Surname	Centre Number	Candidate Number
First name(s)		0

GCSE

3310U20-1

A19-3310U20-1

THURSDAY, 7 NOVEMBER 2019 – MORNING

MATHEMATICS – NUMERACY
UNIT 2: CALCULATOR-ALLOWED
FOUNDATION TIER

1 hour 30 minutes

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

ADDITIONAL MATERIALS

A calculator will be required for this paper.

A ruler, a 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 additional page at the back of the booklet. Question numbers must be given for the work written on the additional page.

Take π as 3·14 or use the π button on your calculator.

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 **2***(b)*, the assessment will take into account the quality of your linguistic and mathematical organisation, communication and accuracy in writing.

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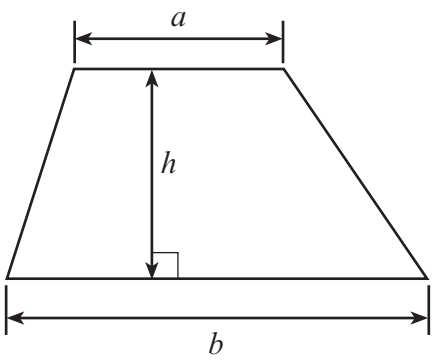
Formula List - Foundation Tier

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



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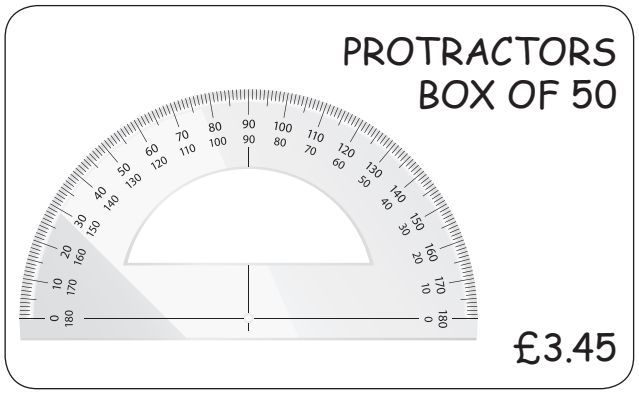
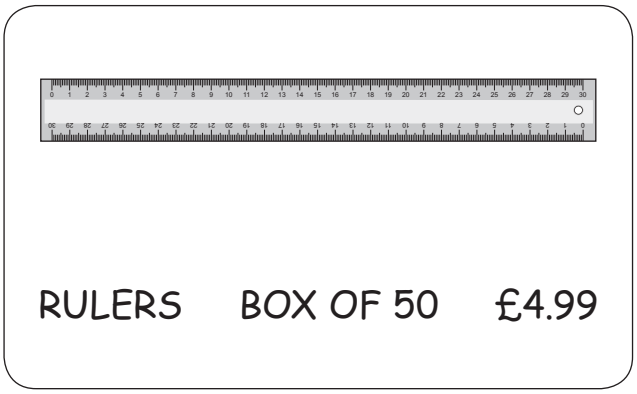
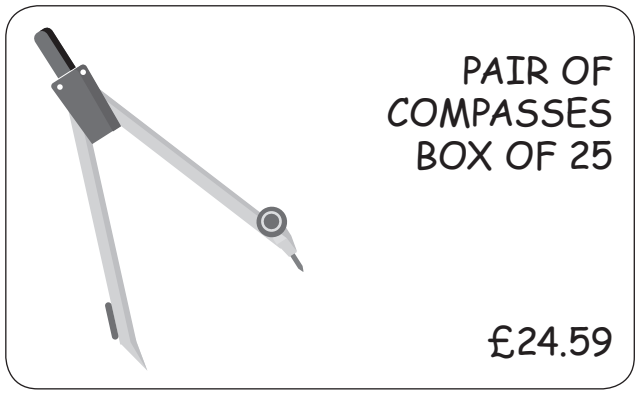
Examiner only

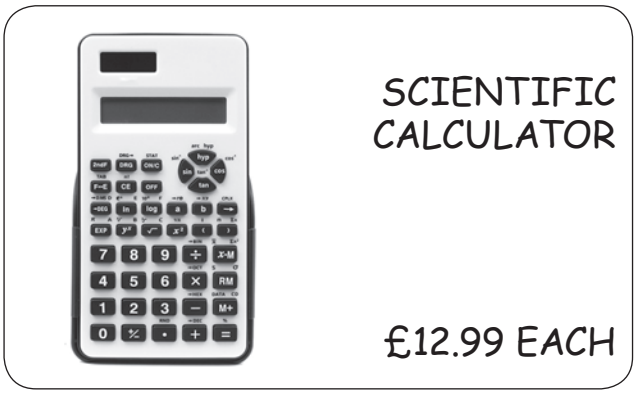
1. Mrs Jones is a mathematics teacher.
She orders some equipment for her department.

She sees the following items in a catalogue from a stationery company.









(a) Mrs Jones buys the items listed below.

Complete the following table to show her bill for these items. [4]

Item	Cost
1 box of protractors	£3.45
4 boxes of rulers	£
3 boxes of compasses	£
30 scientific calculators	£
Total	£

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Examiner only

(b) The company offers Mrs Jones a discount of 25% off the total cost of these items.
How much discount does she receive? [2]

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(c) After paying for the items, Mrs Jones has £164 left to spend on equipment for the department.
She wants to spend the remaining money on buying as many scientific calculators as possible.
There will be no discount on this order.
How many extra calculators can Mrs Jones buy? [2]

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Mrs Jones can buy ..... extra calculators.

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2. A company calculates its postage costs by using the following formula:

Total postage costs (£) =

number of *small letters* × 0.65 + number of *large letters* × 0.98

(a) Here is a note showing how many *small letters* and *large letters* were posted in a particular week.

Total postage costs = ...

143 small letters

50 large letters

Calculate the total postage costs for this week. [3]

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Examiner only

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

Here is a note showing the total postage cost and the number of *small letters* posted the following week.

Total postage cost = £119.47

125 small letters

..... large letters

Find how many *large letters* were posted that week.
You must show all your working. [4 + 2 OCW]

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The company produces some postcards to advertise the business.
The postcards are rectangular.
The dimensions can be seen on the diagram below.

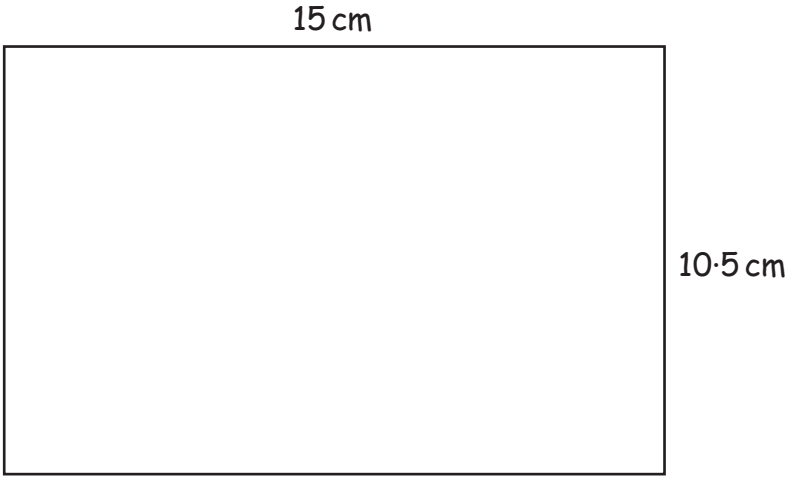

Diagram not drawn to scale

(c) What is the perimeter of the postcard?
Circle your answer. [1]

50·10 cm 25·5 cm 51 cm 157·5 cm^2 157·5 cm

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(d) The postcards are to be stored in boxes shaped like a cuboid, as shown in the diagram below.

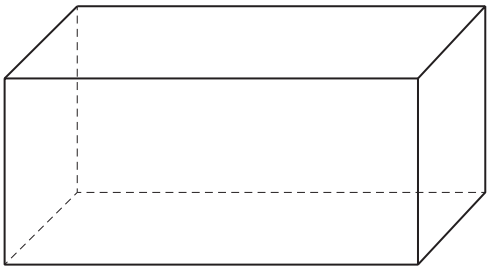
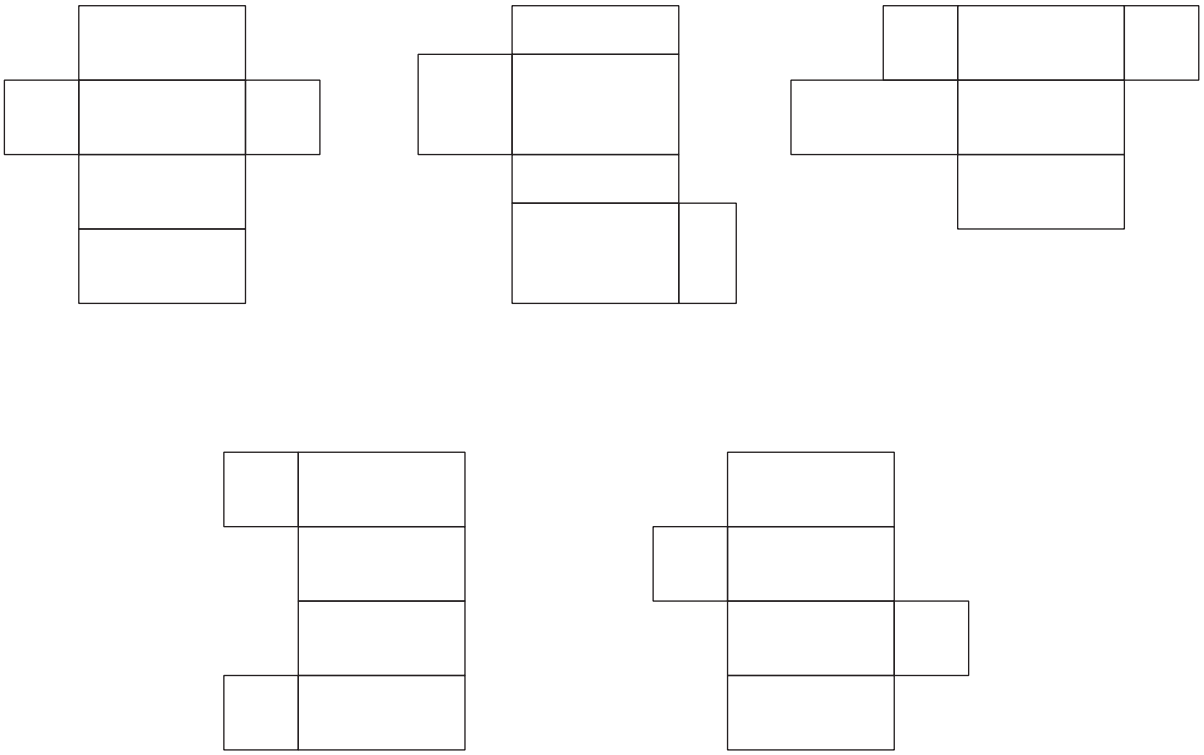


Diagram not drawn to scale

Which **two** of the following nets can be used to make the boxes?
Circle your answers. [2]



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3. Mair has two dogs, Gelert and Tili.

(a) Gelert weighs 22 lb (pounds).
Tili weighs 14·5 kg.

Including an appropriate calculation, explain fully how you know that Tili is heavier than Gelert. [2]

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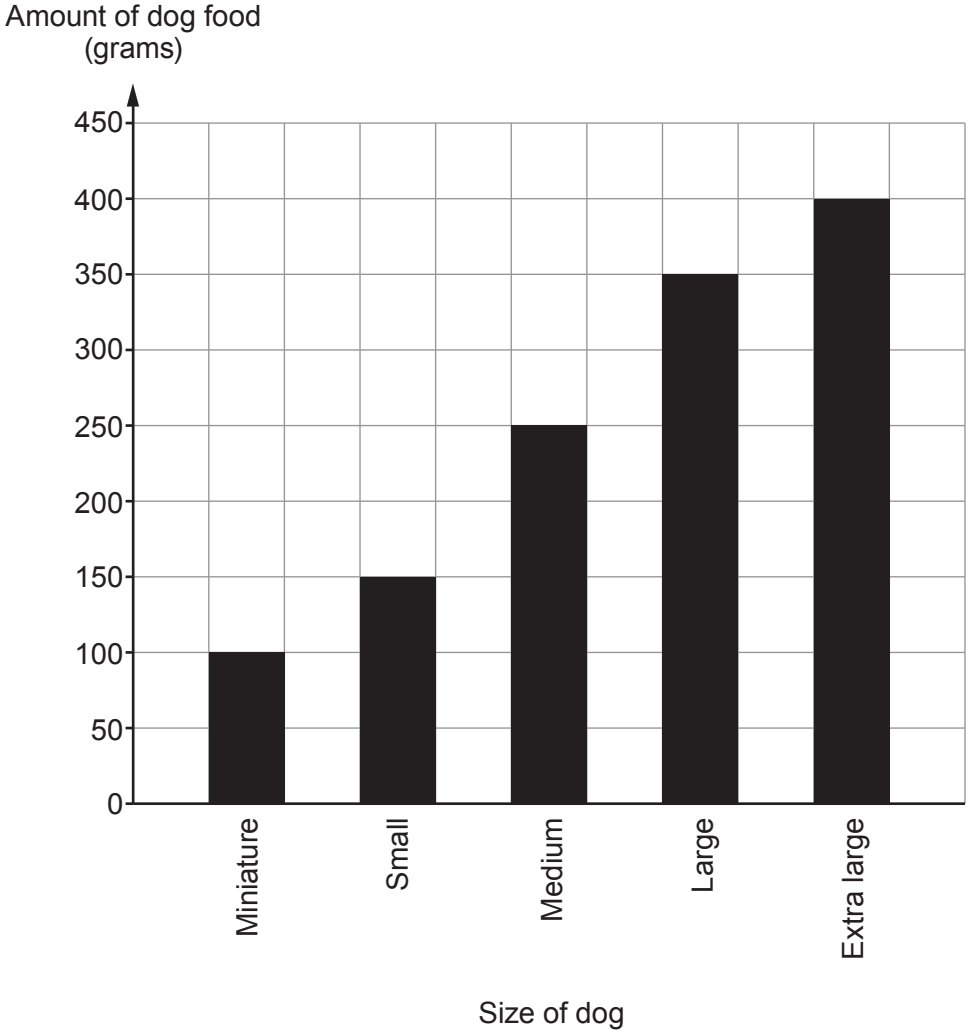
(b) Both dogs eat a particular brand of dog food.
The graph below shows the amount of food that dogs of different sizes should eat **each day**.



Examiner only

Gelert is a medium-sized dog.
Tili is a large dog.

(i) Using the graph, how much food **in total** should Gelert and Tili eat each day? [2]

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(ii) Mair buys an 18 kg bag of the dog food.
How many days will the 18 kg bag of food last? [3]

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The 18 kg bag of food will last for ..... days

Turn over.

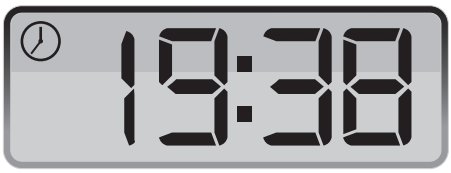
Examiner only

4. Evan wears a fitness watch that shows the time and the number of steps he has taken during the day.

Evan goes for a run one evening.
The displays on his watch at the beginning of the run and at the end of the run are shown below.

Beginning of the run

TIME



STEPS

End of the run

TIME

STEPS

(a) For how long did Evan run?
Circle your answer. [1]

24 minutes 22 minutes 52 minutes 36 minutes 76 minutes

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(b) Write, in words, the number of steps displayed on Evan's watch at the **end** of the run. [1]

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Examiner only

(c) Evan wants to know how many miles he has run.
The number of steps taken to complete one mile depends upon the runner's height.
The table below, taken from the internet, gives this information.

Evan is 5 feet 7 inches tall.

Height	Steps per Mile
5 feet	2514 steps
5 feet 1 inch	2473 steps
5 feet 2 inches	2433 steps
5 feet 3 inches	2395 steps
5 feet 4 inches	2357 steps
5 feet 5 inches	2321 steps
5 feet 6 inches	2286 steps
5 feet 7 inches	2252 steps
5 feet 8 inches	2218 steps
5 feet 9 inches	2186 steps
5 feet 10 inches	2155 steps
5 feet 11 inches	2125 steps
6 feet	2095 steps

How many miles did Evan run? [4]

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Examiner only

5. Ceri and Paulo both sit the same mathematics test.
The test is marked out of 125.

Ceri scores 78 marks in the test.
Paulo's result is 64%.

Who has the higher result in this mathematics test?
You must show all your working. [3]

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6. Barrels are used to store liquid.
Glass containers are filled with liquid from a barrel.

The table opposite gives the capacity of some glass containers and their traditional names.

Examiner only

(a) Complete the table to give the number of bottles equivalent to all the traditional sizes. [2]

Capacity in litres	Number of bottles	Traditional name
0·75	1	Bottle
1·5	2	Magnum
3	.....	Jéroboam
4·5	.....	Réhoboam
6	8	Methuselah
9	12	Salmanazar
12	.....	Balthazar

(b) A barrel contains just enough liquid to fill 3 Salmanazars and 1 Magnum.
Which of the following amounts does the barrel hold?
Circle your answer. [1]

4 bottles 28·5 bottles 10·5 bottles 36 bottles 38 bottles

(c) A different barrel contains just enough liquid to fill 30 Magnums.
How many Salmanazars can be filled from this barrel? [2]

Examiner only

7. Five pupils attended a dance class every Thursday.

For these five pupils:
- the median of their ages is 17 years,
- the mode is 18 years,
- the range of their ages is 8 years,
- one pupil is 2 years older than the youngest pupil.

Coleen now joins this class.
She is two years younger than the mean age of the other 5 pupils.

How old is Coleen?
You must show all your working. [4]

Examiner only

8. *(a)* $\frac{6}{11}$ of Jenna's friends have pets.

Of these friends with pets, $\frac{2}{3}$ of them have a dog.

Use this information to answer each of the following questions.

(i) Jenna has 33 friends.
How many of her friends have a pet? [2]

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(ii) What fraction of Jenna's friends have a dog? [2]

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(b) 120 people were surveyed.
They were each asked which is their favourite pet: dog, cat or fish.
The numbers who answered dog, cat and fish were in the ratio 63 : 39 : 18.

Express this ratio in its simplest terms. [1]

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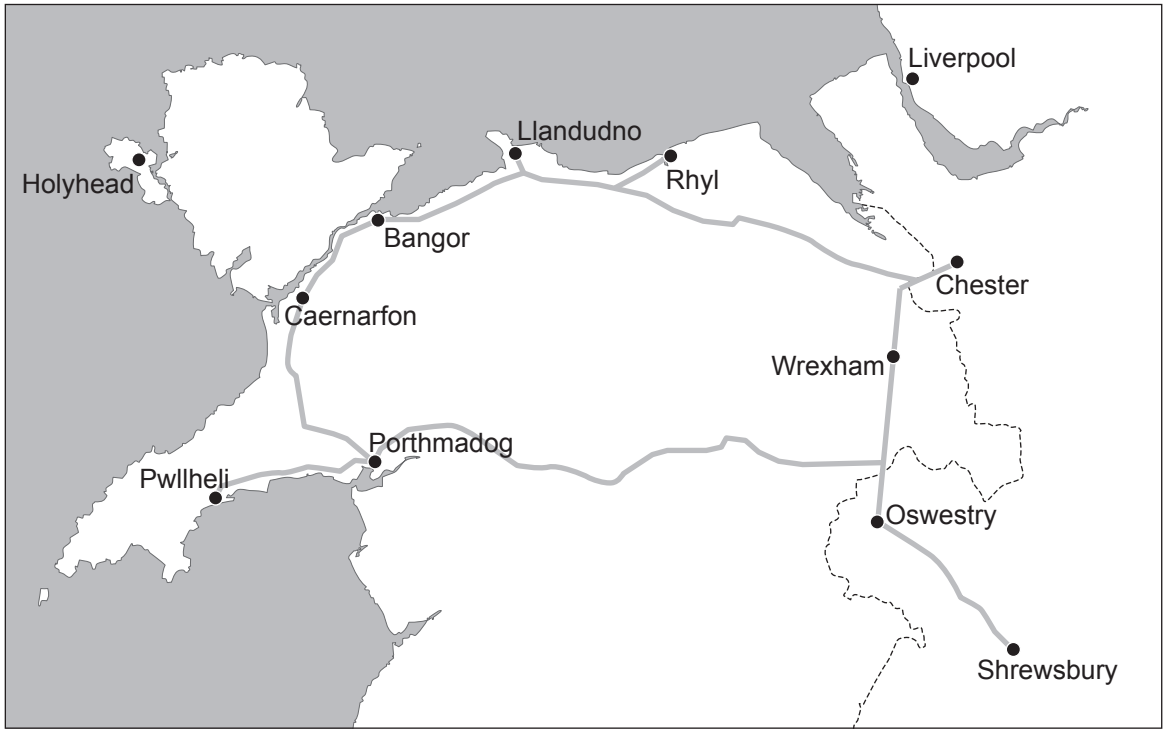
Examiner only

9. A map of north Wales and the border with England is shown below.
The distance between Wrexham and Oswestry is approximately 22 km by road.



(a) The straight-line distance between Wrexham and Oswestry on the map is 2·2 cm.
Which of the following represents the scale of the map?
Circle your answer. [1]

1 : 10 1 : 1000 1 : 10 000 1 : 100 000 1 : 1 000 000

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(b) Lauren travels by road directly from Wrexham to Oswestry.
This journey takes 25 minutes.
Calculate the average speed for Lauren's journey.
Give your answer in km/h. [3]

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Average speed ..... km/h

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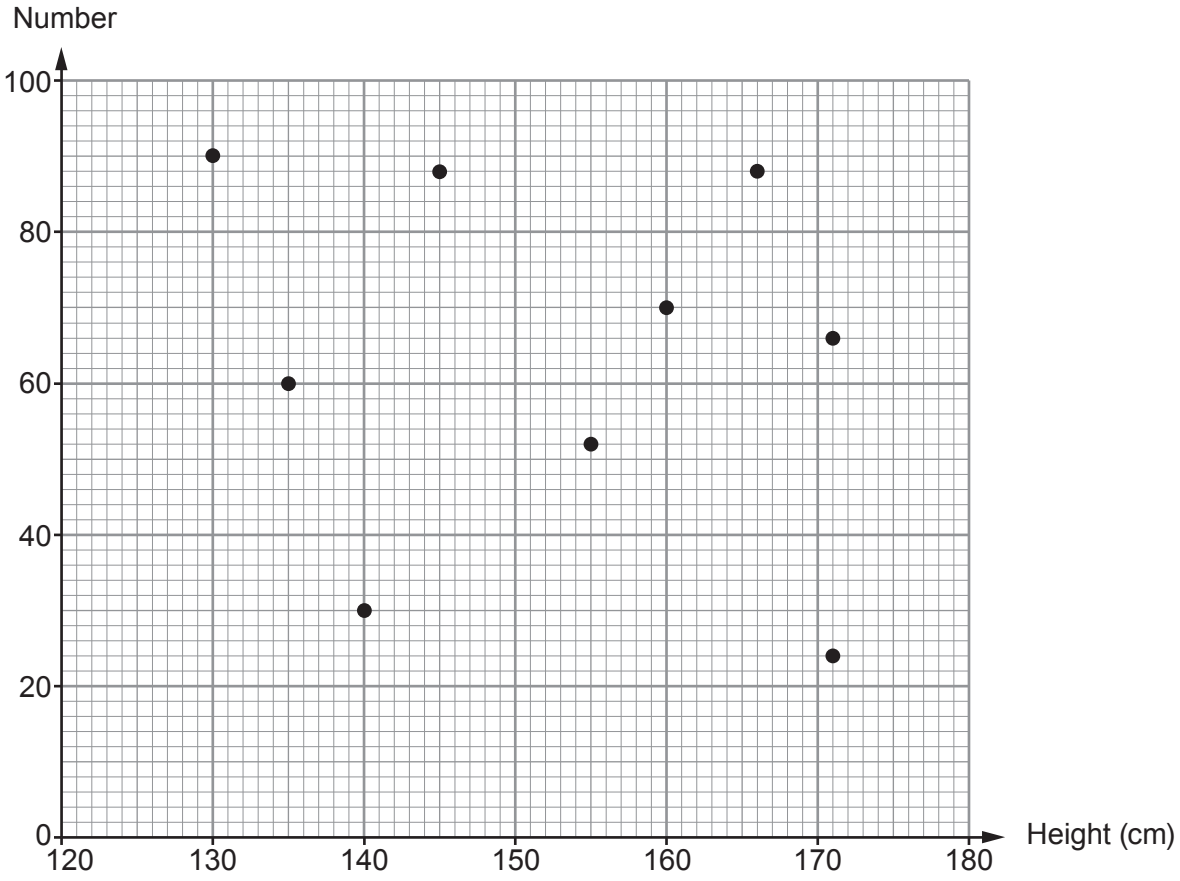
10. Some students were asked to select an even number between 0 and 100.
The heights of these students and the number they each selected are shown in the scatter diagram below.



(a) Describe the correlation shown by the scatter diagram. [1]

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(b) Gwenda and Daniel selected the same number.
Gwenda is shorter than Daniel.
Lotte is the shortest student.
Iona and Steffan are both the same height.
Iona selected a number greater than 40.

Complete the table. [4]

Name	Height (cm)	Number
Gwenda		
Daniel		
Lotte		
Iona		
Steffan		

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11.

Arianna's pizzeria

All pizzas £8.80 each

Special offers

Buy 1 pizza, get 1 pizza free OR 35% off the price of every pizza

(a) Lowri orders 3 pizzas.
She wants to pay the least amount possible.
Which offer should Lowri ask for?

Buy 1 pizza, get 1 pizza free ☐ 35% off the price of every pizza ☐

You must give the total cost of each of the offers.
You must show all your working. [5]

(b) Noah wants to order 10 pizzas.
Explain why 'buy 1 pizza, get 1 pizza free' would be the better of the 2 offers.
Do not use any calculations. [1]

END OF PAPER

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

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