Surname	Centre Number	Candidate Number
Other Names		0

GCSE LINKED PAIR PILOT

4362/01

APPLICATIONS OF MATHEMATICS

UNIT 2: Financial, Business and Other Applications FOUNDATION TIER

A.M. THURSDAY, 20 June 2013

$1\frac{1}{2}$ hours

Suitable for Modified Language Candidates

4362 010001

ADDITIONAL MATERIALS

A calculator will be required for this paper.

INSTRUCTIONS TO CANDIDATES

Use black ink or black ball-point pen.

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.

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.

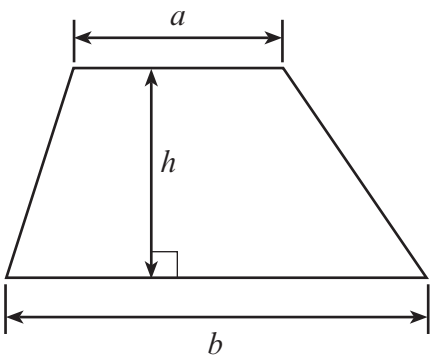
The number of marks is given in brackets at the end of each question or part-question.

You are reminded that assessment will take into account the quality of written communication (including mathematical communication) used in your answer to question **6***(a)*.

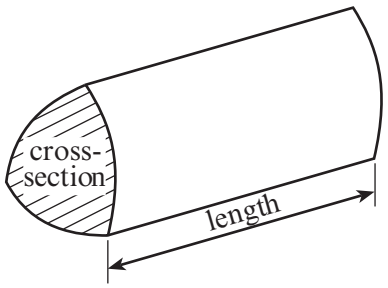
For Examiner's use only		
Question	**Maximum Mark**	**Mark Awarded**
1	**15**	
2	**4**	
3	**5**	
4	**5**	
5	**4**	
6	**16**	
7	**6**	
8	**4**	
9	**5**	
10	**9**	
11	**3**	
12	**4**	
TOTAL MARK		

Formula List

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



Volume of prism = area of cross-section × length



Examiner only

1. Maurice runs the French Café.
He wants to place an order for the goods that he sells.
The costs of the goods are shown below.

		
Croissants 10 pence each	Cheese £6.92	Pain au chocolat 32 pence each
		
Coffee £1.52	Bread 99 pence each	Jam £1.24

(a) (i) Complete the order for Maurice to find the total cost of the goods.

Goods	Quantity	Cost
Croissants	15	£ 1.50
Cheese	1	£
Pain au chocolat	10	£
Coffee	4	£ 6.08
Bread	10	£ 9.90
Jam	5	£
	TOTAL COST	£

[4]

(ii) The company, which supplies Maurice's goods, offers him a discount of 15% of the total cost of his order.
How much discount does he receive?

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[2]

Examiner only

(b) Maurice sells the pains au chocolat for 62 pence each.
Melodie has £5 to buy as many pains au chocolate as she can from Maurice.

(i) How many pains au chocolat can Melodie buy?

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[2]

(ii) How much change will she receive?

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[1]

Examiner only

(c) The following table shows the number of drinks that Maurice sold on a Saturday morning.

Drink	Tea	Coffee	Fizzy Drink	Orange Juice	Bottled water
Number sold	12	16	20	7	11

Draw a graph or chart to display this information. [4]

(d) Maurice knows that 7 boxes of bottled water will cost him less than £65.

What is the greatest possible cost of one box of bottled water?
Give your answer to the nearest pound.

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[2]

Turn over.

Examiner only

2. Every week, Sarah does her family shopping on the Internet. She has to be careful to order things in the correct quantities.

The following table shows the items and quantities that Sarah has ordered.

Place a '✕' by the items that do not appear to have a sensible quantity and a '✓' by those that do. Two have been completed for you.

Item	Quantity	✕ or ✓
Orange juice	2 litres	✓
Mushrooms	50 kilograms	
A bag of sugar	1 kilogram	
Tomato sauce	350 litres	
Potatoes	5 grams	✕
Large chocolate bar	100 grams	
Bottle of vinegar	250 millilitres	
Butter	500 grams	
Milk	4 litres	
Washing-up liquid	500 litres	

[4]

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Turn over.

Examiner only

3. Gethin wants to organise a mountain walk in the Brecon Beacons with his 3 friends Chloe, Robert and Martyn during 2014.

He has the following information:

- He (Gethin) can only go on a Sunday;
- Chloe cannot go during the last 4 months of the year;
- Martyn works on the first 3 Sundays of each month;
- Robert cannot go during the school holidays;
- All his friends agree that the months of November, December and January are unsuitable for the walk.

The calendar shown on the opposite page is for 2014.

The school holidays are represented by 

What would be the **latest date** that they could all go for the mountain walk?

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[5]

2014

January

Su	M	Tu	W	Th	F	Sa
			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	

February

Su	M	Tu	W	Th	F	Sa
						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	

March

Su	M	Tu	W	Th	F	Sa
						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					

April

Su	M	Tu	W	Th	F	Sa
		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			

May

Su	M	Tu	W	Th	F	Sa
				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

June

Su	M	Tu	W	Th	F	Sa
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					

July

Su	M	Tu	W	Th	F	Sa
		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		

August

Su	M	Tu	W	Th	F	Sa
					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						

September

Su	M	Tu	W	Th	F	Sa
	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				

October

Su	M	Tu	W	Th	F	Sa
			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	

November

Su	M	Tu	W	Th	F	Sa
						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						

December

Su	M	Tu	W	Th	F	Sa
	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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Turn over.

Examiner only

4. A gardener wishes to place new fencing around his rectangular vegetable garden.

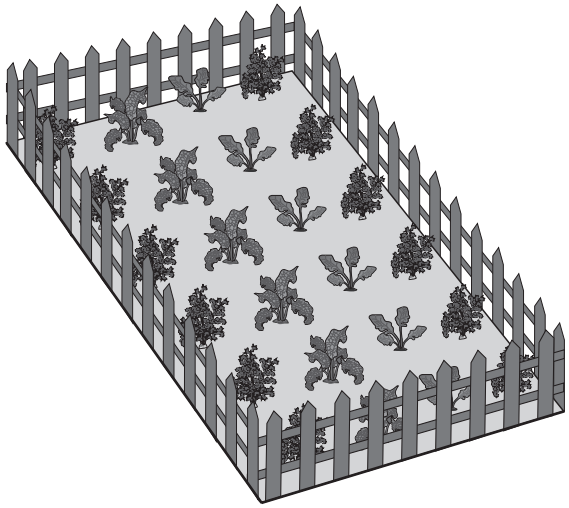

Diagram not drawn to scale

The garden is 12 metres long and 9 metres wide.
Each fence panel is 3 metres long and costs £21.98.
Find the total cost of the fence panels for the rectangular vegetable garden.

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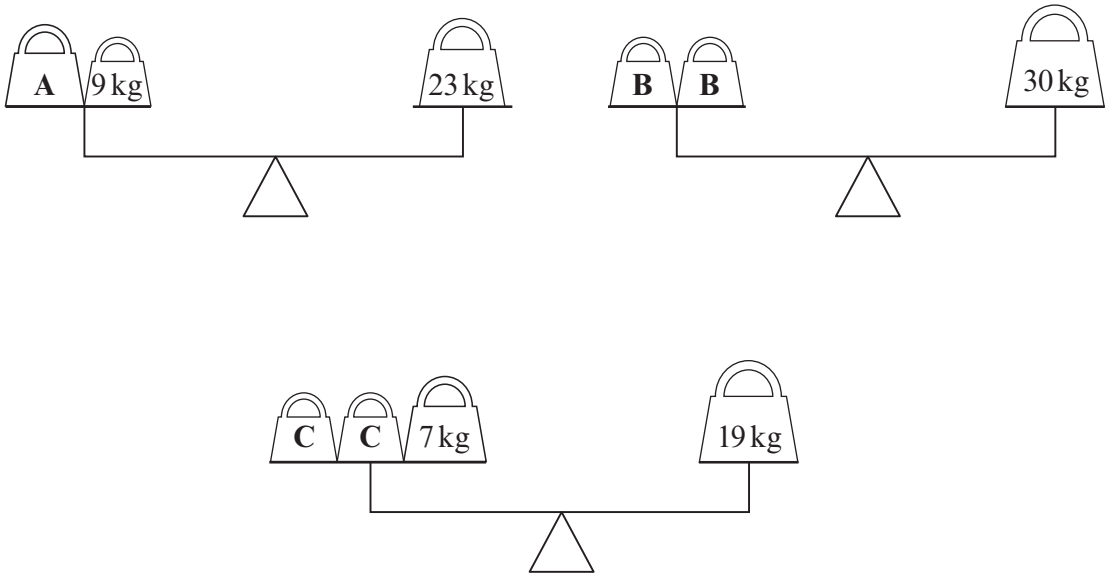
[5]

Examiner only

5. Each diagram represents a balance with the total weight on each side being equal.
Find the value of **A**, **B** and **C**.



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A = ... kg **B** = ... kg **C** = ... kg

[4]

6. *(a) You will be assessed on the quality of your written communication in this part of the question.*

The table below shows the room-only costs for a 7-night holiday to Menorca, Spain.

The table shows different arrival dates for August.

Arrival date	Price per adult (£)	Price per child Aged 5-16 (£)
August 1, 8	486	203
August 3, 10, 17	498	219
August 15, 22	512	226
August 24	475	199

Supplements **Price per person per night**		
	Sea view	£4
	Bed and breakfast	£8
	Half board	£18
	All Inclusive	£25

All children under the age of 5 go free. They do not have to pay for any supplements.

- Mr and Mrs Edwards book a 7-night holiday to Menorca for themselves and their 3 children.
- Their three children are aged 13, 8 and 4.
- They decide to book the holiday with an arrival date of 10 August.
- They have chosen to book rooms with a sea view.
- They also decide to have the all-inclusive package for the whole family.

Examiner only

Calculate the total amount that they pay for their 7-night holiday. Show all your working.

[10]

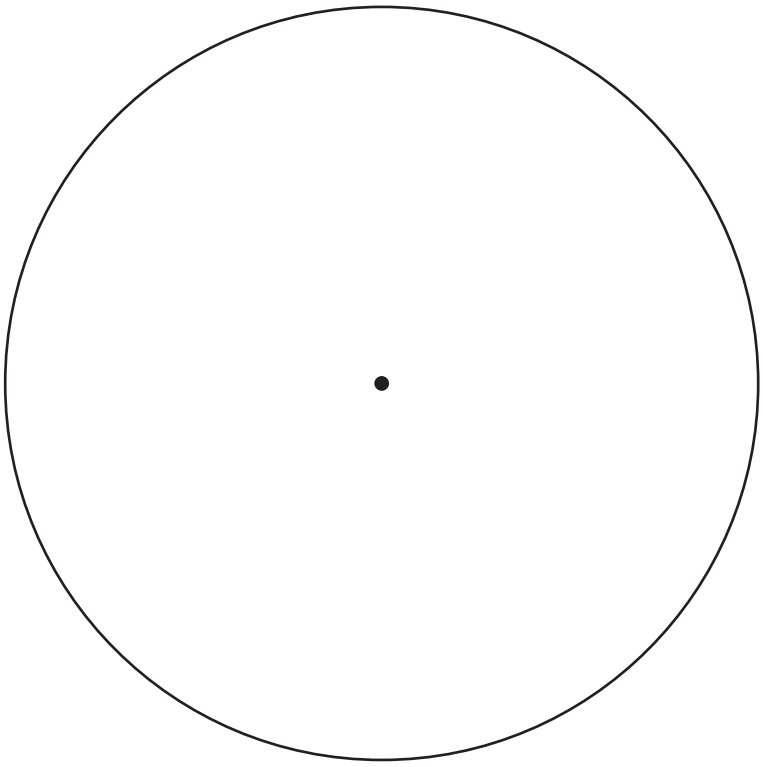
Turn over.

Examiner only

(b) The holiday company records the number of families that stay at certain hotels in Menorca. The following table shows these hotels and the number of families that stayed there during the week commencing 10 August.

Hotel	Viva Menorca	Hamilton Hotel	Fiesta Hotel	Sol Menorca
Number of families	62	54	40	84

Draw a pie chart to illustrate these results.
You should show how you calculate the angles of your pie chart.



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[4]

Examiner only

(c) The holiday company performs the following calculation to work out the percentage of hotel rooms that were occupied.

$$\frac{635 \times 100}{200 + 180 + 75 + 225}$$

Calculate this percentage. Give your answer correct to 1 decimal place.

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[2]

Examiner only

7. A gold bar in the shape of a cuboid has dimensions 20 cm by 8 cm by 4·5 cm.

The gold bar is melted down to make small cubes of sides 2 cm.

How many of these small cubes can be made from the gold bar?

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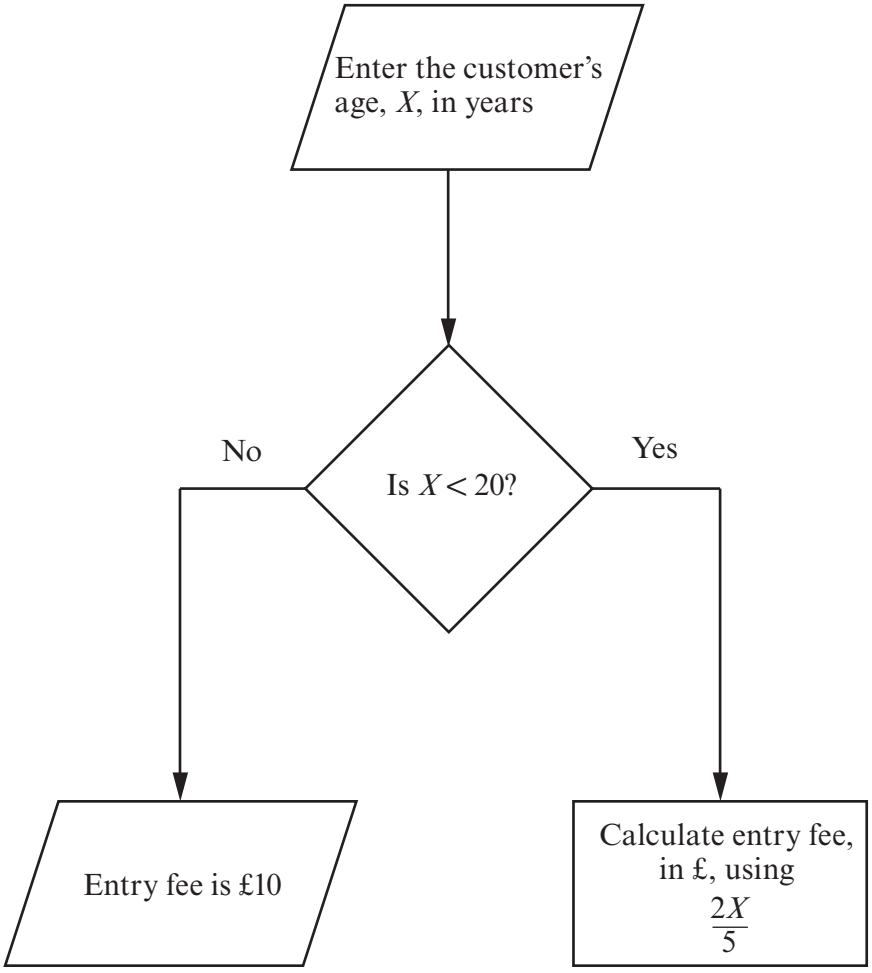
[6]

Examiner only

8. The following section of a flowchart is used to find the entry fee for an Aqua Park.



Use this section of the flowchart to find the Aqua Park entry fee for each of the following customers.

Howard, aged 20

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Betty, aged 10

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Charlie, aged 6

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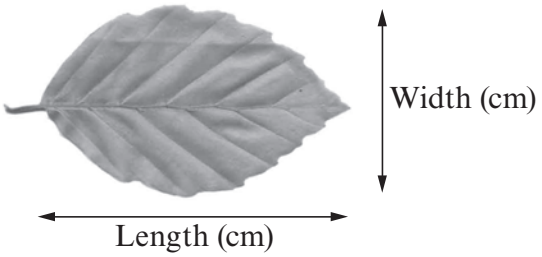
[4]

Examiner only

9. Billy and Shaun both completed a survey.
They collected leaves from a number of trees and decided to measure them.

They agreed on the following decisions.

- The length of the leaf does not include the stem.
- The width of the leaf is measured at the widest section of the leaf.



(a) Why have they both agreed on these decisions about measuring the leaves?

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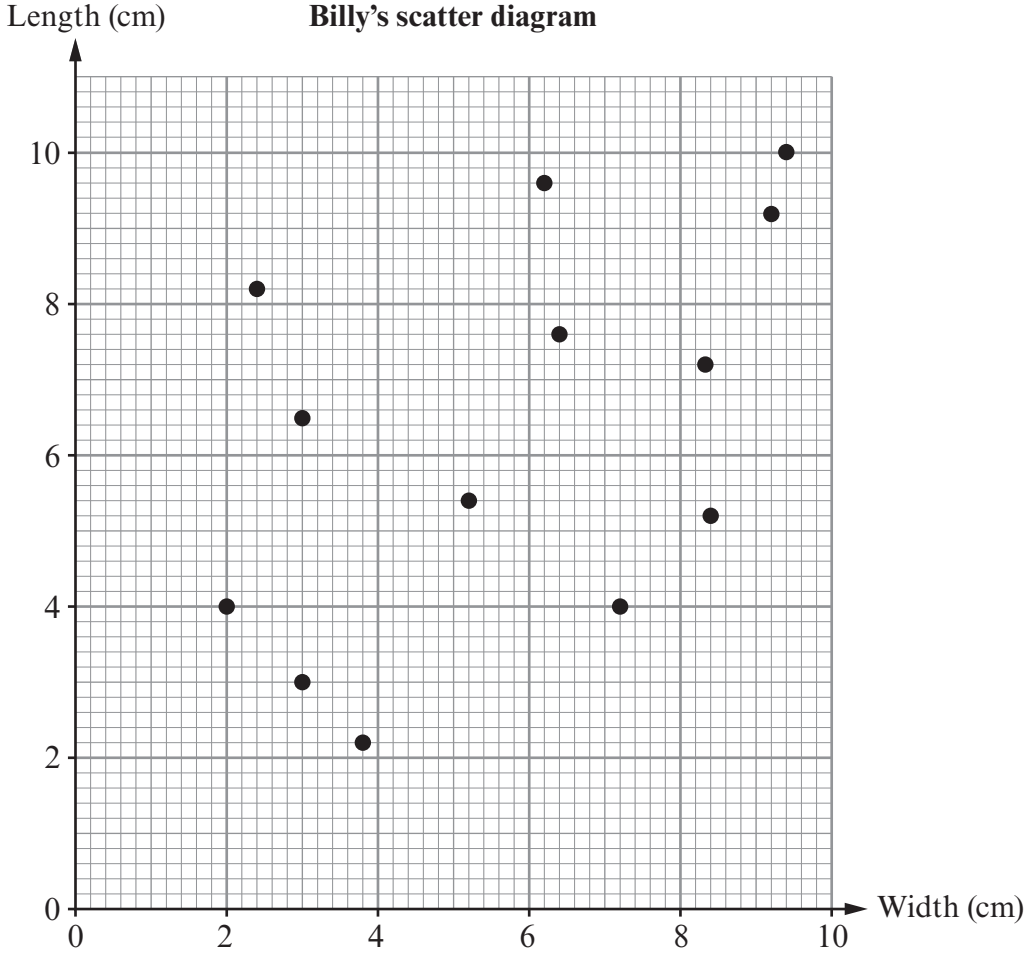
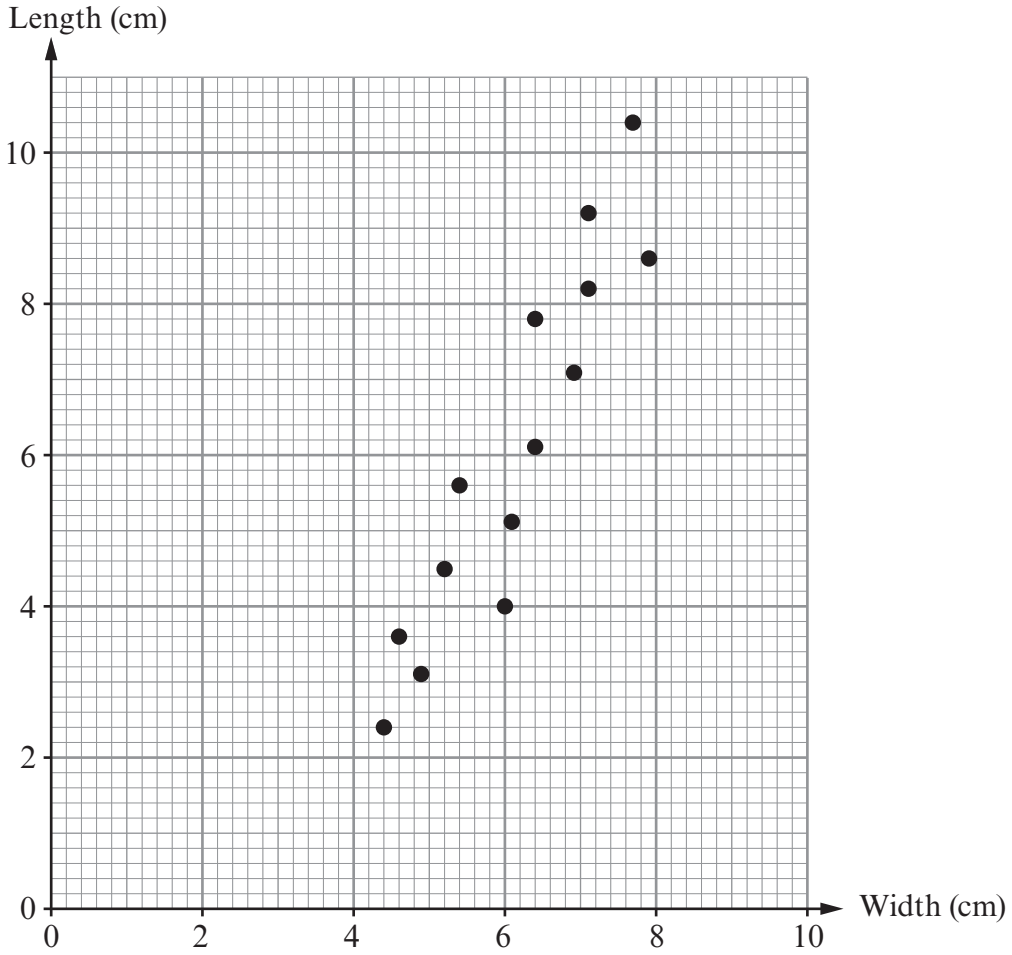
[1]

(b) Billy measured the length and width of each leaf he had collected.
Shaun did the same with his leaves.
They displayed the lengths and widths of their own leaves on separate scatter diagrams.
Billy's scatter diagram is shown below and Shaun's scatter diagram is shown opposite.



Examiner only

Shaun's scatter diagram



(i) Who found the longest leaf? .....

Write down the length of this leaf. ..... cm [1]

(ii) One of the two boys collected leaves from a variety of trees.
Who was this, Billy or Shaun? Give a reason for your answer.

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[1]

(iii) Draw, by eye, a line of best fit on Shaun's scatter diagram. [1]

(iv) Shaun realises he has one more leaf that he has not included on his scatter diagram.
The leaf is damaged in such a way that Shaun cannot measure its width.
The leaf is of length 8·5 cm.
Write down a reasonable estimate for the width of this leaf.

Width ..... cm

[1]

Turn over.

Examiner only

10. Laura has her own car.

During April

- Laura drove a total distance of 560 miles in her car.
- Her car's fuel consumption was 37·8 mpg (miles per gallon).
- Petrol cost £1.48 per litre.

(a) 1 gallon is approximately 4·55 litres. Calculate the cost of the petrol that Laura used during April.
You must show all your working.

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[5]

Examiner only

(b) (i) Laura spent 10 hours 45 minutes driving during April.
Calculate the average speed of Laura's car for the distance driven during April.
Give your answer in miles per hour.

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[3]

(ii) Select which of the following best describes the roads on which Laura travelled during April.

You must give a reason for your answer.

A: Mainly small narrow country lanes
B: Mainly inner city roads with lots of traffic lights
C: Mainly motorways and dual carriageways
D: Mainly steep mountain routes with many sharp bends
E: Mainly roads with speed limits of 30 mph

Reason:

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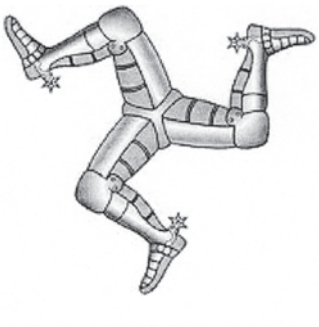
[1]

Examiner only

11. A plate manufacturer wishes to design a pattern to be printed on a new circular dinner plate. They consider three possible designs as shown below.

Rings

Petals



Legs

The new design must satisfy the following criteria.

Given that

n = the number of lines of symmetry

r = the order of rotational symmetry

then $n > 2$ and $r - n = 0$

Complete the following table.

Design	n	r	Satisfies the criteria? Yes or No
Rings			
Petals			
Legs			

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[3]

Examiner only

12. *Abbiford Computers* sells computer systems.
Their customers are Internet businesses and town centre shops.
All customers are given access to a helpline when they are setting up a new computer system.
Abbiford Computers carried out a survey to find the number of times each customer called the helpline.
The stem-and-leaf diagram shows the results of the survey.

Internet businesses		Town centre shops
1	4	
	3	
3	2	2 3 5 7
5 3	1	1 4 4 6 8
7 4 3 3 2 2 2	0	7 9

Key: Internet businesses 3 | 2 means 23 calls
Town centre shops 1 | 8 means 18 calls

(a) Complete the following table.

	Median	Range	Mode
Internet businesses			
Town centre shops			

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[3]

(b) The director of *Abbiford Computers* tells the helpline manager:

"41 calls is not good enough. We need to provide better help for the Internet businesses buying computer systems from us."

How do you think the helpline manager should reply to the Director.....

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[1]

END OF PAPER