Use the scale drawing above. Measure and write down the length of the line from the START to 1st base. [1]

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- (b) Calculate the actual distance from the START to 1st base, in metres. [1]

.....

Distance is ..... m

- (c) The caretaker of a sports ground uses the scale drawing to plan how to mark out the lines of a rounders pitch. The START and the first three bases are the four corners of a square. The caretaker marks the lines from the START to 1st base, then to 2nd base, then to 3rd base and finally to 4th base.

What is the total actual length of the lines he marks? [3]

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07

30 42

3. Mehmet needs a new fence for one end of his garden.  
Fences are constructed using panels and posts.

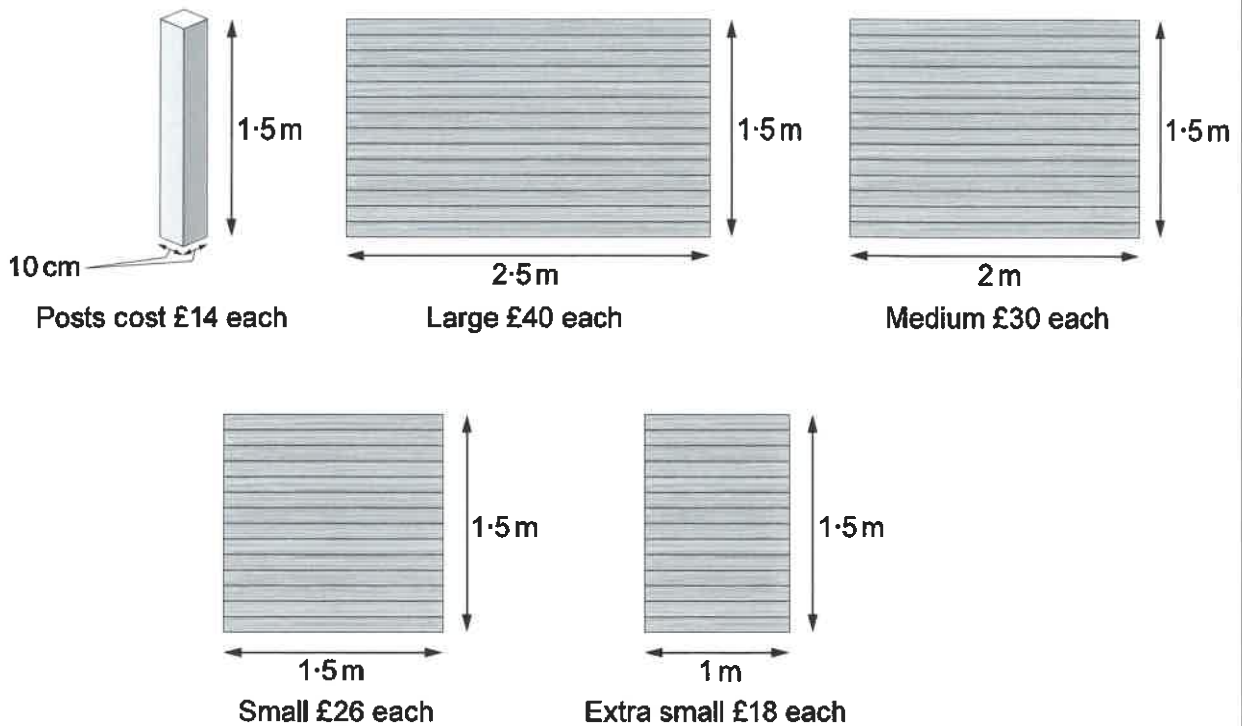


- (a) Posts are needed between each fence panel and at both ends.  
How many posts are needed for a fence made with 34 panels?  
Circle your answer.

[1]

33                  35                  37                  34                  36

- (b) Mehmet wants a new 1.5 m high fence for his garden.  
The fence panels come in different lengths.  
The posts Mehmet wants to use are all the same size.  
Mehmet has the following information.



F+I Num Nov 2017 7 u1

Examiner only

The fence Mehmet wants to make is 8.5 m long, including the posts.  
He has started to sketch a plan, as shown below.

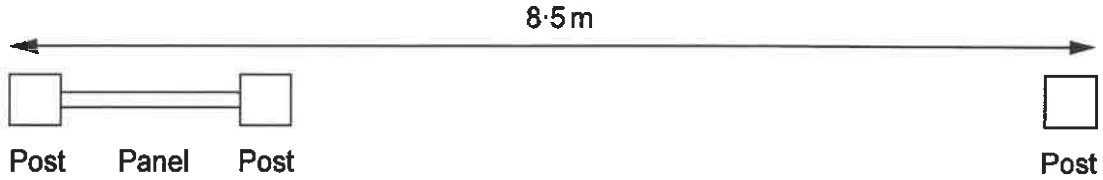


Diagram not drawn to scale

Mehmet needs to use 5 posts.  
Work out one possible choice of panels that Mehmet could use.  
You may use the plan to help you.  
Calculate the total cost of the posts and panels for this choice of fence.

[6]

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Total cost of making the 8.5 m fence is £ .....

(c) It costs 2p to paint each 100 cm<sup>2</sup> of a fence post.  
How much will it cost to paint the 4 vertical sides of 1 fence post?

[3]

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07

32 44

3310U301  
07

5. Rupert Shoes sells shoes online.

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

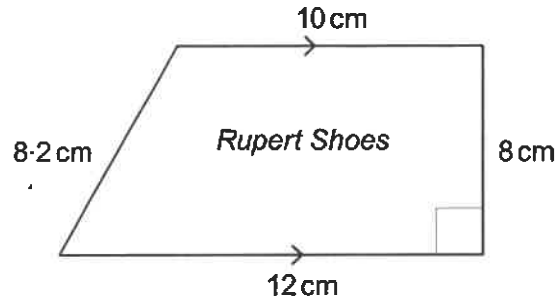


Diagram not drawn to scale

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]

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

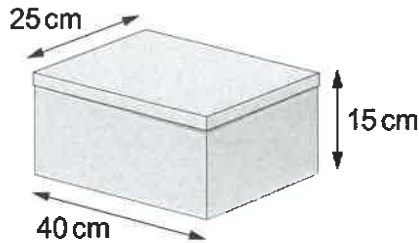


Diagram not drawn to scale

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

[1]

40 cm<sup>2</sup>      225 cm<sup>2</sup>      375 cm<sup>2</sup>      800 cm<sup>2</sup>      1000 cm<sup>2</sup>

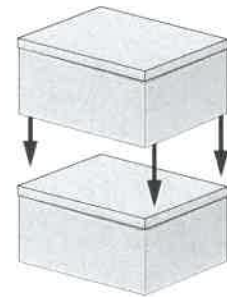
- (ii) A customer orders 2 pairs of shoes.

The package for sending the shoes to the customer is made by:

- placing one box on top of the other, and
- taping the two boxes together.

This is shown in the diagram.

The cost for sending the package is calculated using the formula below. All dimensions are measured in cm.



$$\text{Cost in } \pounds = \frac{1}{5} \times (S + F) \times 0.02$$

$S$  = value of the sum of the 3 dimensions of the package

$F$  = value of the area of one of the **largest** faces of the package

How much does it cost *Rupert Shoes* to send the package?

Give your answer in pounds.

You must show all your working.

[5]

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9. You are given that:  
 1 gigalitre = 1 000 000 m<sup>3</sup>  
 1 megalitre = 1 million litres

Lake Vyrnwy is a reservoir in mid Wales.



- (a) Lake Vyrnwy can release between 25 and 45 megalitres of water per day from the dam.

The lake also supplies water through underground pipes to another reservoir at a rate of 230 000 m<sup>3</sup> per day.

- (i) How many litres are there in 25 megalitres?  
 Circle your answer.

[1]

$25 \times 10^8$     
   $25 \times 10^{-6}$     
   $25 \times 10^7$     
   $2.5 \times 10^6$     
   $2.5 \times 10^7$

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- (ii) Which is the best estimate for the volume of water passing through the underground pipes **per hour**?  
 Circle your answer.

[1]

8500 m<sup>3</sup>    
  9600 m<sup>3</sup>    
  10040 m<sup>3</sup>    
  10400 m<sup>3</sup>    
  11000 m<sup>3</sup>

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- (b) Lake Vyrnwy has a surface area of approximately  $4\,540\,000\text{ m}^2$ .  
Lake Vyrnwy contains 59.7 gigalitres of water.



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

[3]

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Estimate of average depth is ..... m



7. (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]

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- (ii) Every 1 cm<sup>3</sup> 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]

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.....

A portion of baked beans has a mass of ..... g

- (b) A mathematically similar tin of baked beans has a radius of 4.2 cm.



Diagram not drawn to scale

Calculate the height of the larger tin of beans.

[2]

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# Similar Shapes

I&H Maths Num W2 Nov 2016<sup>13</sup>

Examiner  
only

- (b) The Headteacher decides to place signs around the school site to stop pupils using their bikes on grassed areas.

He introduces a new sign to pupils in the school newsletter.  
The size of the sign in the newsletter is shown below.

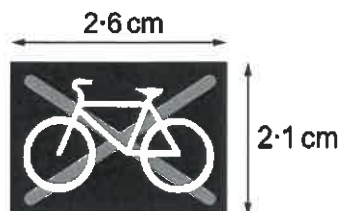


Diagram not drawn to scale

A mathematically similar new sign is placed near the side of the playing field.



Diagram not drawn to scale

It is 33.6 cm high.  
How wide is this sign?

[2]

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Width is ..... cm

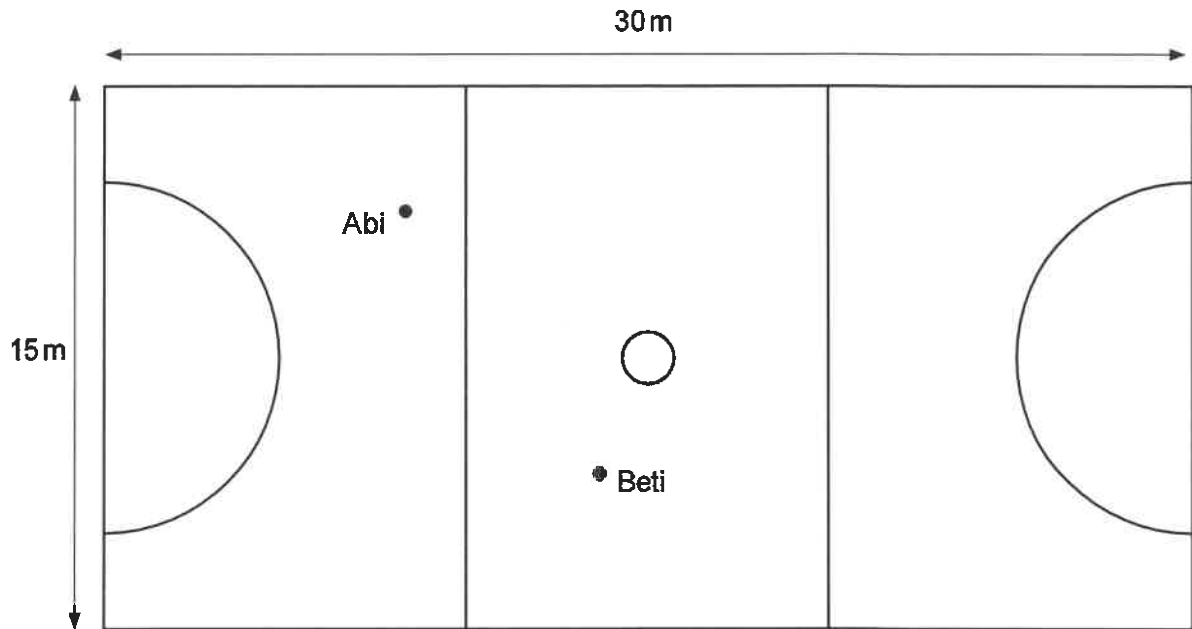


# Map Scales and Measurement

F Maths Num 11 Nov 2016 <sup>10</sup>

Examiner only

4. The diagram shows a scale drawing of a netball court.



(a) All of the **straight** lines on the netball court are to be painted white. What is the total length of the white lines that need to be painted? [2]

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(b) The scale used in the diagram is 1 cm represents 2 m.

Abi passes the ball to Beti.

Use the scale to work out the distance between Abi and Beti in metres. [2]

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f Maths Num 11 Nov 2016

Examiner  
only

- (c) Abi, Beti, Cala and Delaney played a practice game.  
Abi scored 9 goals.  
Beti scored 6 goals.  
Cala scored 5 goals.

The mean number of goals scored by all four players was 7.  
How many goals did Delaney score?

[4]

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- (d) The practice game started at 3:55 p.m.  
Cala scored her first goal after 12 minutes.  
At what time did Cala score her first goal?  
Circle your answer.

[1]

3:43 p.m.      15:67      04:07      3:07 p.m.      16:07

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3310U101  
11



34 53

- (b) The diagram shows a sketch of the top part of a 1-litre carton. There is a circular hole cut out for the plastic lid.

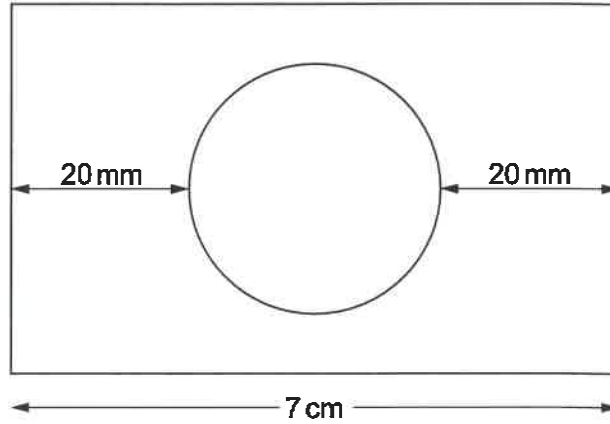


Diagram not drawn to scale

What is the radius of the circular hole?  
Give your answer in mm.

[3]

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11

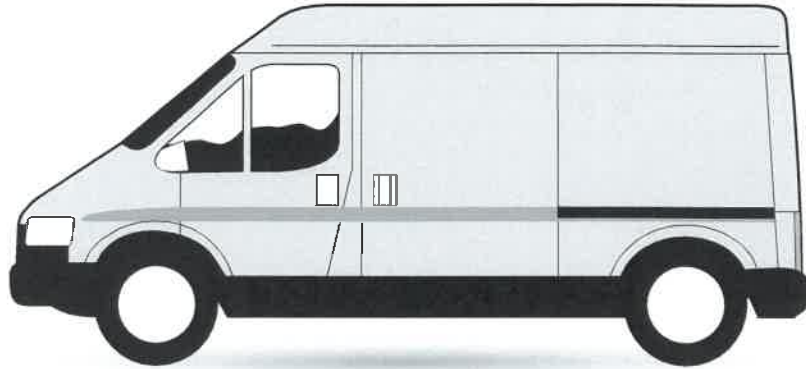


(b) The plumber uses a van for work.

The diagram below is a **scale drawing** of his van.  
The scale of the drawing is 1 cm represents 50 cm.

Find the actual length of the van in metres.

[3]



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I Num Nov 2017<sup>3</sup> u1

Examiner  
only

1. Pont y Ddraig (Dragon's Bridge) opened in Rhyl harbour in autumn 2013.



The harbour development cost £9.8 million.  
£4.3 million of this money was spent on Pont y Ddraig.

- (a) How much was spent on the rest of the harbour development in Rhyl?  
Circle your answer.

[1]

£55 000

£550 000

£5 500 000

£55 000 000

£550 000 000

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- (b) A newspaper at the time said,  
'Pont y Ddraig provides the final link in 15 miles of traffic-free cycling across Conwy  
and Denbighshire.'

Write 15 miles in kilometres.

[2]

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- (c) The height of the mast on the bridge is 148 feet.  
Using the conversion 1 foot = 30 cm, calculate the height of the mast in metres.

[3]

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03

37 56





I+H Num June 2018 <sup>7</sup> 42

Examiner  
only

(b) Gary travelled a distance of 231 km in 3 hours and 30 minutes.  
Calculate Gary's average speed in km/h.  
Circle your answer.

[1]

0.015

1.1

66

70

77

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3310U801  
07



07

40 59

F Num June 2018<sup>4</sup> 41






Examiner  
only

1. The following information was taken from the internet in 2017.

Highest temperatures recorded in the UK:

 United Kingdom			
 England	38.5°C (101.3°F)	Faversham, Kent	10 August 2003
 Northern Ireland	30.8°C (87.4°F)	Knockarevan, County Fermanagh Belfast, County Antrim	30 June 1976 12 July 1983
 Scotland	32.9°C (91.2°F)	Greycrook, Scottish Borders	9 August 2003
 Wales	35.2°C (95.4°F)	Hawarden Bridge, Flintshire	2 August 1990

Lowest temperatures recorded in the UK:

 United Kingdom			
 England	-26.1°C (-15.0°F)	Newport, Shropshire	10 January 1982
 Northern Ireland	-18.7°C (-1.7°F)	Castlederg, County Tyrone	24 December 2010
 Scotland	-27.2°C (-17.0°F)	Braemar, Aberdeenshire Altnaharra, Sutherland	11 February 1895 and 10 January 1982 30 December 1995
 Wales	-23.3°C (-9.9°F)	Rhayader, Powys	21 January 1940

Use the information above to answer the following questions.

(a) What was the lowest temperature recorded in the UK in °C?

[1]

Lowest temperature: ..... °C



04

41 60

F Num June 2018 <sup>5</sup> 41

Examiner  
only

- (b) Using the values in the table, what is an approximate value for 40°C in °F?  
Circle your answer.

[1]

80°F

95°F

100°F

105°F

120°F

- (c) Calculate the difference between the highest and lowest temperatures recorded in Wales  
in °C.

[2]

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3310U101  
05

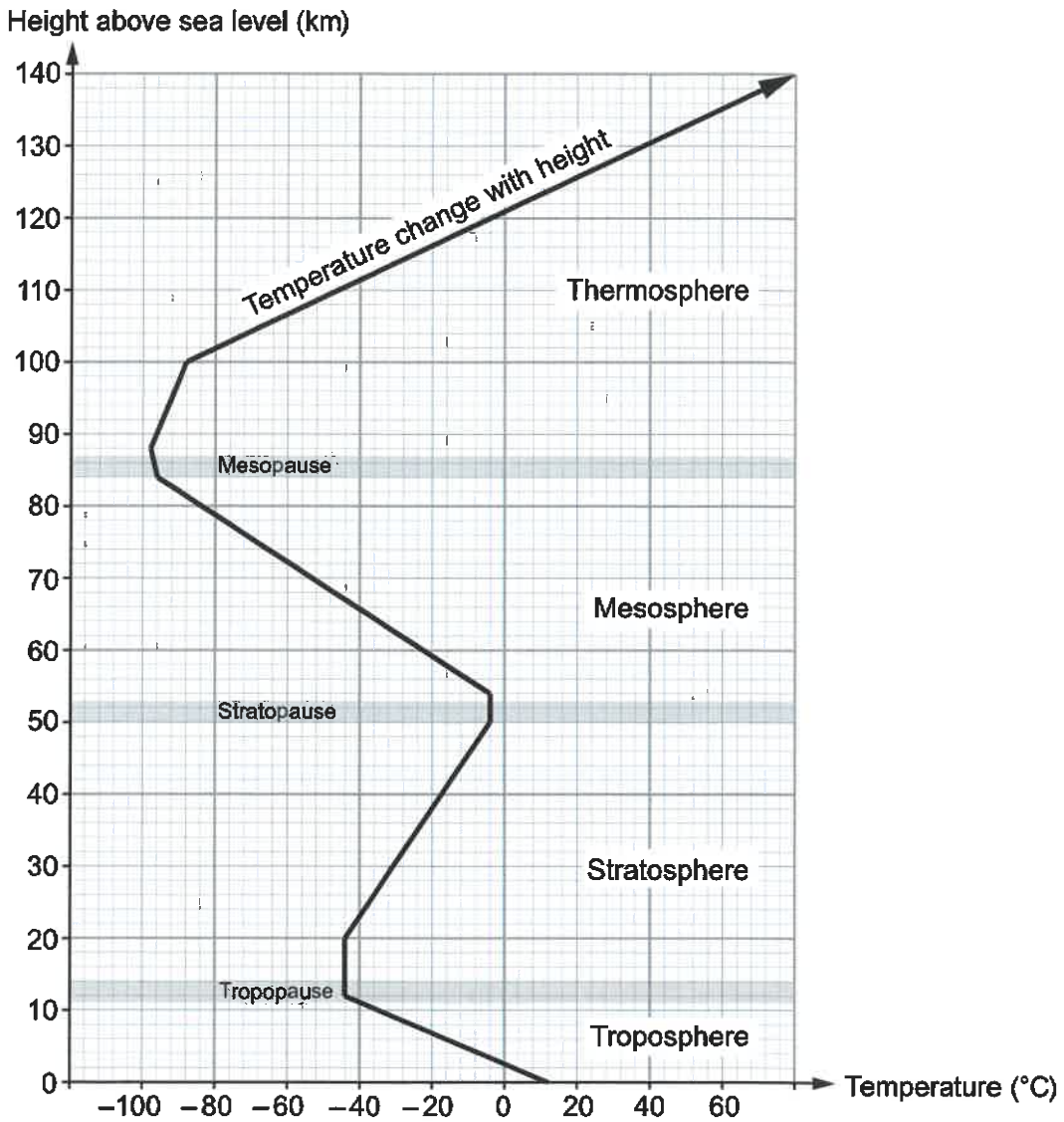


05

42 61

5. The atmosphere above the Earth's surface is divided into different layers.

The graph shows the average temperature at different heights above sea level. It also shows the positions of the different layers of the atmosphere.



Use the graph to answer the following questions.

(a) What is the approximate temperature 40 kilometres above sea level?  
Circle your answer.

[1]

- 30°C      10°C      -22°C      -18°C      130°C



F Num Nov 2017 <sup>13</sup> W1

Examiner  
only

(b) What is the lowest temperature shown in the **mesosphere**?  
Circle your answer.

[1]

105°C

-105°C

-80°C

95 °C

-95 °C

(c) What is the approximate difference between the least and the greatest temperature shown  
in the **troposphere**?

[2]

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3310U101  
13



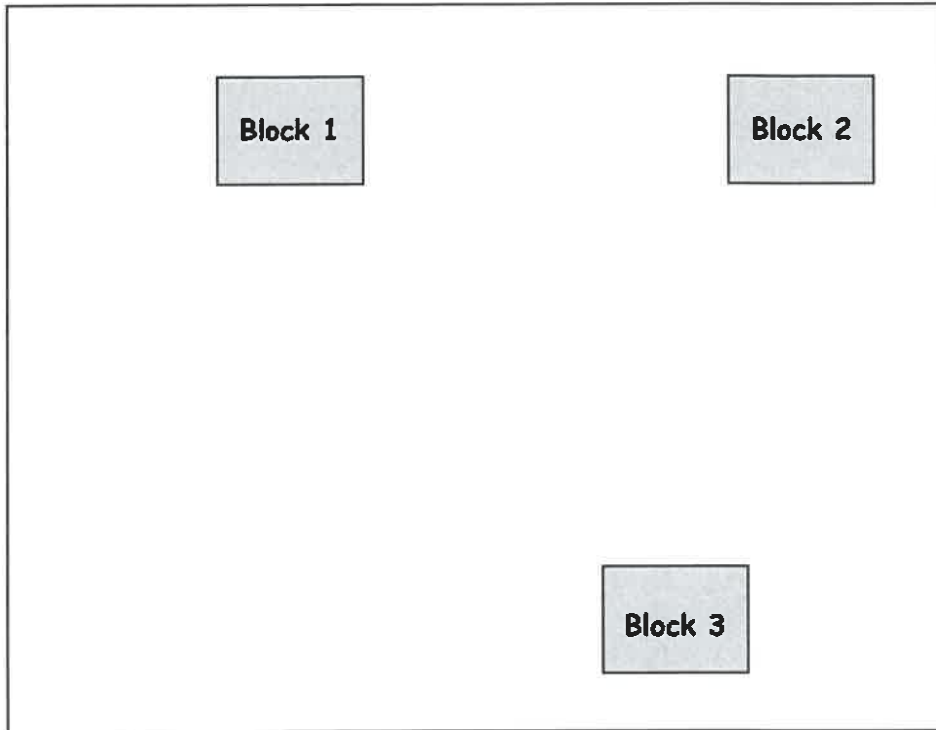
13

44 63



6. A builder has drawn a plan for building 3 office blocks on a plot of land. They are numbered 1, 2 and 3, as shown below.

The scale of the plan is 1 cm represents 20 m.



- (a) The builder is planning to plant a tree so that it is:
- the same distance from Block 1 as it is from Block 2,
  - 80 metres from the top left hand corner of Block 3.

Mark the position for the planting of the tree.

[3]

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- (b) What is the shortest possible distance between Block 2 and Block 3?

[1]

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..... metres



(b) The plan for the flight is shown below.

Journey	Average speed	Time
Milford Haven to Ruabon	90 mph	1 hour 20 minutes
Ruabon to Swansea	80 mph	1 hour 15 minutes

- (i) Calculate the total distance of the flight.  
Give your answer in miles.  
You must show all your working.

[4]

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Total distance is ..... miles

- (ii) On average, the helicopter uses 0.4 gallons of fuel per minute.

Remember: 1 gallon = 4.55 litres
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Use this information to calculate how many litres of fuel the helicopter would be expected to use for the flight planned in (b)(i).  
You must show all your working.

[5]

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Fuel = ..... litres

