Centre Number						Candidate Number				
Surname										
Other Names										
Candidate Signature										

For Examiner's Use	
Examiner's Initials	
Pages	Mark
2–3	
4–5	
6–7	
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10–11	
12–13	
14–15	
16–17	
18–19	
20–21	
22–23	
TOTAL	

General Certificate of Secondary Education
Foundation Tier
June 2012

Mathematics (Linear) 43651F

Paper 1

Monday 11 June 2012 1.30 pm to 2.45 pm

F

For this paper you must have:
- mathematical instruments.

You must **not** use a calculator.

Time allowed
- 1 hour 15 minutes

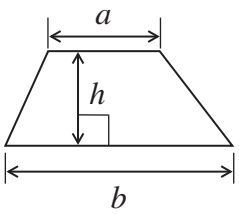
Instructions
- Use black ink or black ball-point pen. Draw diagrams in pencil.
- Fill in the boxes at the top of this page.
- Answer **all** questions.
- You must answer the questions in the spaces provided. Do not write outside the box around each page or on blank pages.
- Do all rough work in this 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 2 and 7. 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.

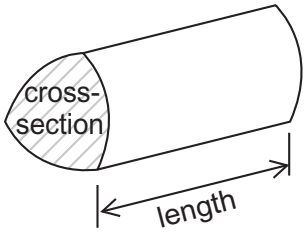
Advice
- In all calculations, show clearly how you work out your answer.

Formulae Sheet: Foundation Tier

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

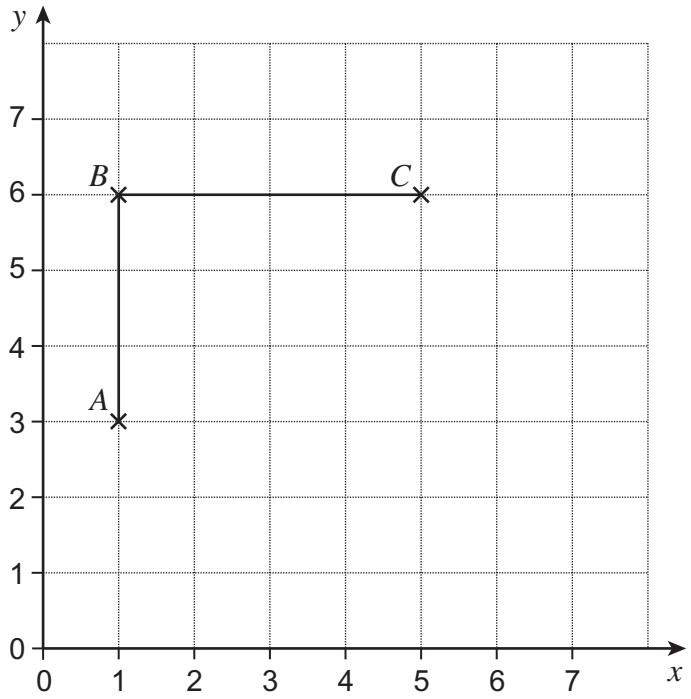


Volume of prism = area of cross-section $\times$ length



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

1 Lines AB and BC are shown on the centimetre grid.



1 (a) Write down the coordinates of point A.

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

1 (b) A, B and C are three corners of a rectangle $ABCD$.

Complete the rectangle on the grid.

(1 mark)

1 (c) Work out the perimeter of rectangle $ABCD$.

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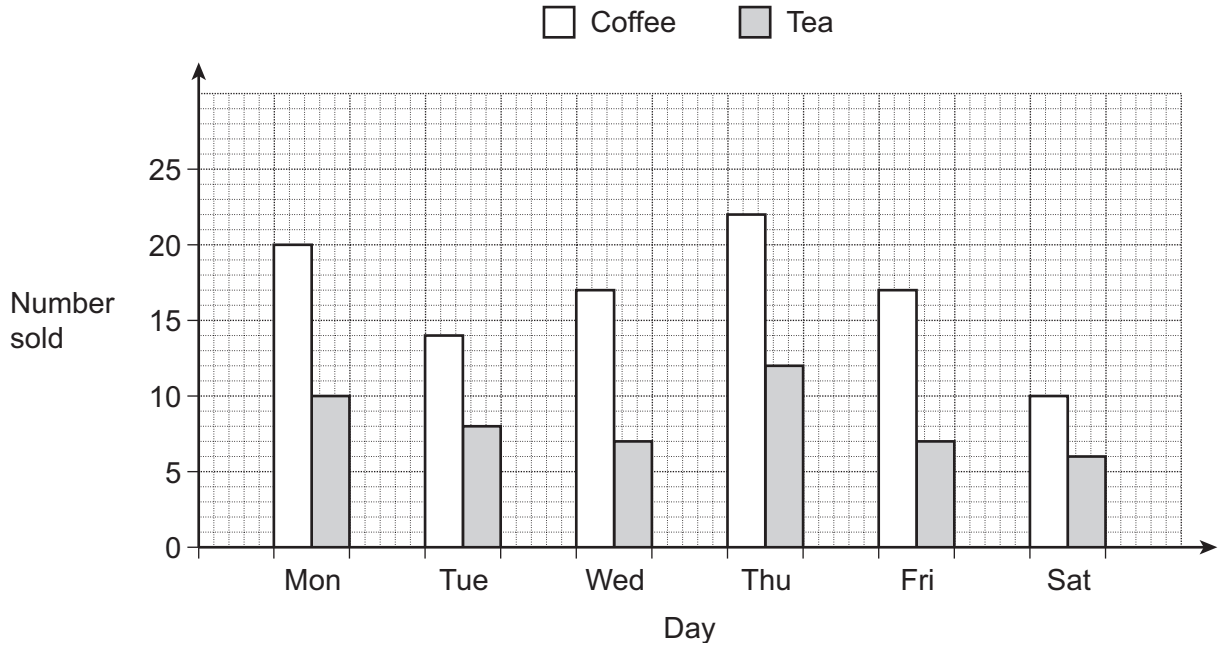
Answer ..... cm *(2 marks)*

4

Turn over ▶

***2** A café sells coffee and tea.
The numbers sold for one week are shown.



2 (a) How many teas were sold on **Monday**?

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

2 (b) Coffee costs £1.20
Tea costs £1.00

How much money did the café take from coffee and tea sales on **Saturday**?

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Answer £ ..... *(3 marks)*

2 (c) 100 coffees were sold that week.

Was coffee twice as popular as tea?
You **must** show your working.

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(3 marks)

3 (a) Work out 149 + 36

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

3 (b) Work out 9×16

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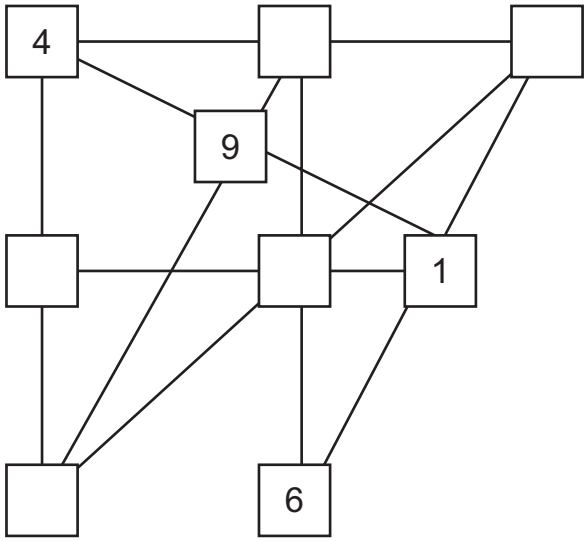
Answer ..... *(1 mark)*

9

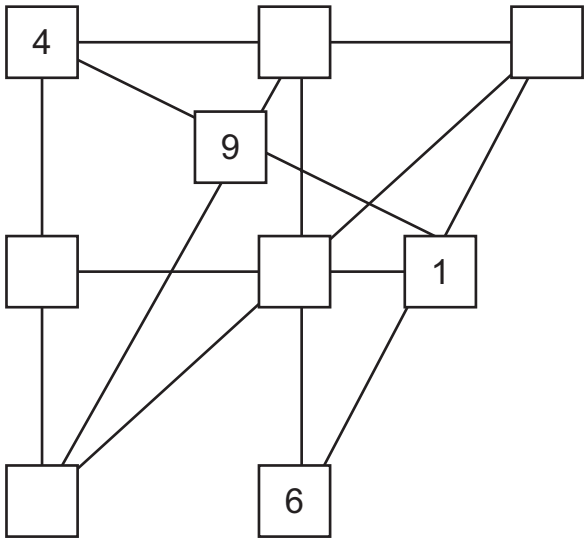
4 In the diagram, the three boxes in each straight line have a total of 14.

Complete the diagram using the numbers 2, 3, 5, 7 and 8.

You can use this diagram to practise.



Put your final answer on this diagram.



(3 marks)

5 Work out the value of $3a + 5b$ when $a = 2$ and $b = 7$

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

6 (a) Write down the value of $\sqrt{100}$

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

6 (b) Write down the value of 13^2

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

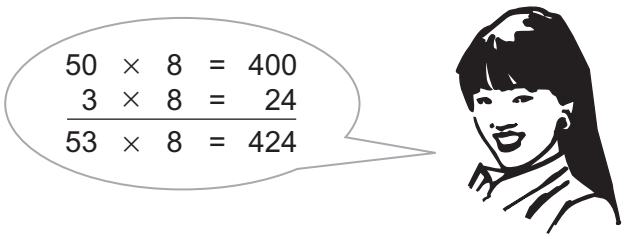
Turn over for the next question

7

*7 The first five lines of the 8-times table are shown.

1×8	8
2×8	16
3×8	24
4×8	32
5×8	40

7 (a) Vicky uses the table to work out 53×8



Use Vicky's method to work out 34×8

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

7 (b) Eight friends win £4032
They share the money equally.

Work out what each friend gets.

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Answer £ ..... *(2 marks)*

8 Work out 80% of 300

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

9 (a) Circle the cube number.

25 27 31 32 44 45

(1 mark)

9 (b) Circle the prime number.

25 27 31 32 44 45

(1 mark)

9 (c) Circle a number that is a factor of 900

25 27 31 32 44 45

(1 mark)

10

10 A train timetable is shown.

Southampton	10:15	11:45	13:15
Plymouth	14:54	16:24	17:57
Devonport	14:58	16:28	18:01

10 (a) William catches the 10:15 from Southampton.
He arrives in Devonport 4 minutes late.

What time does he arrive in Devonport?

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

10 (b) How long is William's total journey?

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

10 (c) Kate catches the 11:45 from Southampton.
She arrives in Plymouth on time.

She goes shopping.
She gets back to Plymouth station 90 minutes later.

Is she back in time to catch the 17:57 train?
You **must** show your working.

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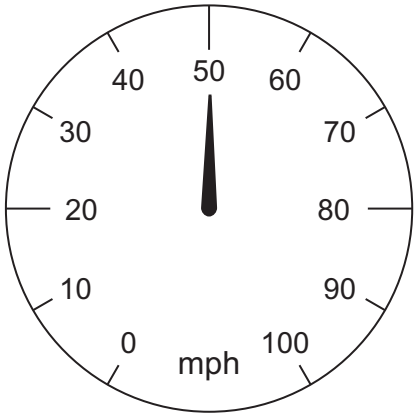
(2 marks)

Turn over for the next question

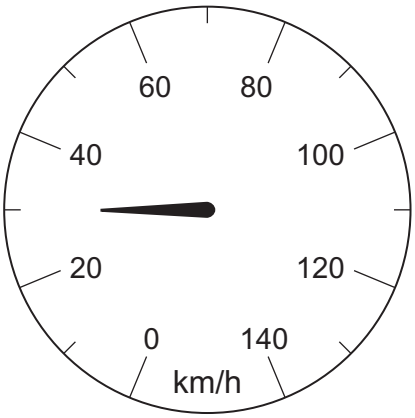
5

11 (a) This speedometer shows a speed of 50 **miles per hour** (mph).

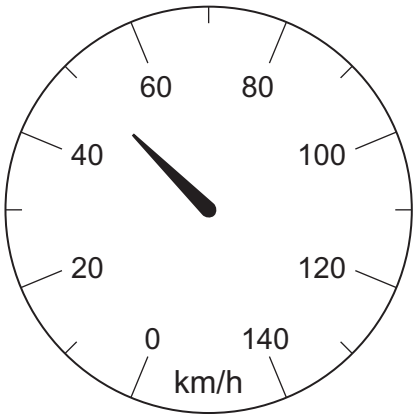


These speedometers are marked in **kilometres per hour** (km/h).

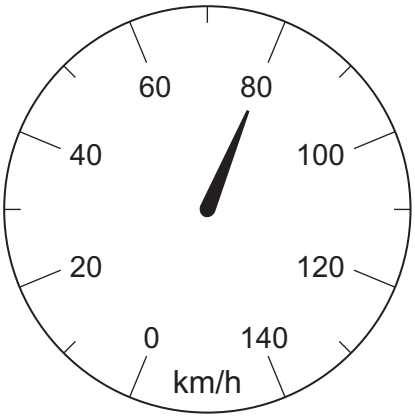
A



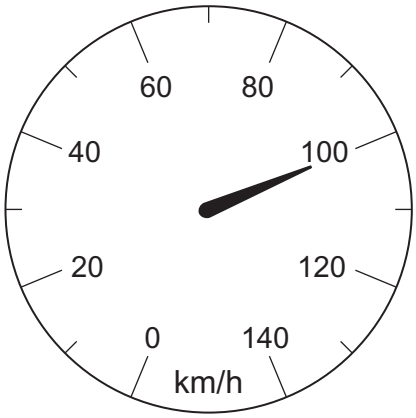
B



C



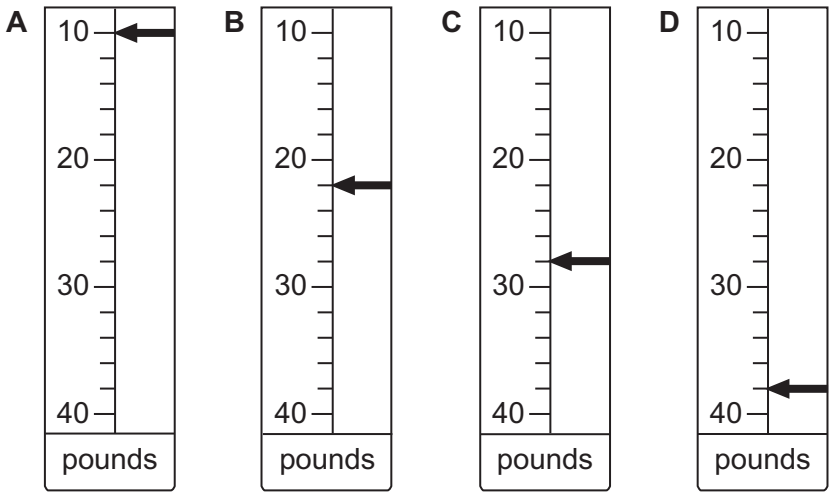
D



Which speedometer shows a speed the same as 50 mph?

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

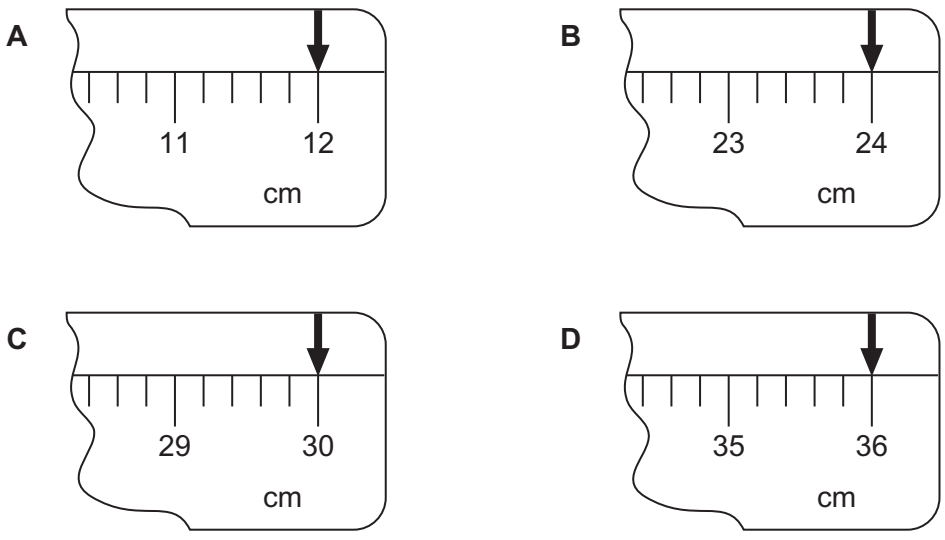
11 (b) Here are four scales showing some weights in **pounds**.



Which scale shows a weight the same as 10 kilograms?

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

11 (c) Here are some rulers showing lengths in **centimetres**.



Which ruler shows a length the same as 12 inches?

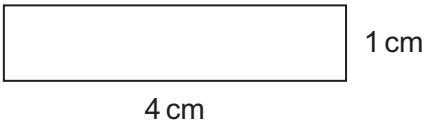
Answer ..... *(1 mark)*

3

Turn over ▶

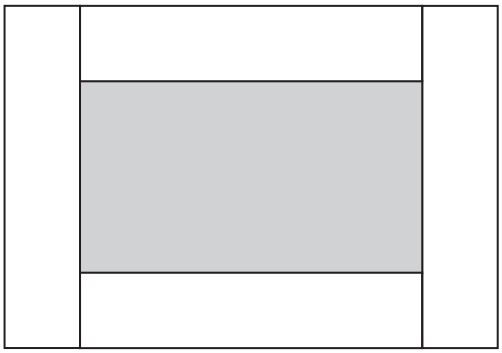
12 The diagram shows a rectangle.

Not drawn accurately



12 (a) Four of these rectangles are put together as shown.

Not drawn accurately



Work out the shaded area.

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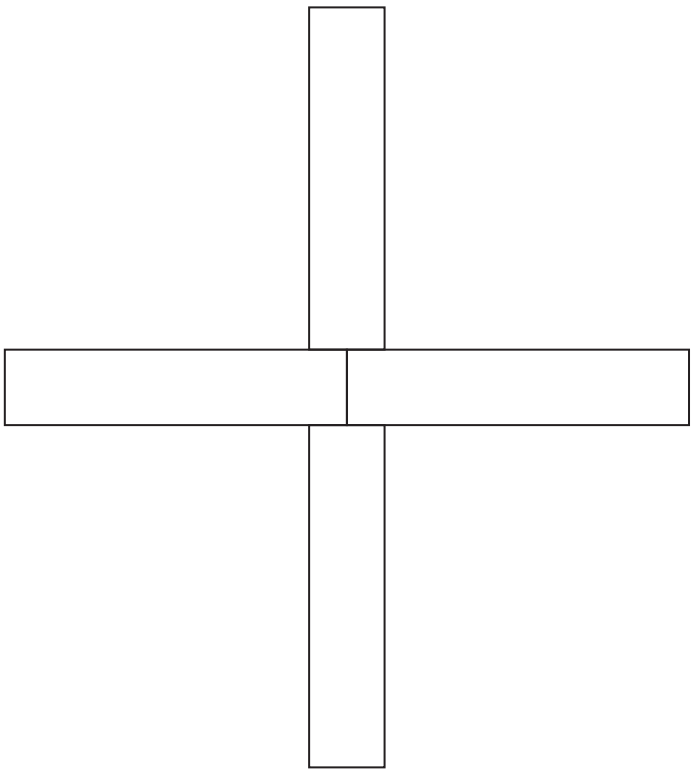
Answer ..... cm^2 *(2 marks)*

12 (b) The four rectangles are now put together to make this shape.



Not drawn accurately

Work out the perimeter of the shape.
You **must** show your working.

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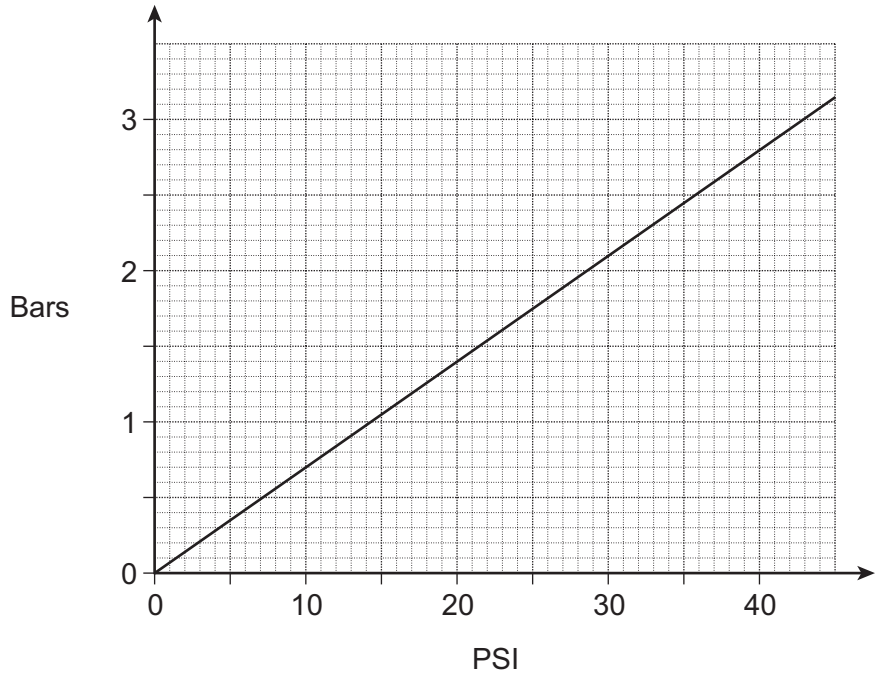
Answer ..... cm *(3 marks)*

5

13 Tyre pressure for bicycles is measured in pounds per square inch (PSI) or Bars.

Here is a conversion graph for PSI and Bars.



13 (a) Use the graph to convert 40 PSI to Bars.

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

13 (b) The tyre pressure for a racing bicycle is 100 PSI.

Work out this pressure in Bars.
You **must** show your working.

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

14 (a) Expand $3(x - 6)$

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

14 (b) Factorise $5y - 10$

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

14 (c) Expand and simplify $3(4w + 1) - 5(3w - 2)$

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

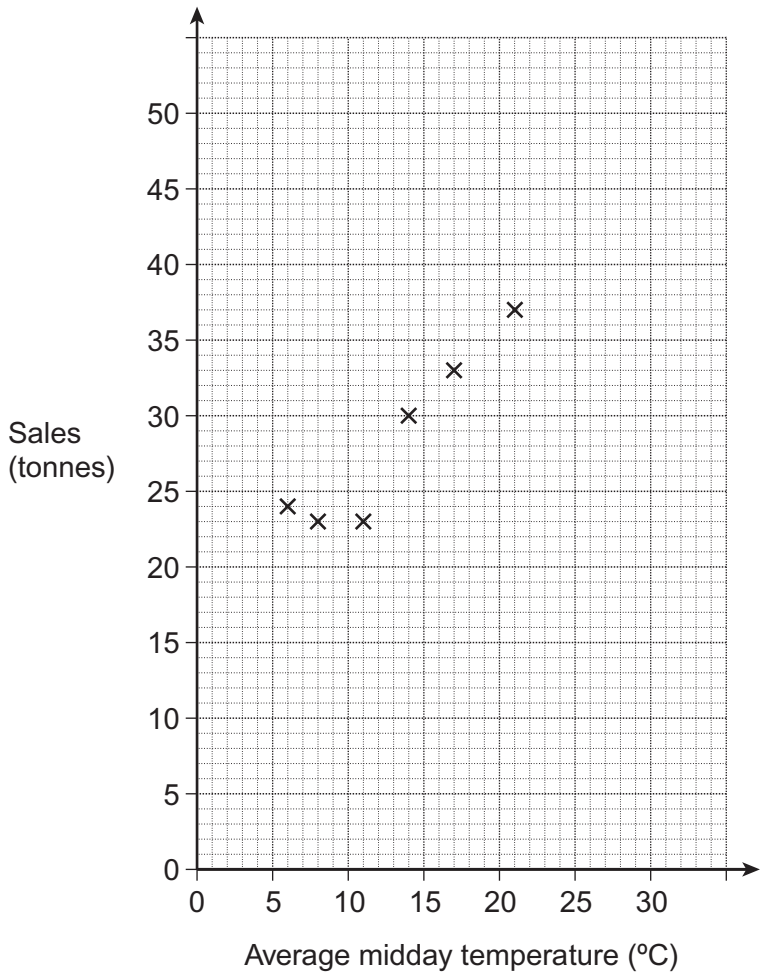
Turn over for the next question

9

15 A company sells ice cream.
The average midday temperature and the sales for each month in 2011 are shown.

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Average midday temperature (ºC)	8	6	11	14	17	21	22	29	20	14	10	4
Sales (tonnes)	23	24	23	30	33	37	39	47	36	28	22	23

15 (a) Complete the scatter diagram by plotting the values for July to December.
The values for January to June have been done for you.



(2 marks)

15 (b) In July 2012, the average midday temperature is predicted to be 25 ºC.

Use the graph to estimate the sales of ice cream in July 2012.
Show clearly how you obtain your answer.

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

15 (c) In December 2012, the average midday temperature is predicted to be 5 ºC higher than in December 2011.

Should the company increase its production of ice cream for December 2012?
Tick a box.

Yes ☐ No ☐

Give a reason for your answer.

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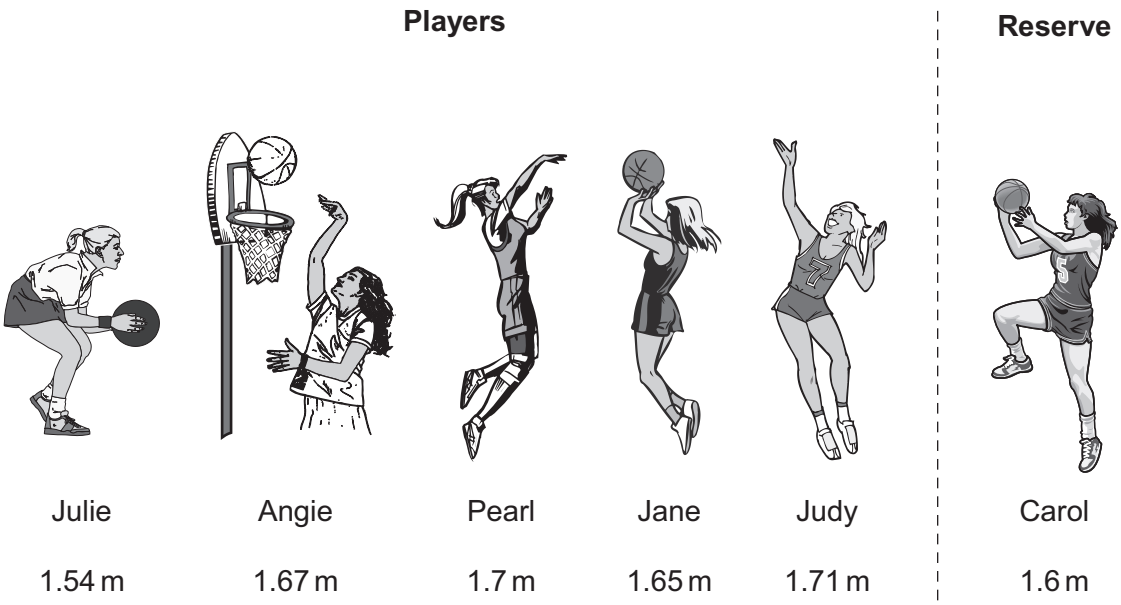
(1 mark)

Turn over for the next question

5

16 A basketball team has five players and one reserve.
Their names and heights are shown.



16 (a) Which girl is the second tallest?

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

16 (b) One of the **five** players is picked at random.

What is the probability her name begins with J?

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

16 (c) The mean weight of the **five** players is 58 kg.
The reserve weighs 64 kg.

Work out the mean weight of all **six** team members.

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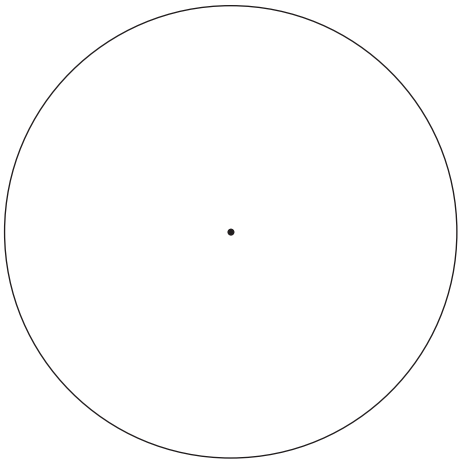
Answer ..... kg *(3 marks)*

Turn over for the next question

5

17 This circle is drawn accurately.



Work out the area of the circle.
Give your answer in terms of π.

State the units of your answer.

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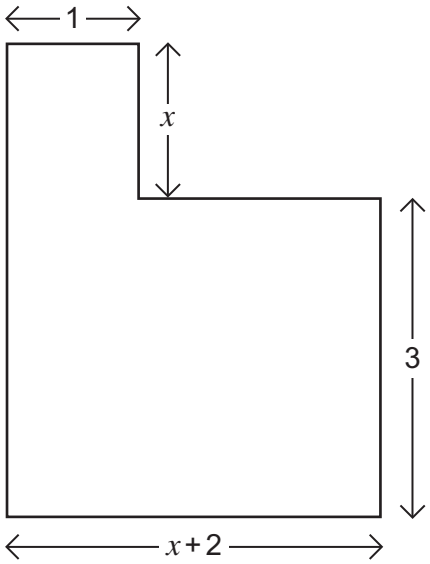
Answer ..... *(4 marks)*

18 The L-shape below has an area of 12 cm^2.
All corners are right angles.
All lengths are in centimetres.



Not drawn accurately

Work out the value of x.

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Answer ..... cm *(4 marks)*

END OF QUESTIONS

8

There are no questions printed on this page

DO NOT WRITE ON THIS PAGE
ANSWER IN THE SPACES PROVIDED