

Please write clearly in block capitals.

Centre number

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Candidate number

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Surname

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Forename(s)

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Candidate signature

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# GCSE MATHEMATICS (LINEAR)

# F

Foundation Tier Paper 2

Thursday 9 June 2016

Morning

Time allowed: 1 hour 45 minutes

## Materials

For this paper you must have:

- a calculator
- mathematical instruments.



## Instructions

- Use black ink or black ball-point pen. Draw diagrams in pencil.
- 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 105.
- The quality of your written communication is specifically assessed in Questions 4, 17 and 22. These questions are indicated with an asterisk (\*).
- You may ask for more answer paper, graph paper and tracing paper. These must be tagged securely to this answer book.

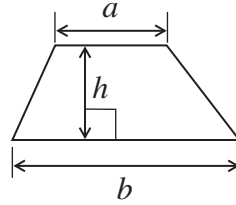
## Advice

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

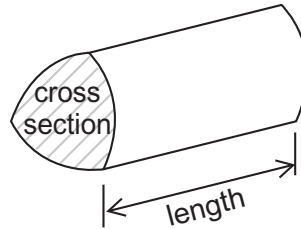


**Formulae Sheet: Foundation Tier**

**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 (a)** Circle the multiple of 9

4.5      19      36      42      60

[1 mark]

**1 (b)** Circle the factor of 76

4      6      8      24      152

[1 mark]

**1 (c)** Circle the cube number.

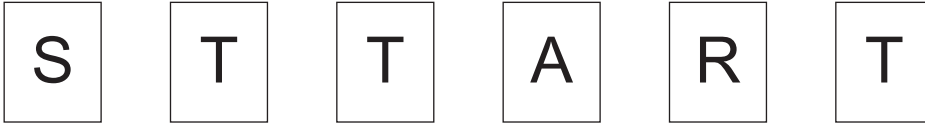
4      16      30      81      1000

[1 mark]

**Turn over for the next question**



**2 (a)** Here are some letter cards.



Here is a list of words that describe chance.

impossible      unlikely      evens      likely      certain

A card is picked at random.

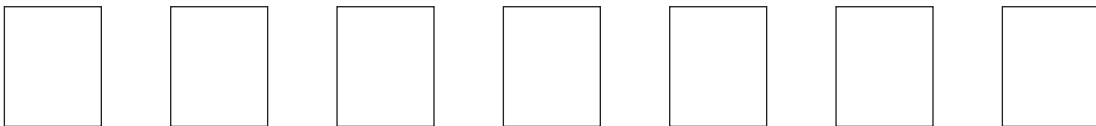
Choose **one** word from the list to describe each sentence.

**[2 marks]**

The card has a letter T on it. \_\_\_\_\_

The card has a letter W on it. \_\_\_\_\_

**2 (b)** Here are seven blank cards.



Write a letter on each card so that when picking a card at random,

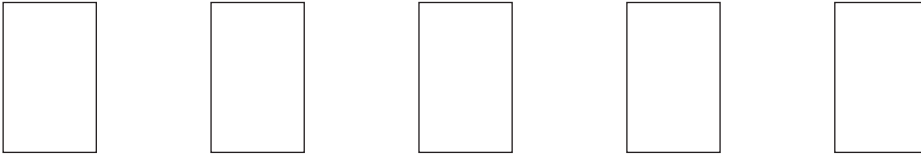
B is likely

**and** D has twice the chance of being picked as C.

**[2 marks]**



**2 (c)** Here are five blank cards.



Write the number 2, 3 or 4 on each card so that when picking a card at random,

4 has the greatest chance of being picked but is **not** certain

**and** 2 and 3 have the same chance of being picked.

**[2 marks]**

**Turn over for the next question**



**3 (a)** 30 men and 10 women choose one activity from fishing, walking and climbing.

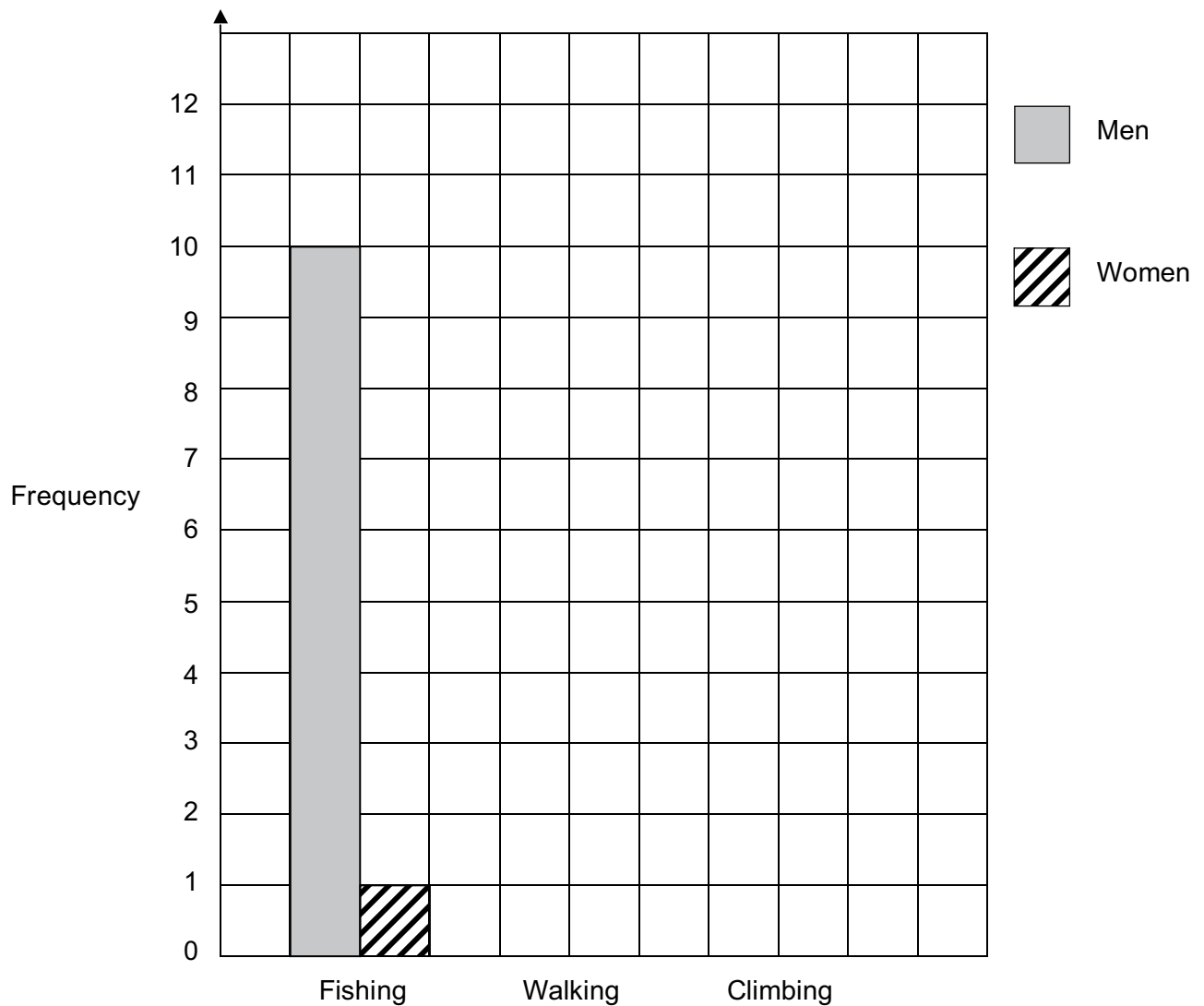
10 men choose fishing.

1 woman chooses fishing.

12 men choose walking.

2 more men than women choose climbing.

Complete the dual bar chart.



**[3 marks]**



**3 (b)** 38 children choose a sport.

Sport	Football	Hockey	Tennis
Number of children	24	10	4

For each sport a **minimum** of 1 adult for every 8 children is needed.

Work out the **minimum** number of adults needed in total.  
Put your answers in the table.

**[3 marks]**

Sport	Football	Hockey	Tennis	Total
Number of children	24	10	4	38
Minimum number of adults needed				

**Turn over for the next question**



4 Jack's normal pay is £10.50 per hour.

\*4 (a) Work out his pay for working 35 hours.

[2 marks]

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Answer £ \_\_\_\_\_

4 (b) On Saturday, his pay per hour is £5.25 **more** than his normal pay of £10.50

How much is he paid for working 4 hours on Saturday?

[2 marks]

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Answer £ \_\_\_\_\_





**4 (c)** Another week he  
works 28 hours at normal pay  
**and** works on Saturday.

His total pay for the week is £372.75

How many hours does he work on Saturday?

**[3 marks]**

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Answer \_\_\_\_\_ hours

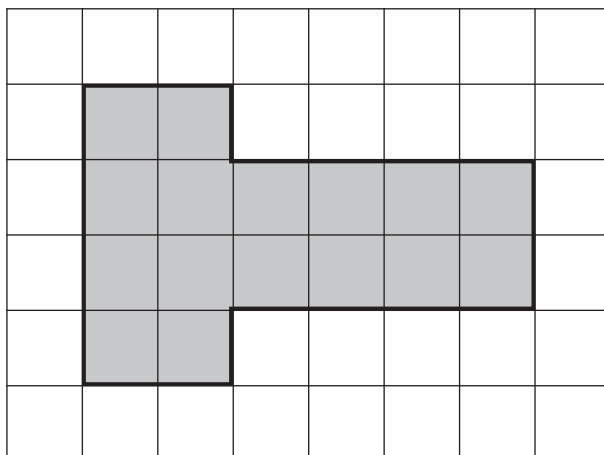
**Turn over for the next question**

7
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**Turn over ►**



5 (a) The diagram shows a shape on a centimetre grid.



Work out the area of the shape.  
State the units of your answer.

[2 marks]

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Answer \_\_\_\_\_

5 (b) Tick any statements that are true for the shape in part (a).

[2 marks]

The shape covers **less** than one-third of the grid.

The shape covers **exactly** one-third of the grid.

The shape covers **more** than one-third of the grid.

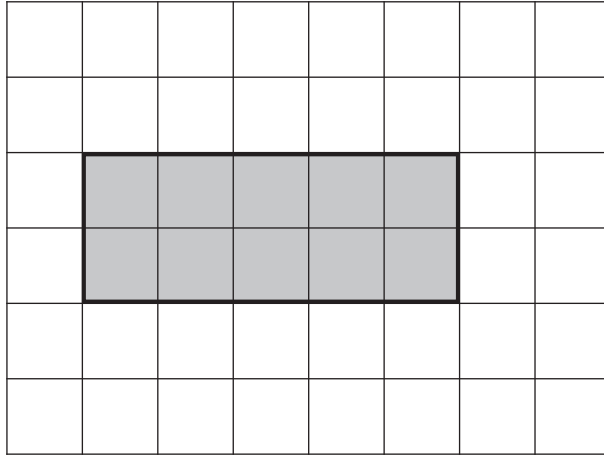
The shape covers **less** than one-half of the grid.

The shape covers **exactly** one-half of the grid.

The shape covers **more** than one-half of the grid.



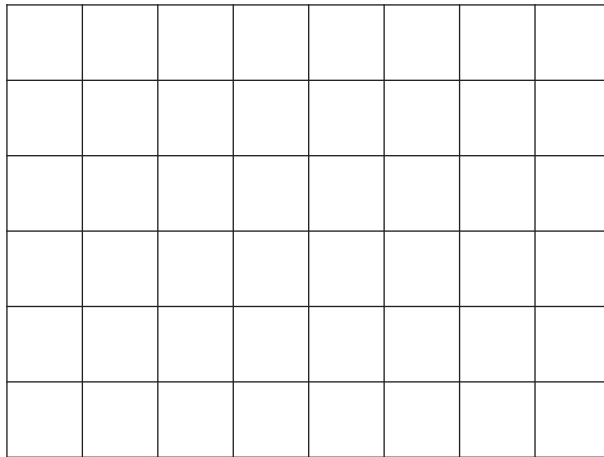
5 (c) On this centimetre grid, a rectangle is shown.



On the centimetre grid below, draw a different rectangle  
with the **same** perimeter and a **smaller** area.

Use whole squares only.

[2 marks]



- 6 (a)** Ali is paid £20 000 a year.  
He saves three-eighths of this amount.

How much does he save?

**[2 marks]**

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Answer £ \_\_\_\_\_

- 6 (b)** Belle is paid £32 000 a year.  
Her rent is £6000

Write the rent as a percentage of her pay.

**[2 marks]**

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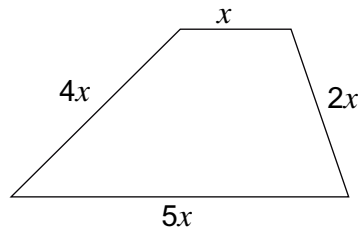
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Answer \_\_\_\_\_ %



- 7 The diagram shows a trapezium.  
All sides are measured in centimetres.

Not drawn accurately



Work out the total length of the sides when  $x = 2.5$  cm

[2 marks]

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Answer \_\_\_\_\_ cm

Turn over for the next question



- 8 (a)** Work out  $10 \text{ km} + 1.5 \text{ km} + 500 \text{ m}$   
Give your answer in metres.

**[2 marks]**

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Answer \_\_\_\_\_ metres

- 8 (b)** How many 125 millimetre glasses can be filled from a 2 litre bottle of water?

**[2 marks]**

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Answer \_\_\_\_\_

- 8 (c)** Use  $5 \text{ miles} = 8 \text{ km}$  to show that 240 miles is approximately 380 km

**[2 marks]**

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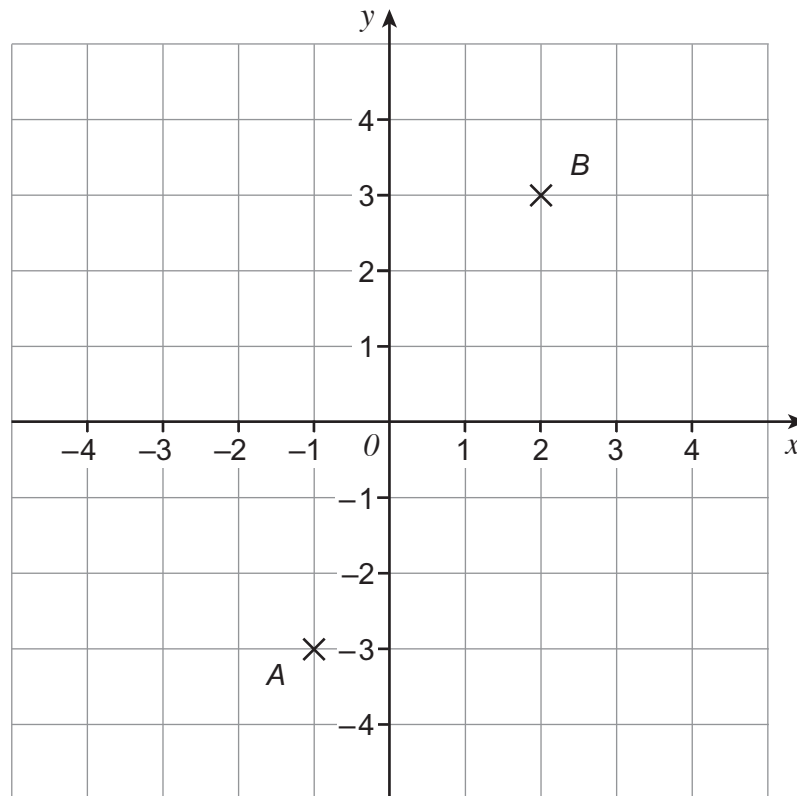
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- 9 Points  $A$  and  $B$  are plotted on the centimetre grid.



- 9 (a) Write down the coordinates of  $A$ .

[1 mark]

Answer ( \_\_\_\_\_ , \_\_\_\_\_ )

- 9 (b)  $C$  is a point on the grid.  
The coordinates of  $C$  are integers.

$$AC = 3 \text{ cm} \quad \text{and} \quad BC = 6 \text{ cm}$$

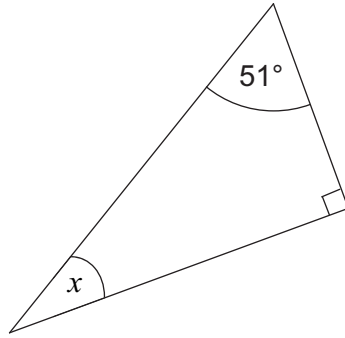
Work out the coordinates of  $C$ .

[2 marks]

Answer ( \_\_\_\_\_ , \_\_\_\_\_ )



10 (a)



Not drawn accurately

Work out the size of angle  $x$ .

[1 mark]

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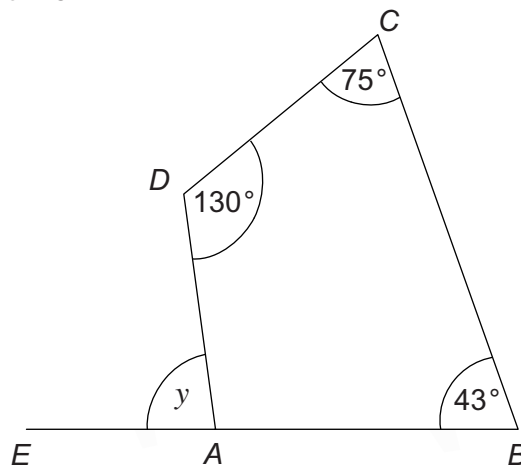


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Answer \_\_\_\_\_ degrees

10 (b)

$ABCD$  is a quadrilateral.  
 $EAB$  is a straight line.



Not drawn accurately

Work out the size of angle  $y$ .

[2 marks]

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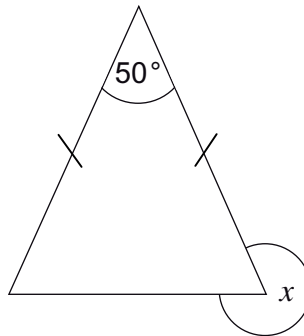
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Answer \_\_\_\_\_ degrees





- 10 (c) The diagram shows an isosceles triangle.



Not drawn accurately

Work out the size of angle  $x$ .

[3 marks]

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Answer \_\_\_\_\_ degrees

- 11 (a) Simplify  $5a + 4b - 2a + b$

[2 marks]

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Answer \_\_\_\_\_

- 11 (b) Solve  $4x - 7 = 9$

[2 marks]

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$x =$  \_\_\_\_\_



12 Here is a menu.

Menu	
Starter	Main course
Soup	Curry
Melon	Burger
Paté	

Sarah wants to have one starter and one main course.

List **all** the different choices she can have.

**[2 marks]**



13 (a) Work out the value of  $8.2^3$   
Give your answer to 1 decimal place.

[2 marks]

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Answer \_\_\_\_\_

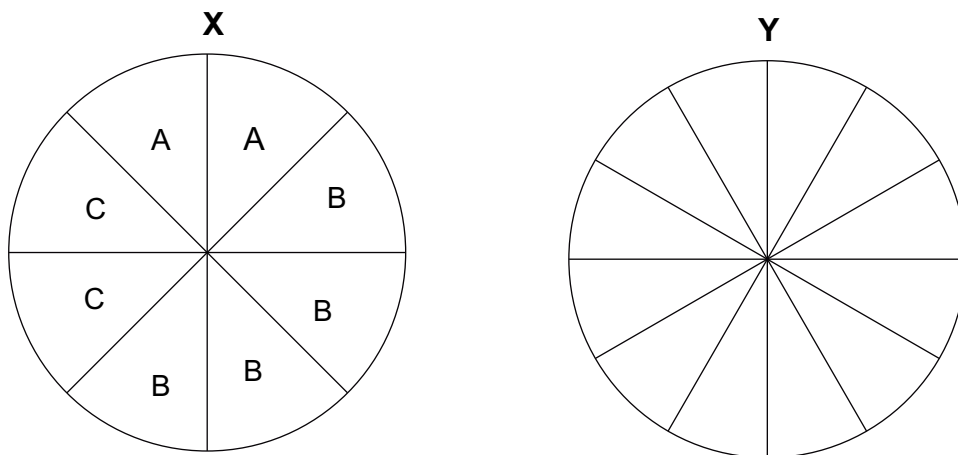
13 (b) Work out the value of  $\frac{\sqrt{6.76}}{2.5}$

[1 mark]

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Answer \_\_\_\_\_

14 Here are two fair spinners X and Y.



Put the letter A, B or C on each section of spinner Y so that the probability of landing on each letter is the same for each spinner.

[2 marks]

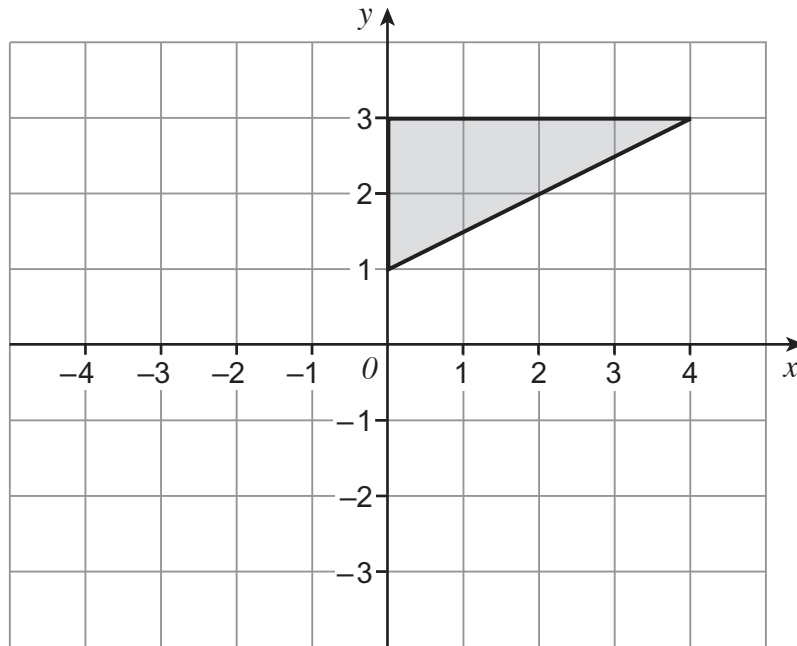
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Turn over ►



- 15 (a) Reflect this triangle in the  $x$ -axis.

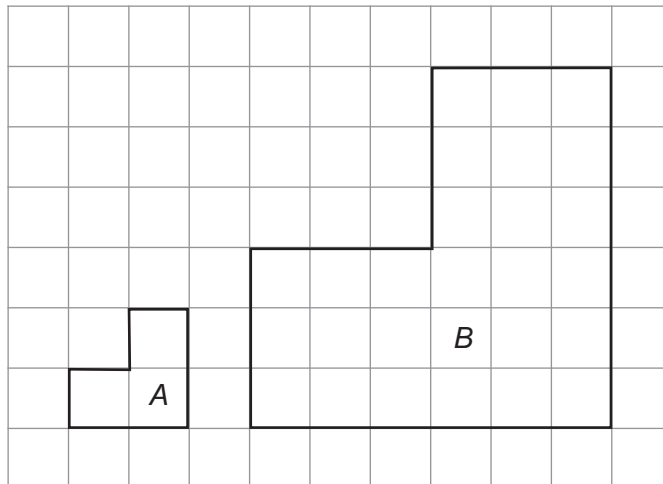
[1 mark]



- 15 (b) Shape  $B$  is an enlargement of shape  $A$ .

Write down the scale factor of the enlargement.

[1 mark]



Answer \_\_\_\_\_

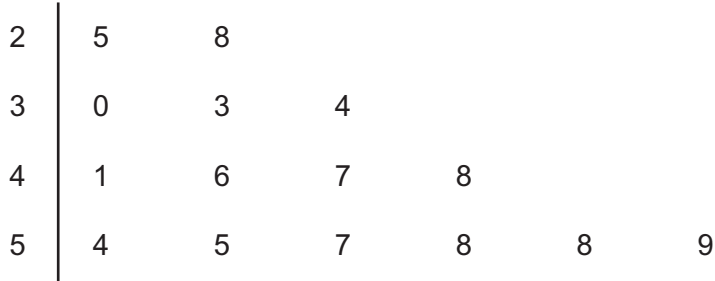


16

Sam played in 15 hockey matches.

The stem-and-leaf diagram shows the time he played in each match.

Key: 2 | 5 represents 25 minutes



The table shows information about the number of goals that Sam scored.

<b>Number of minutes Sam played in a match</b>	less than 30	30 to 45	more than 45
<b>Average number of goals Sam scored in each match</b>	0	1	2

Work out the number of goals that Sam scored in the 15 matches.

**[3 marks]**


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Answer \_\_\_\_\_



**\*17 (a)** Alice wants to book a holiday for one adult and one child.

<p style="text-align: center;"><b>Holiday</b></p> <p style="text-align: center;">£720 per adult</p> <p style="text-align: center;">£430 per child</p> <p style="text-align: center;"><b>Special Offer</b> 15% off</p>
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Alice has £1000

Does she have enough money to book this holiday using the special offer?  
Tick a box.

Yes

No

You **must** show your working.

**[5 marks]**

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**17 (b)** Ben changes £800 to Euros before he goes on holiday.  
£1 = 1.25 Euro

He spends 895 Euros.

He changes the Euros that he has left to Pounds (£).  
The exchange rate is now £1 = 1.40 Euro

How many Pounds does he get back?

**[4 marks]**

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Answer £ \_\_\_\_\_

**Turn over for the next question**



**18** Here are the ingredients to make 8 biscuits.

75 g	flour
50 g	sugar
40 g	butter
2	egg yolks

Work out the ingredients to make 20 biscuits.

**[3 marks]**

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\_\_\_\_\_ g flour

\_\_\_\_\_ g sugar

\_\_\_\_\_ g butter

\_\_\_\_\_ egg yolks





- 19 This formula converts degrees Celsius ( $C$ ) to degrees Fahrenheit ( $F$ ).

$$F = \frac{9}{5}C + 32$$

Use the formula to convert  $28^{\circ}\text{C}$  to  $^{\circ}\text{F}$   
Give your answer to the nearest whole number.

[3 marks]

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Answer \_\_\_\_\_  $^{\circ}\text{F}$

Turn over for the next question



**20 (a)** The  $n$ th term of a sequence is  $6 - 2n$

Work out the first three terms of the sequence.

**[2 marks]**

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Answer \_\_\_\_\_ , \_\_\_\_\_ , \_\_\_\_\_

**20 (b)** Here is the term-to-term rule for a different sequence.

Multiply previous term by 2 and then subtract 3

The third term in this sequence is 31

Work out the **first** term.

**[3 marks]**

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Answer \_\_\_\_\_



- 21** The table shows information about the pay per hour of 40 people.

Pay per hour, $x$ (£)	Frequency		
$5 < x \leq 15$	14		
$15 < x \leq 25$	12		
$25 < x \leq 35$	11		
$35 < x \leq 45$	2		
$45 < x \leq 55$	1		
	Total = 40		

- 21 (a)** Which group contains the median pay per hour?  
Circle your answer.

[1 mark]

$5 < x \leq 15$        $15 < x \leq 25$        $25 < x \leq 35$        $35 < x \leq 45$        $45 < x \leq 55$

- 21 (b)** Work out an estimate of the mean pay per hour.

[4 marks]

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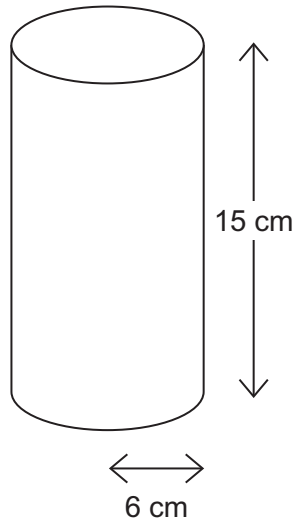


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Answer £ \_\_\_\_\_



22 (a) The diagram shows a cylinder.



The radius of the base is 6 cm

The height is 15 cm

Work out the volume.

[3 marks]

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Answer \_\_\_\_\_  $\text{cm}^3$



**\*22 (b)**     $1000 \text{ cm}^3 = 1 \text{ litre}$

A tank contains  $45\,000 \text{ cm}^3$  of water.  
The tank leaks at  $0.75 \text{ litres/minute}$ .

How long does the tank take to empty?

**[4 marks]**

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Answer \_\_\_\_\_

**Turn over for the next question**

7
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**Turn over ►**



- 23** A baker makes 130 loaves so that there are  
6 times as many white loaves as granary loaves  
half as many brown loaves as white loaves.

How many of each type does he make?

**[3 marks]**

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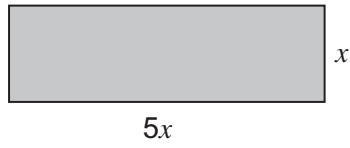
White \_\_\_\_\_

Brown \_\_\_\_\_

Granary \_\_\_\_\_

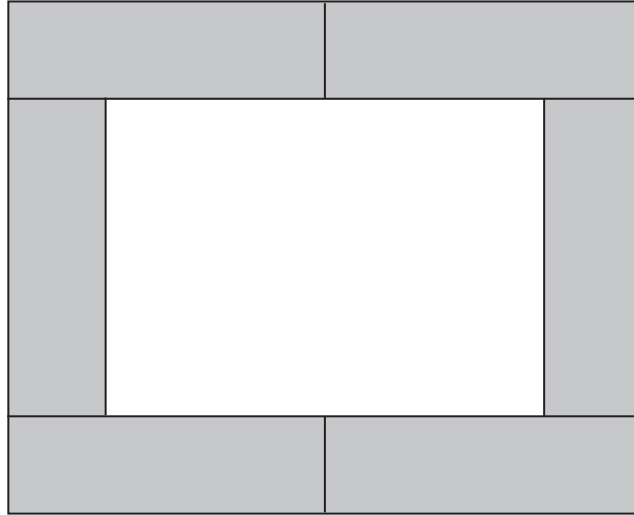


- 24 The diagram shows a rectangle.



Not drawn accurately

Six of these rectangles are joined to make this shape.



The area of the white rectangle in the middle is  $1440 \text{ cm}^2$

Work out the area of **one** shaded rectangle.

[5 marks]

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Answer \_\_\_\_\_  $\text{cm}^2$

**END OF QUESTIONS**



**There are no questions printed on this page**

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