Centre Number						Candidate Number				
Surname										
Other Names										
Candidate Signature										

For Examiner's Use	
Examiner's Initials	
Pages	Mark
3	
4–5	
6–7	
8–9	
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12–13	
14–15	
16–17	
18–19	
20–21	
22	
TOTAL	

General Certificate of Secondary Education
Foundation Tier
January 2013

Mathematics (Linear) 43651F

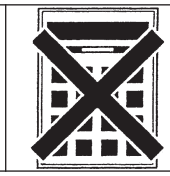
Paper 1

Friday 11 January 2013 9.00 am to 10.15 am

F

For this paper you must have:
- mathematical instruments.

You must **not** use a calculator.



Time allowed
- 1 hour 15 minutes

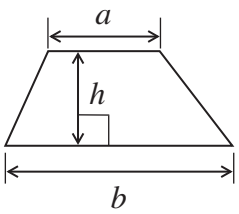
Instructions
- Use black ink or black ball-point pen. Draw diagrams in pencil.
- Fill in the boxes at the top of this page.
- Answer **all** questions.
- You must answer the questions in the spaces provided. Do not write outside the box around each page or on blank pages.
- Do all rough work in this book.

Information
- The marks for questions are shown in brackets.
- The maximum mark for this paper is 70.
- The quality of your written communication is specifically assessed in Questions 9, 12 and 21. These questions are indicated with an asterisk (*).
- You may ask for more answer paper, tracing paper and graph paper. These must be tagged securely to this answer book.

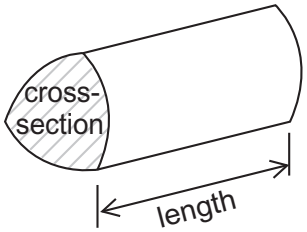
Advice
- In all calculations, show clearly how you work out your answer.

Formulae Sheet: Foundation Tier

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

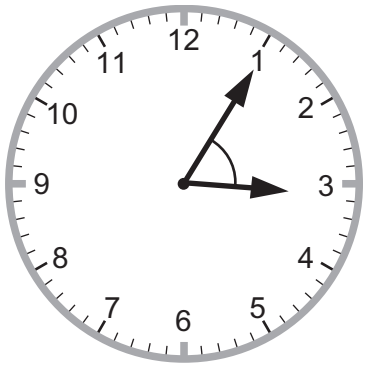


Volume of prism = area of cross-section $\times$ length



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

1 The clock shows the time that Helen finishes school.



1 (a) Write down the time shown on the clock.

Answer ..... *(1 mark)*

1 (b) Circle the type of angle marked between the minute hand and the hour hand.

Acute Right Obtuse Reflex

(1 mark)

1 (c) Helen has three lessons in the morning.

Lesson 1 starts at 0910.
Each lesson is 60 minutes long.
There is a 15-minute break between lessons 2 and 3.

At what time does lesson 3 end?

.....

.....

.....

.....

Answer ..... *(3 marks)*

5

Turn over ▶

2 (a) Circle the multiple of 9.

8 10 13 16 20 27

(1 mark)

2 (b) Circle the factor of 30.

8 10 13 16 20 27

(1 mark)

2 (c) Circle the square number.

8 10 13 16 20 27

(1 mark)

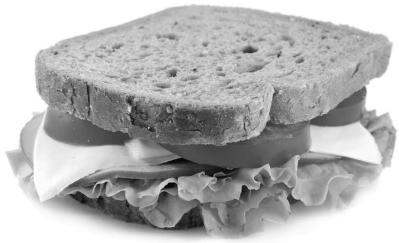
2 (d) Circle the prime number.

8 10 13 16 20 27

(1 mark)

3

65p



£1.10

Sam has £5.

Can she buy three drinks and three sandwiches?
You **must** show your working.

.....

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(3 marks)

4 Here are five numbers.

5 9 10 7 9

4 (a) What is the mode?

.....

Answer ..... *(1 mark)*

4 (b) Show clearly that the median is 9.

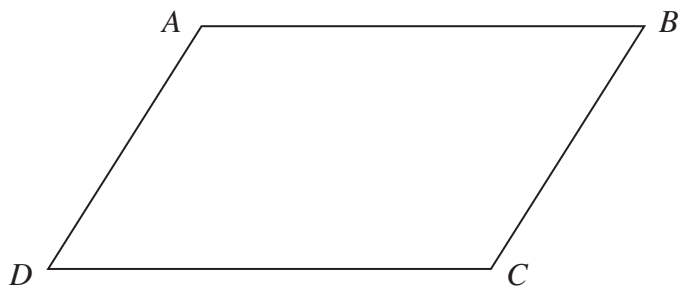
.....

.....

(1 mark)

9

5 Here is a parallelogram.

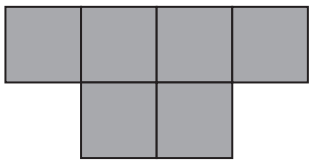


Tick a box to show whether each statement is true or false.

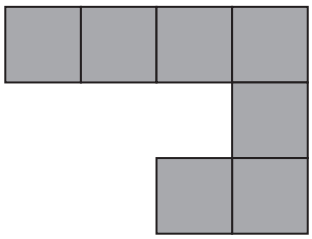
	True	False
AB is parallel to DC.	☐	☐
Angle A = Angle C	☐	☐
The parallelogram has 2 lines of symmetry.	☐	☐
The parallelogram has rotational symmetry of order 2.	☐	☐

(3 marks)

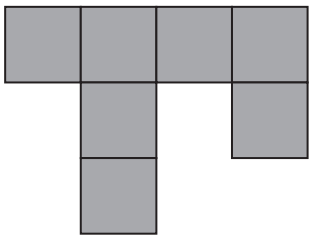
6 Six shapes are made from centimetre squares.



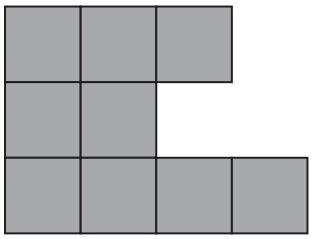
A



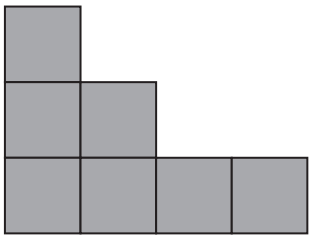
B



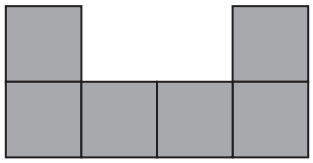
C



D



E



F

6 (a) Complete the following sentences.

Shape A and Shape ..... fit together to make a rectangle.

Shape B and Shape D fit together to make a .....

(2 marks)

6 (b) Work out the area of Shape D.
State the units of your answer.

.....

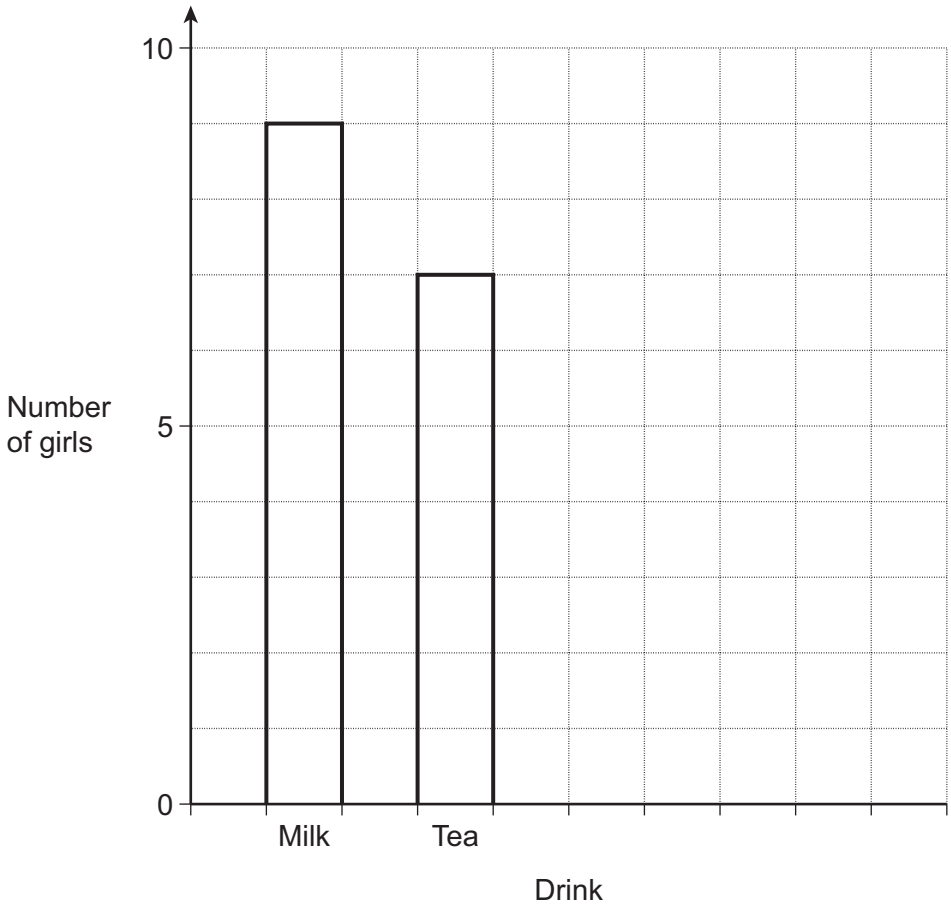
Answer ..... *(2 marks)*

7

7 The table shows the favourite drinks of 25 girls.

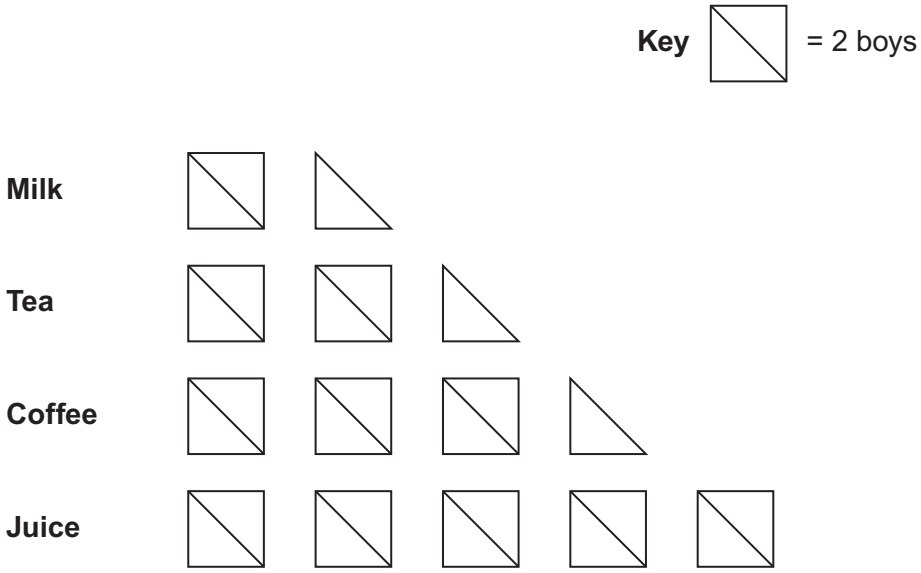
Drink	Milk	Tea	Coffee	Juice
Number of girls	9	7	4	5

7 (a) Complete the bar chart to show this information.



(2 marks)

7 (b) The pictogram shows the favourite drinks of 25 boys.



How many **more** boys than girls prefer coffee?

.....

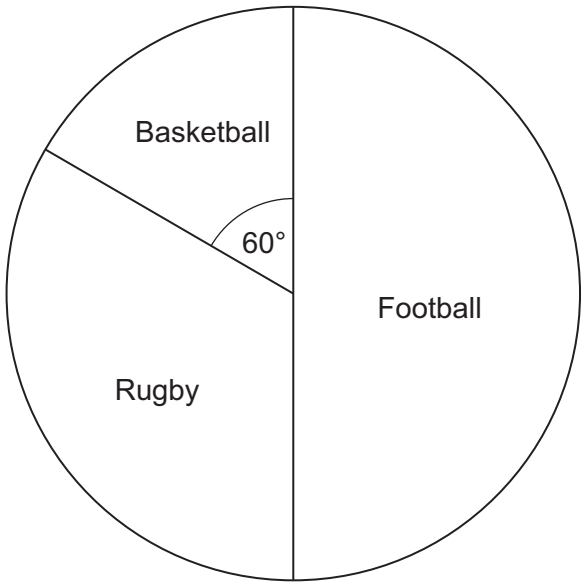
.....

.....

Answer ..... *(3 marks)*

5

8 The pie chart shows the sports played by 30 boys.



8 (a) How many boys play Football?

.....

Answer ..... *(1 mark)*

8 (b) How many boys play Rugby?

.....

.....

Answer ..... *(2 marks)*

***9** Write these values in order, starting with the smallest.

$\frac{1}{10}$ 0.2 11%

You **must** show your working.

.....

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.....

.....

Answer ..... *(3 marks)*

Turn over for the next question

6

10 (a) Jess ran a race in 54.34 seconds.
The winning time was 2 hundredths of a second less than her time.

What was the winning time?

.....

Answer ..... seconds *(1 mark)*

10 (b)

In a 400-metre hurdles race

the first hurdle is 45 m from the start
the last hurdle is 40 m from the finish
the rest of the hurdles are 35 m apart.

What is the total number of hurdles?
You **must** show your working.

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Answer ..... *(3 marks)*

4

11 $P = 2a + 3b$

Work out the value of P when $a = 11$ and $b = 5$

.....

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.....

Answer ..... *(2 marks)*

***12** A school hall costs £200 to hire.
Parents get a 10% discount.
30 parents share the cost equally.

How much does each parent pay?

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.....

Answer £ ..... *(4 marks)*

13 Here are two sets of cards.

Set A	4	7	6	X
Set B	2	5	1	X

X has the same value on both cards.
Each set of cards has a range of 4.

Work out the value of X.

.....

.....

.....

Answer ..... *(2 marks)*

14 Complete this table.

3^0	3^1	3^2	3^3	3^4	3^5	3^6	3^7
1	3	9			243	729	2187

(2 marks)

10

15 (a) The rule for continuing a sequence is

Double the previous term and add 5

A sequence starts 5 15 35 .....

Work out the next term in this sequence.

Answer ..... *(1 mark)*

15 (b) A different sequence follows the same rule.

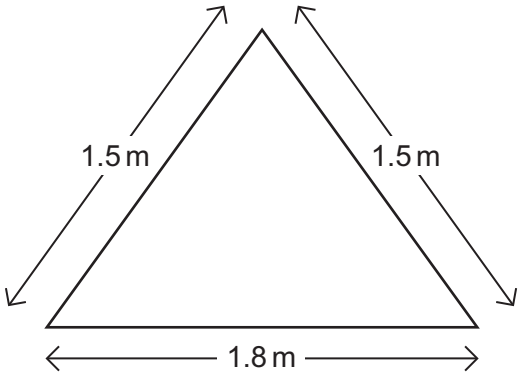
Double the previous term and add 5

The **third** term of this sequence is 27.

Work out the **first** term.

Answer ..... *(3 marks)*

16 Jack is 1.28 metres tall.
He has a tent in the shape of a triangular prism.
The diagram shows the front view of the tent.



Not drawn accurately

The base of the tent has been drawn to scale below.

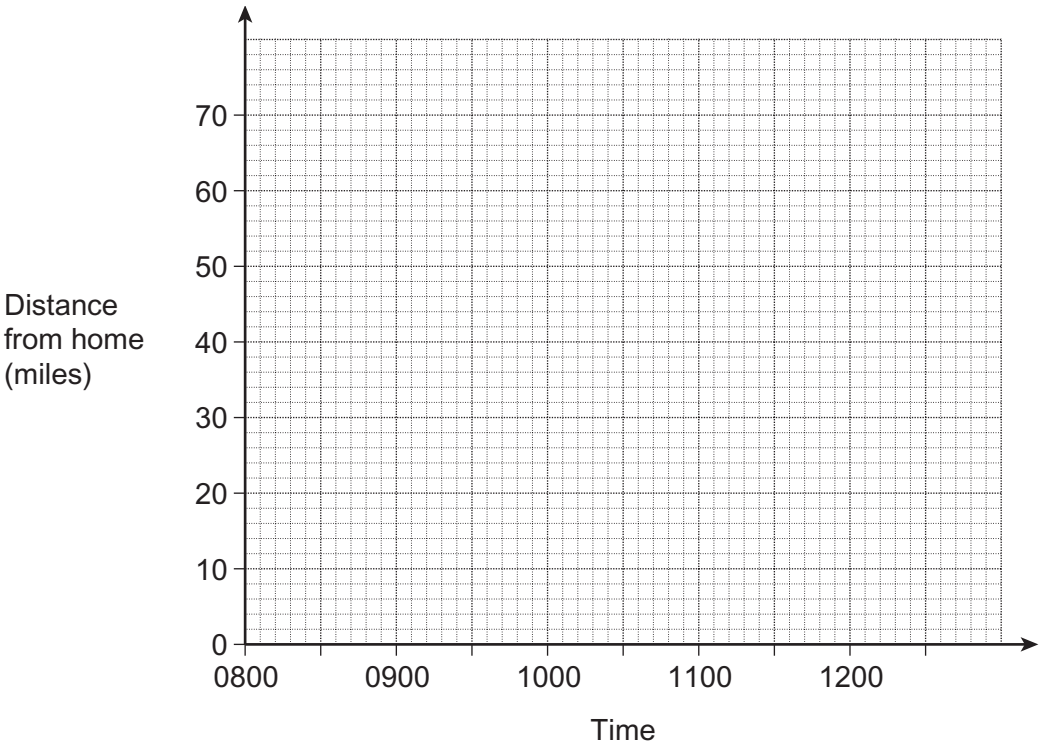
Complete the scale drawing to work out if Jack can stand up in the middle of the tent.
Show how you decide.

Scale: 1 cm represents 20 cm

(3 marks)

7

17 Dan leaves home at 0800.
He drives 60 miles from home in the first 90 minutes.
He stops for 30 minutes.
He then drives home at an average speed of 50 mph.



17 (a) Draw a distance-time graph to show Dan's journey.

(3 marks)

17 (b) A TV programme starts at 1130.

Does Dan get home in time for the start?
Show how you decide.

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.....

.....

(1 mark)

18 This grid follows two rules.

Rule 1 The sums of each row are equal.

Rule 2 The products of each column are equal.

				Sum of rows
	5	32	80	117
	96	15	6	117
Product of columns	480	480	480	

The grid below follows the same two rules.

Work out the missing numbers.

				Sum of rows
		5	6	
Product of columns	60			

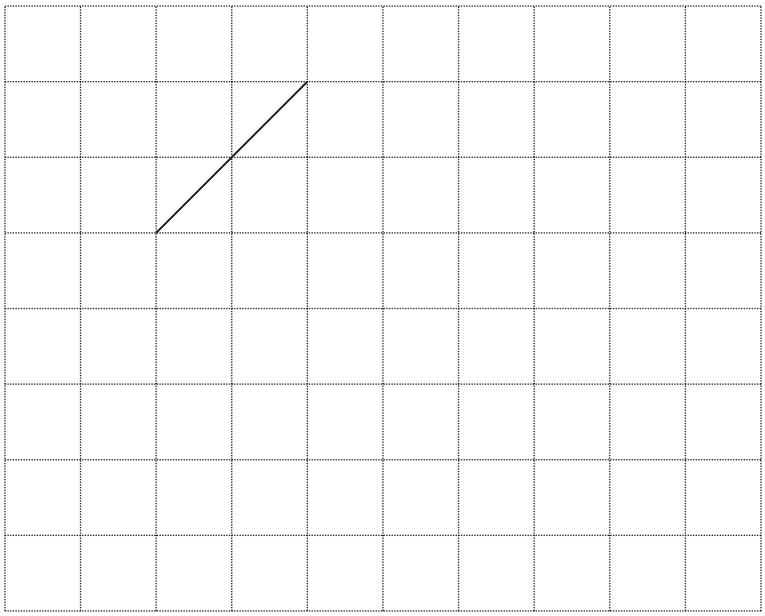
(3 marks)

7

Turn over ▶

19 This is a centimetre grid.

Draw a kite with an area of 12 cm^2.
One side has been drawn for you.



(2 marks)

20 Work out the nth term of this sequence

6 10 14 18 22 ....

Answer ..... *(2 marks)*

***21 (a)** Show the inequality $x > -2$ on the number line.

(1 mark)

21 (b) Solve the inequality $3x + 5 \leqslant 11$

.....

.....

.....

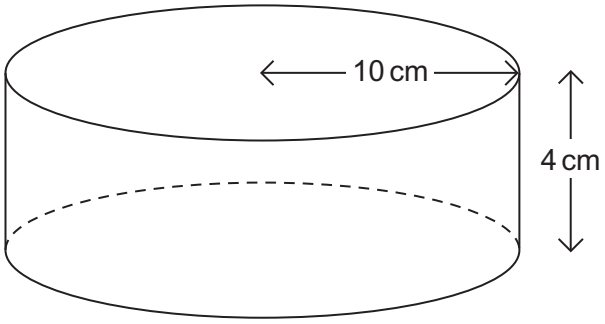
Answer ..... *(2 marks)*

Turn over for the next question

7

22 The radius, r, of the cylinder is 10 cm.
The height, h, is 4 cm.

The volume, V, of a cylinder is $V = \pi r^2 h$



Work out the volume of the cylinder.
Use $\pi = 3.1$

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Answer ..... cm^3 *(3 marks)*

END OF QUESTIONS

3

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