Surname	Centre Number	Candidate Number
Other Names		0

GCSE

3310U10-1

A17-3310U10-1

MATHEMATICS – NUMERACY
UNIT 1: NON-CALCULATOR
FOUNDATION TIER

MONDAY, 6 NOVEMBER 2017 – MORNING

1 hour 30 minutes

For Examiner's use only		
Question	**Maximum Mark**	**Mark Awarded**
1.	**4**	
2.	**6**	
3.	**12**	
4.	**4**	
5.	**4**	
6.	**3**	
7.	**5**	
8.	**10**	
9.	**4**	
10.	**4**	
11.	**6**	
12.	**3**	
Total	**65**	

ADDITIONAL MATERIALS

The use of a calculator is not permitted in this examination.

A ruler, protractor and a pair of compasses may be required.

INSTRUCTIONS TO CANDIDATES

Use black ink or black ball-point pen. Do not use gel pen or correction fluid.

You may use a pencil for graphs and diagrams only.

Write your name, centre number and candidate number in the spaces at the top of this page.

Answer **all** the questions in the spaces provided.

If you run out of space, use the continuation page at the back of the booklet. Question numbers must be given for all work written on the continuation page.

Take π as 3·14.

INFORMATION FOR CANDIDATES

You should give details of your method of solution when appropriate.

Unless stated, diagrams are not drawn to scale.

Scale drawing solutions will not be acceptable where you are asked to calculate.

The number of marks is given in brackets at the end of each question or part-question.

In question **3***(a)*(ii), the assessment will take into account the quality of your linguistic and mathematical organisation, communication and accuracy in writing.

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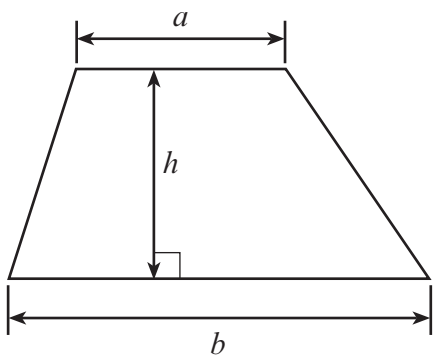
Formula List - Foundation Tier

Area of trapezium $= \frac{1}{2}(a + b)h$



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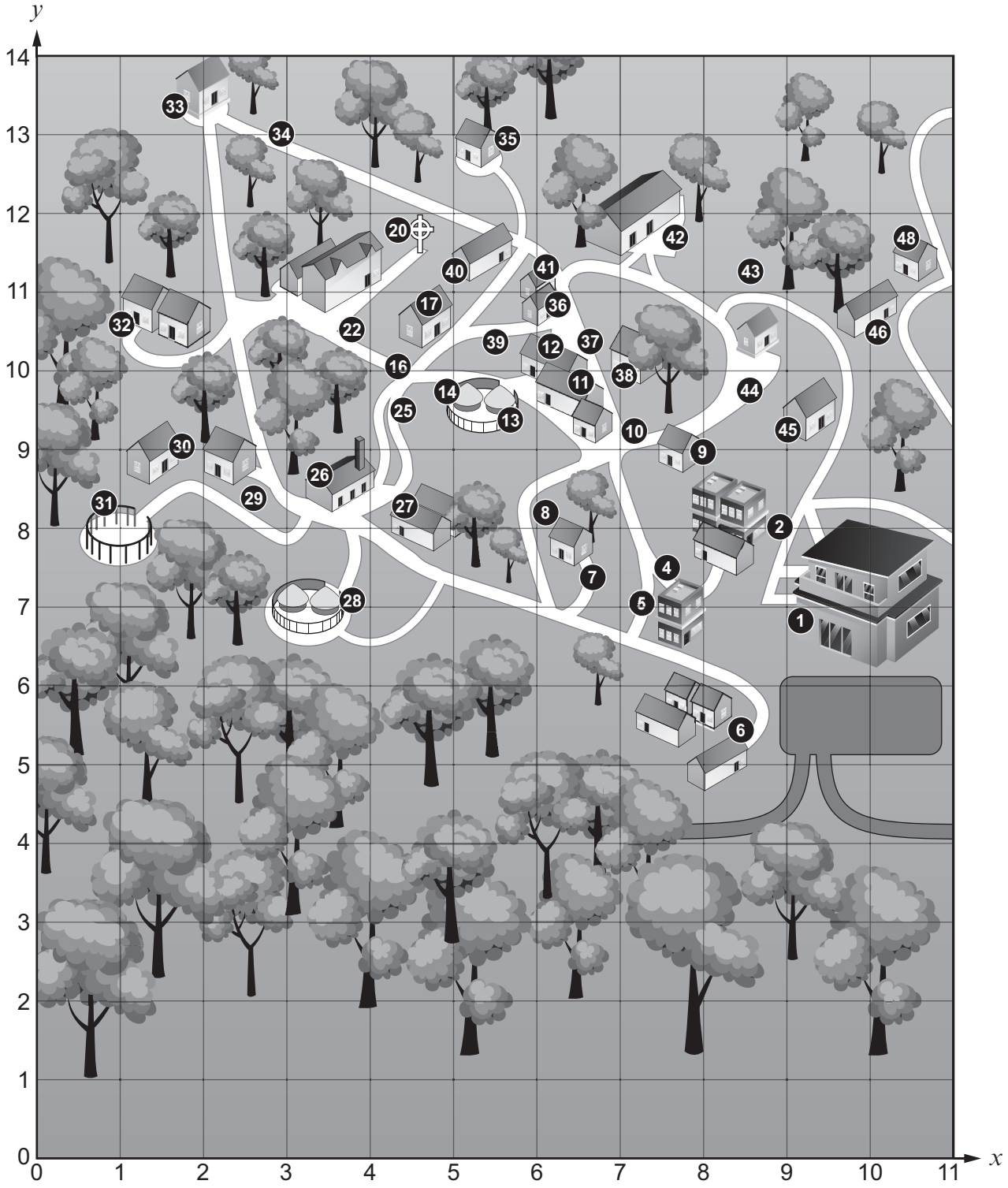
1. Look at the coordinate grid below. It is a map of St Fagans National Museum of History. Mr Jones visited St Fagans. He used the grid to find the places that he wanted to see.



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(a) What are the coordinates of the Timber Circle? This is shown as number 31 on the grid. [1]

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(b) Mr Jones stopped at (6, 7) during his visit. Mark this position on the grid with a **cross** (×). [1]

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(c) Mr Jones and Bethan were standing outside the Sawmill (number 26).
They were both facing the Tannery (number 27).
Bethan asked Mr Jones for the directions to the Newbridge War Memorial (number 20).
Complete the set of directions for the shortest route that Mr Jones could have given Bethan. [2]

Turn left from the Saw Mill.

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2. Sian works for the packaging company *BoxCymru*.

When she started work she was given an employee number.

Her employee number is 11-17/314.
This number shows that she started work in November 2017, and she was the 314th person to start working for *BoxCymru*.

(a) Kevin also works for the same company. His employee number is 02-15/047.
In which month and year did Kevin start working for *BoxCymru*? [1]

Month ..... Year .....

(b) Sian is the last person to have been employed by the company.
How many people have *BoxCymru* employed since Kevin joined the company? [1]

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(c) Steven is the next person to be employed by *BoxCymru* after Sian.
He is due to start working on 8th January 2018.
What will Steven's employee number be? [2]

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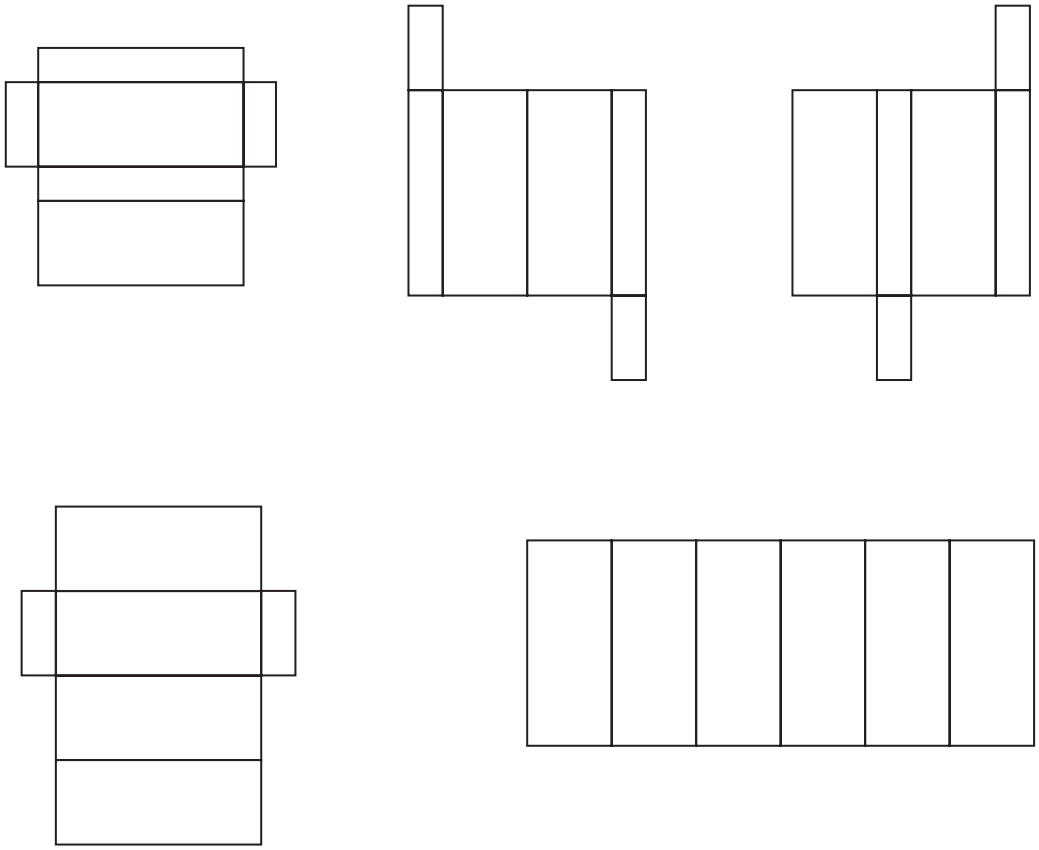
(d) Many of the boxes that *BoxCymru* use are cuboids.
Which of the following nets can be used to make the boxes?
Circle your answers. [2]



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3. Mr Rook wants to update his kitchen.

(a) He needs the carpenter, plumber and electrician to work together for 3 days in January.

(i) The electrician is available from the 13th to the 22nd inclusive.
The plumber is available from the 5th to the 18th inclusive.
The carpenter is available any day except for Saturdays, Sundays and Mondays.

Find the 3 dates that Mr Rook can book the carpenter, plumber and electrician to work together.
Use the calendar below. [2]

JANUARY **2018**

MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SATURDAY	SUNDAY
1	2	3	4	5	6	7
8	9	10	11	12	13	14
15	16	17	18	19	20	21
22	23	24	25	26	27	28
29	30	31				

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The 3 dates are ..... , ... and .....

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

Mr Rook will need to pay the carpenter, plumber and electrician for the 3 days' work. The working day is from 8 a.m. to 5 p.m., with an hour off for lunch. Their charges are:

Carpenter	£20 per hour (not including lunch time)
Plumber	£180 per day
Electrician	£575 for the 3 days

Calculate the total amount that Mr Rook has to pay.

You must show all your working. [5 + 2 OCW]

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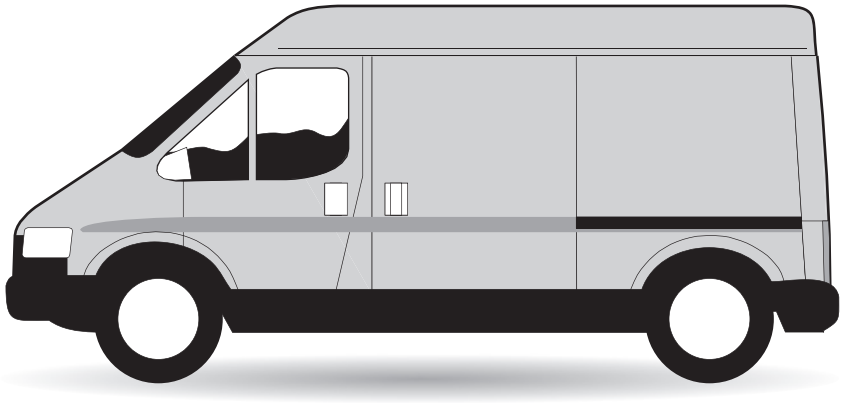
(b) The plumber uses a van for work.

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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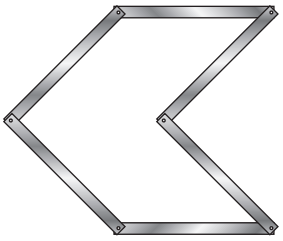
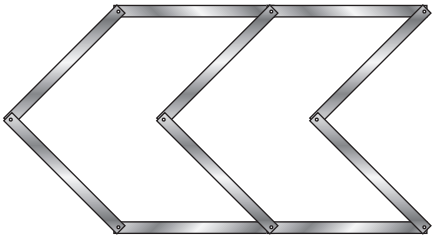
4. Sophia designs jewellery.
She is working on the design of a bracelet.
Each link of the bracelet uses lengths of silver, .



1 link
6 lengths of silver



2 links
10 lengths of silver

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(a) How many lengths of silver are needed for 3 links of the bracelet?
Circle your answer. [1]

14 16 12 18 10

(b) Sophia thinks that she needs 6 lengths of silver for each extra link.
Explain why Sophia is not correct. [1]

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(c) Sophia uses 50 lengths of silver to make a bracelet.
How many links are there in this bracelet? [2]

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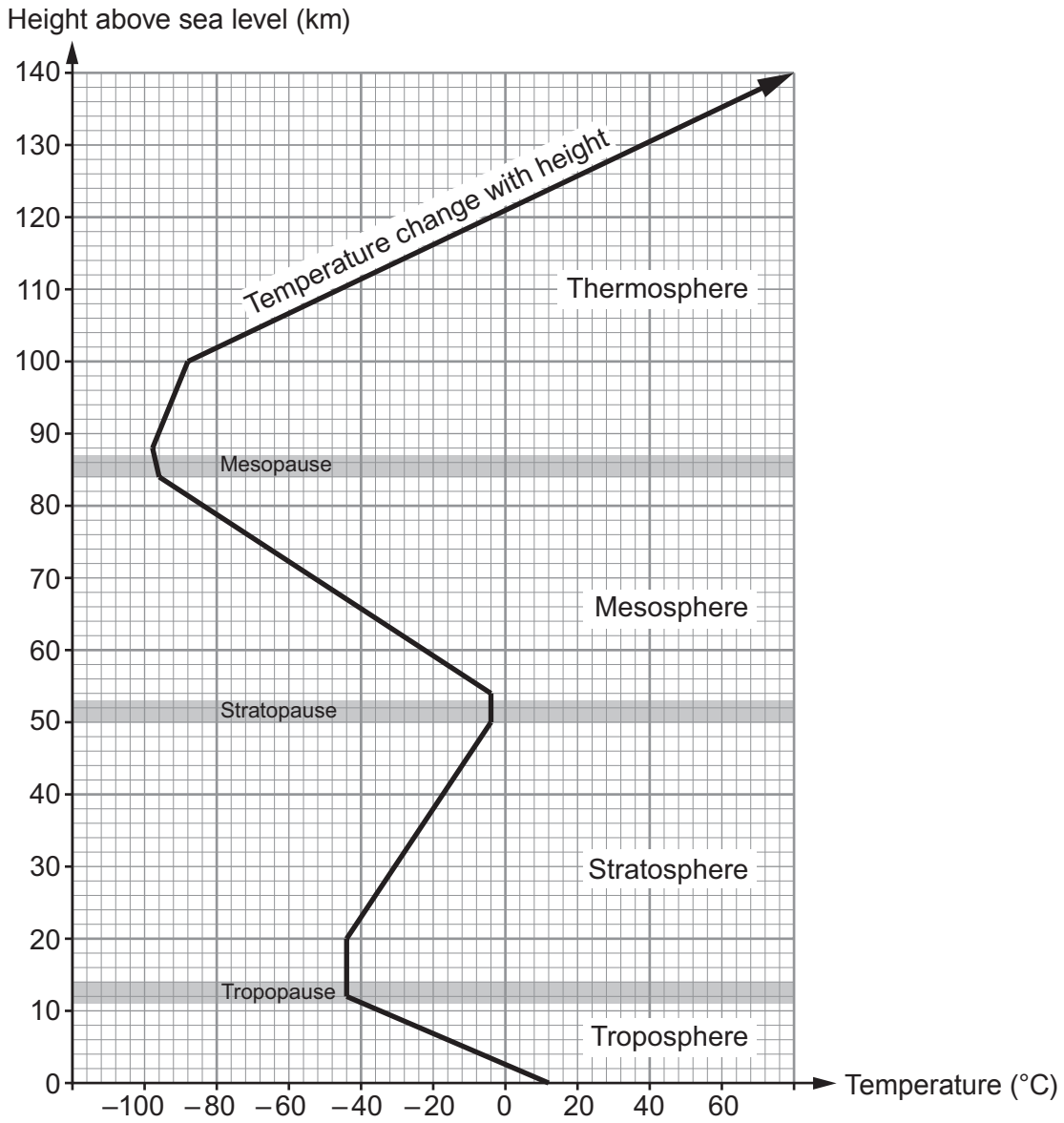
5. The atmosphere above the Earth's surface is divided into different layers.

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

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(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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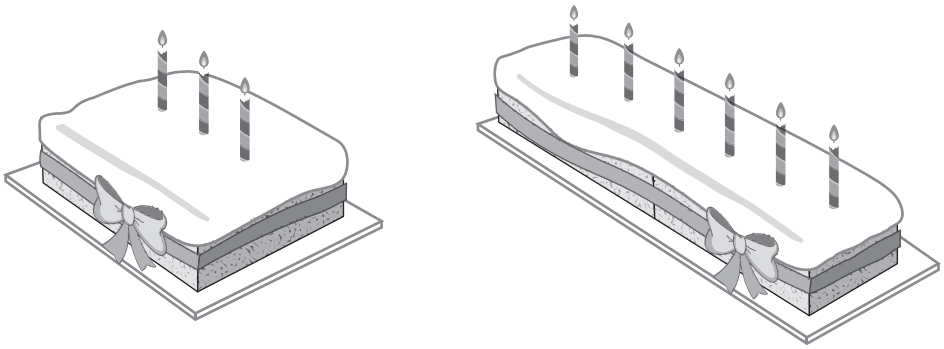
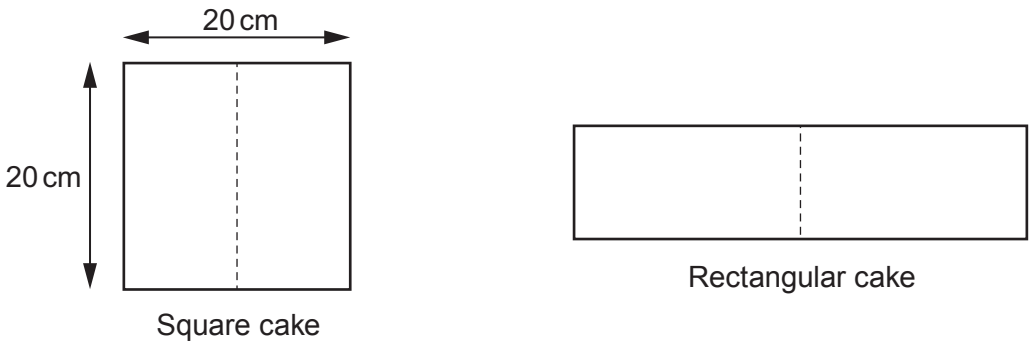


Delyth makes birthday cakes.
To make a rectangular cake, Delyth cuts a 20 cm square cake in half, and joins the two pieces together, as shown in the diagram below.



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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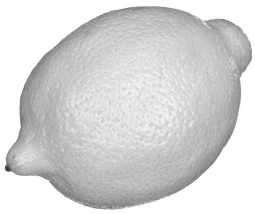
7. Four different supermarkets have special offers on the price of lemons.



Supermarket	Special offer
Cost 4go	Lemons: usually 40p each Now on offer! Buy 3 for the price of 2
Edges Mart	A net of 4 lemons for 75p
Food Uno	A bag of 5 lemons for 76p
Greenway	Lemons: only 26p each

Aled needs 6 lemons to make lemon cakes for a birthday party.

Aled only has time to go to one supermarket.

Calculate how much Aled would pay in each of the supermarkets.
In which supermarket will he be able to get the lemons he needs for the least amount of money?
You must show all your working. [5]

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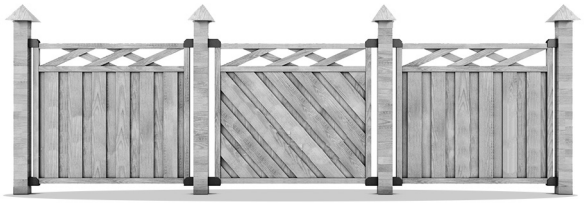
8. Mehmet needs a new fence for one end of his garden.
Fences are constructed using panels and posts.



(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

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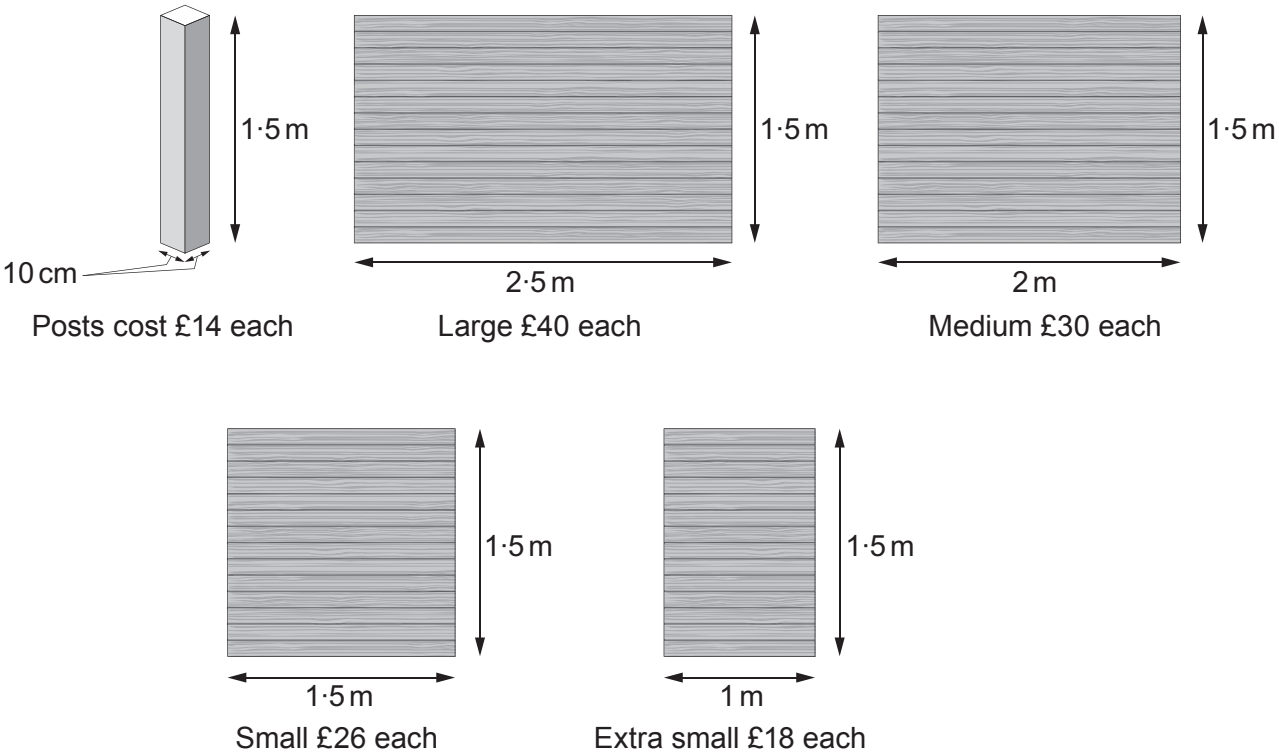
(b) Mehmet wants a new 1·5 m high fence for his garden.
The fence panels come in different lengths.
The posts Mehmet wants to use are all the same size.
Mehmet has the following information.



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The fence Mehmet wants to make is 8·5 m long, including the posts.
He has started to sketch a plan, as shown below.

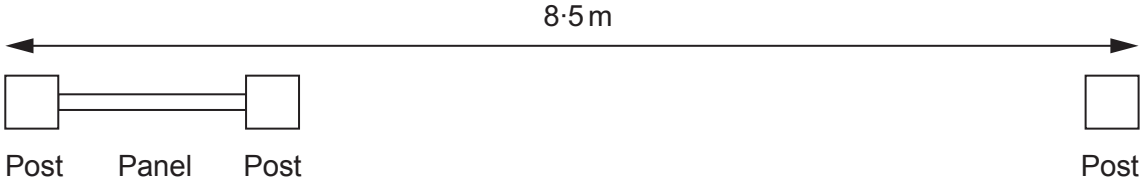

Diagram not drawn to scale

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^2 of a fence post.
How much will it cost to paint the 4 vertical sides of 1 fence post? [3]

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

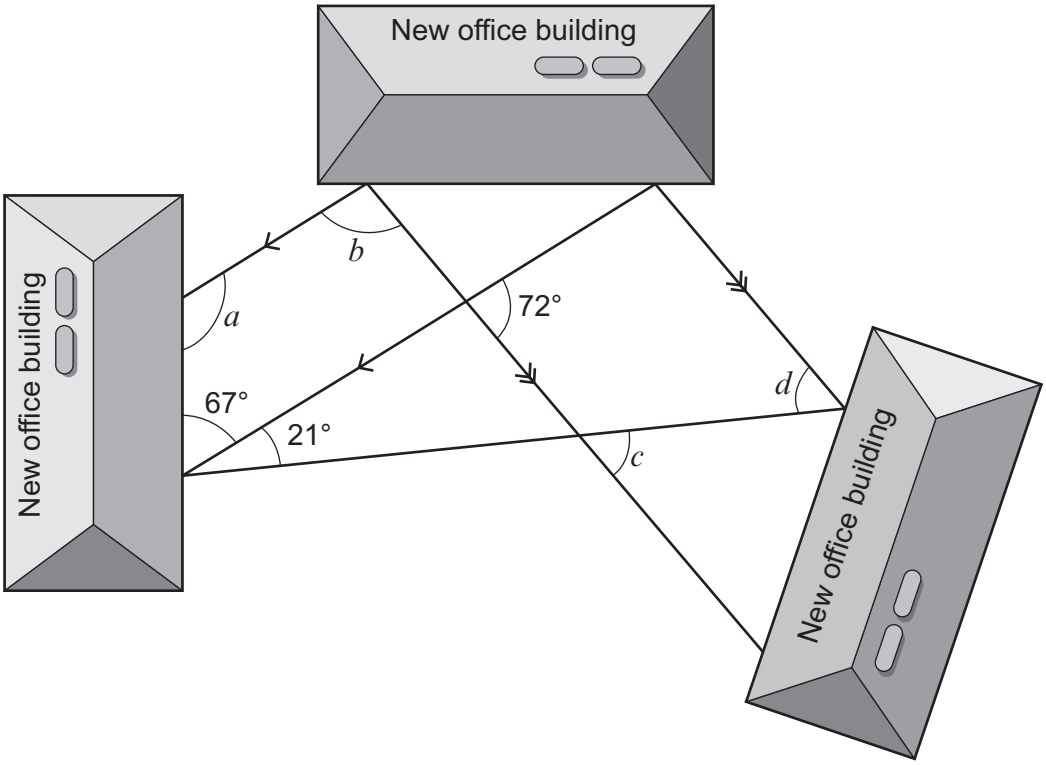

Diagram not drawn to scale

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 = ... ° b = ... ° c = ... ° d = ... °

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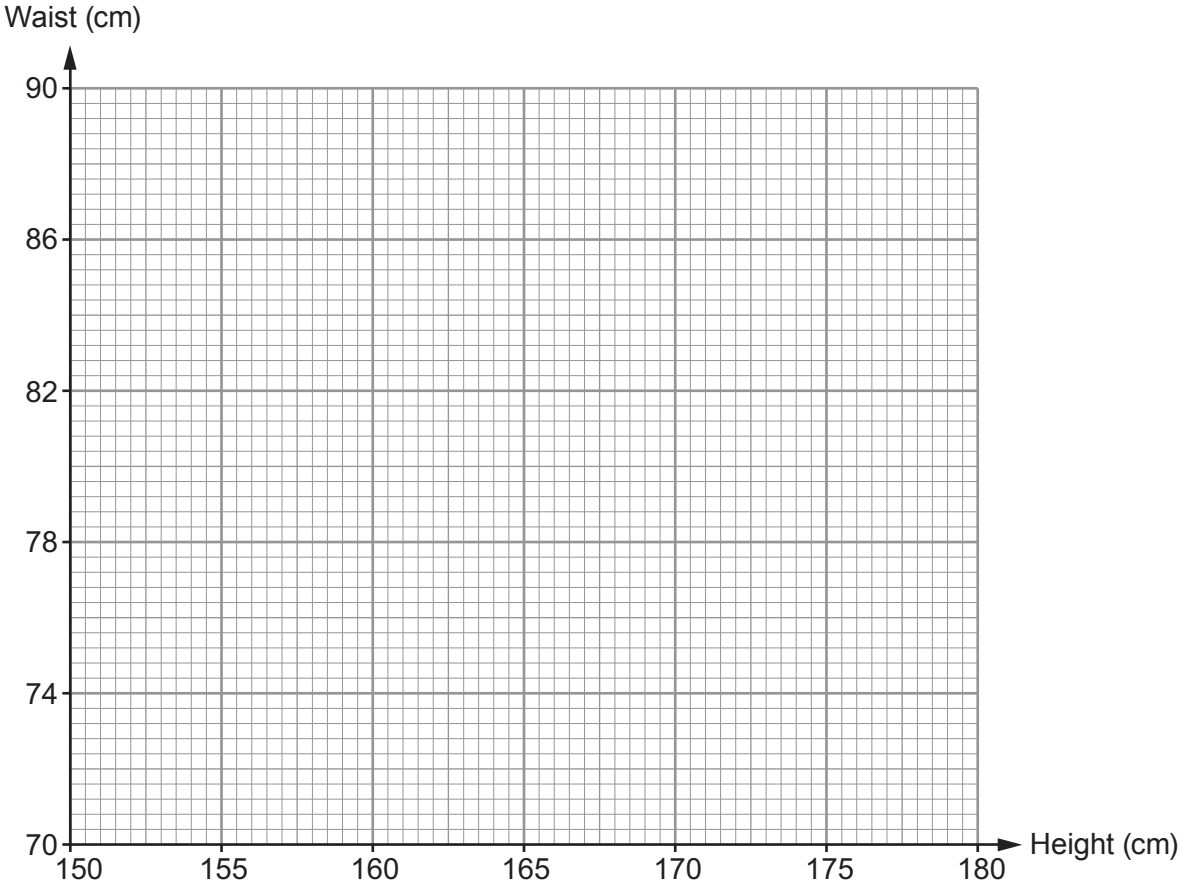
10. Ffion thinks that the taller you are, the greater your waist measurement will be.
She recorded the height and waist measurements, in centimetres, for 6 people.

Height (cm)	170	152	174	155	178	162
Waist (cm)	82	72	86	74	90	78

(a) Draw a scatter diagram to display these measurements.
Use the graph paper below. [2]



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(b) Look at the results that Ffion has recorded for these 6 people.
Do they appear to support her thinking?
Give a reason for your answer. [1]

Yes ☐ No ☐ Can't tell ☐

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(c) Give **one** reason why using this scatter graph to estimate the waist measurement of other people is unlikely to give reliable results. [1]

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11. *Truetool* is a tool hire company.

Hire charges	
The cost of hiring a cement mixer in £:	13 × number of days + 26
The cost of hiring a jet washer in £:	9 × number of days + 38

(a) Sara hires a cement mixer for 5 days and a jet washer for 7 days from *Truetool*.
How much **change** would she get from £200? [3]

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(b) Geraint hired a cement mixer for a number of days.
Lois hired a jet washer for the same number of days.
They each paid the same amount of money.

For how many days did they each hire these tools from *Truetool*?
You must show all your working. [3]

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Number of days .....

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12. The diagram below shows a sketch of the existing gas pipes that run to and from Tŷ Gwyn. It also shows a proposed 180 m gas pipe which is to be laid to provide gas to Cae Nia. The proposed pipe bisects the angle formed by the existing pipes at Tŷ Gwyn.

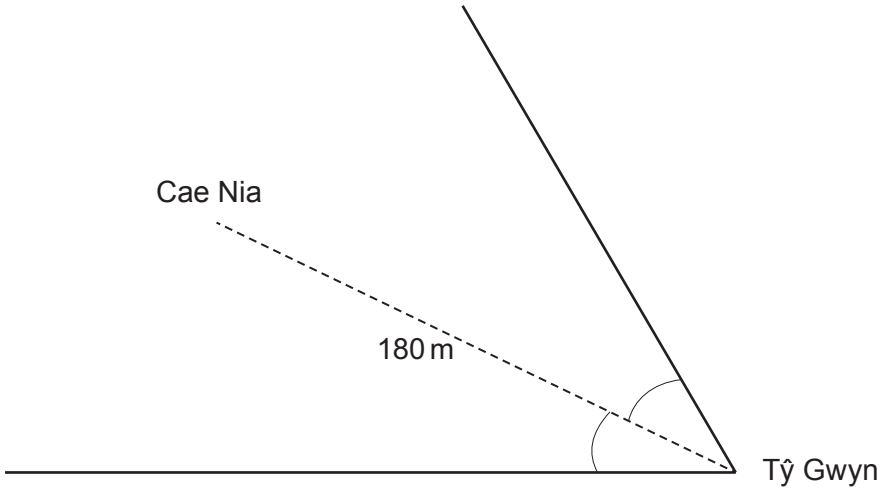

Diagram not drawn to scale

Complete the scale drawing below to show the proposed pipe.

- You must use a pair of compasses to construct the angle bisector.
- Use a scale of 1 cm to represent 20 metres. [3]

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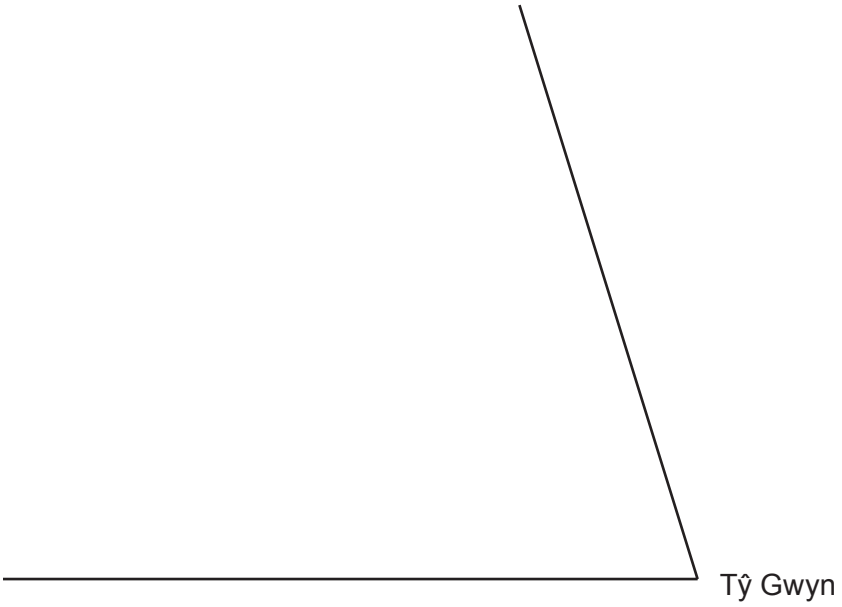

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Question number	Additional page, if required. Write the question number(s) in the left-hand margin.	Examiner only

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