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	
10 – 11	
12 – 13	
14 – 15	
16 – 17	
18 – 19	
20 – 21	
22 – 23	
24 – 25	
26 – 27	
TOTAL	

General Certificate of Secondary Education
Foundation Tier
November 2012

Mathematics (Linear) 43652F

Paper 2

Monday 12 November 2012 9.00 am to 10.45 am

F

For this paper you must have:
- a calculator
- mathematical instruments.

Time allowed
- 1 hour 45 minutes

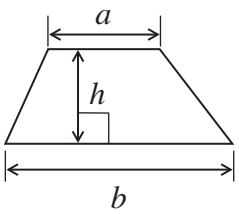
Instructions
- Use black ink or black ball-point pen. Draw diagrams in pencil.
- Fill in the boxes at the top of this page.
- Answer **all** questions.
- You must answer the questions in the spaces provided. Do not write outside the box around each page or on blank pages.
- Do all rough work in this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

Information
- The marks for questions are shown in brackets.
- The maximum mark for this paper is 105.
- The quality of your written communication is specifically assessed in Questions 15, 16 and 27. 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.

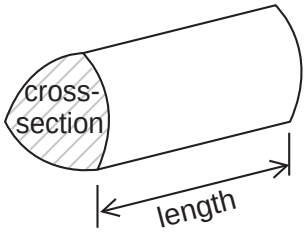
Advice
- In all calculations, show clearly how you work out your answer.

Formulae Sheet: Foundation Tier

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



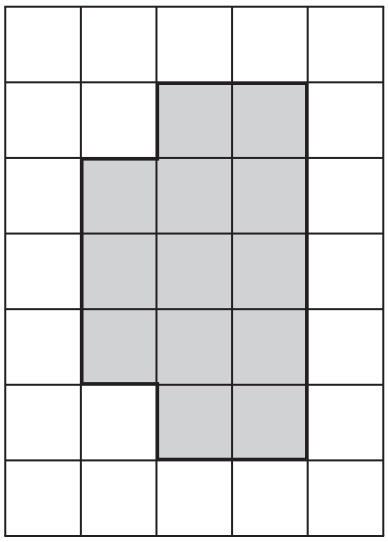
Volume of prism = area of cross-section × length



Do not write outside the box

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

1 Work out the shaded area on the centimetre grid.



State the units of your answer.

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

3

Do not write outside the box

2 (a) Write 23 450 to the nearest thousand.

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

2 (b) Write down **all** the **two-digit** numbers that can be made using the digits 1, 5 and 7.

Each digit can be repeated.

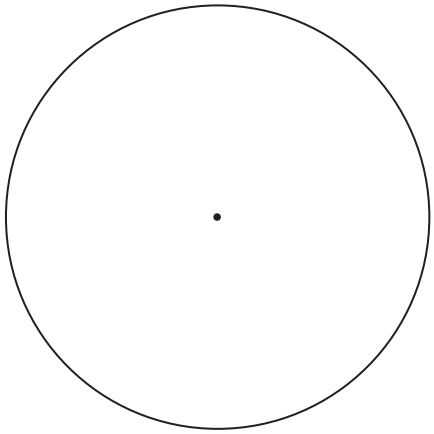
Answer .....

.....

(3 marks)

Do not write outside the box

3 (a) Measure the radius of this circle in centimetres.



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

3 (b) Measure or work out the diameter of the circle in centimetres.

.....

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

3 (c) Write down a formula in words connecting the diameter and the radius.

.....

(1 mark)

Turn over for the next question

7

Do not write outside the box

4 The episodes of a TV soap are each 50 minutes long.
Ryan watches three episodes together.

How long is he watching TV?
Give your answer in hours and minutes.

.....

.....

.....

Answer ..... hours ..... minutes *(2 marks)*

5 30 students were asked to draw a circle or a square and to colour it in.
Here are the results.

	Red	**Blue**	**Green**
Circle	4	8	7
Square	6	3	2

5 (a) How many **blue circles** were drawn?

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

5 (b) How many **squares** were drawn altogether?

.....

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

Do not write outside the box

6 (a) 44% of the students in a school are boys.

What percentage are girls?

.....

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

6 (b) A bottle is full of water.

30% of the water is poured out.
Half of the remaining water is then poured out.

What percentage of the bottle is now filled with water?

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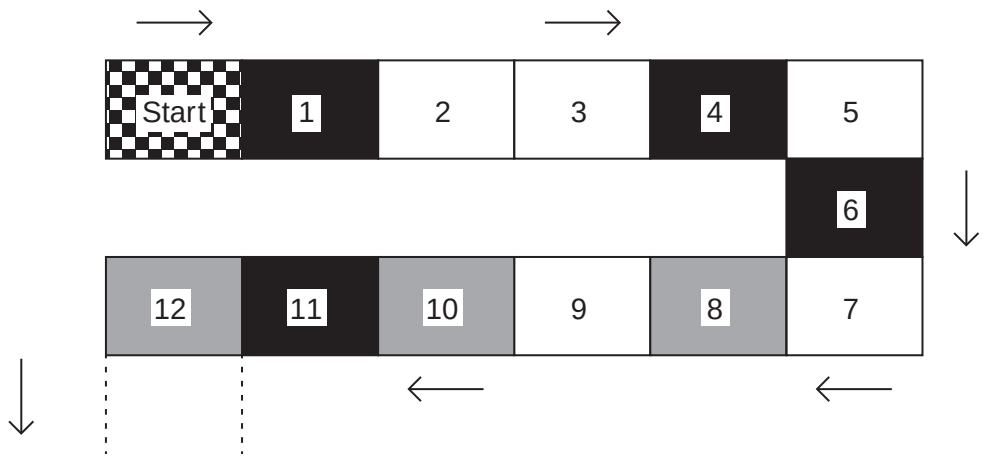
Answer ..... % *(3 marks)*

Turn over for the next question

8

Do not write outside the box

7 The diagram shows the first part of a board game.



Roll an ordinary, fair six-sided dice.
From the start, move the number of places shown by the dice.

7 (a) Circle the word that describes the chance of landing on **black** on your first move.

Impossible Unlikely Evens Likely Certain

(1 mark)

7 (b) Circle the word that describes the chance of landing on **grey** on your first move.

Impossible Unlikely Evens Likely Certain

(1 mark)

Do not write outside the box

7 (c) Beth starts the game.
She lands on black on both of her first two moves.

Write down **two** possible pairs of numbers she could have rolled.

First roll ..... Second roll .....

First roll ..... Second roll .....

(2 marks)

8 (a) Use your calculator to work out the **two** numbers in the list that are multiples of 7.

Circle your answers.

651 787 489 602 414

(2 marks)

8 (b) Use your calculator to work out the **two** numbers in the list that are factors of 1001.

Circle your answers.

3 7 9 11 17

(2 marks)

8

Do not write outside the box

9 Clare has divided her garden into 8 equal sections.

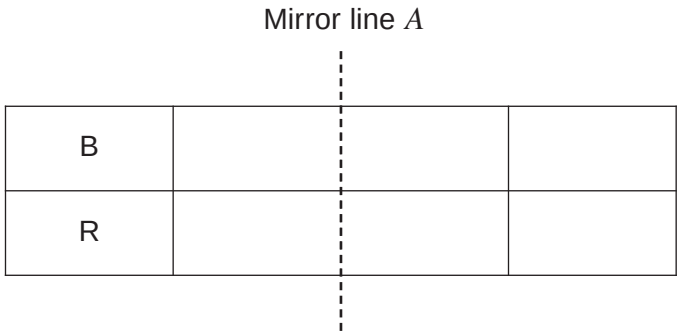
She wants to plant flowers in each section so that the colours are symmetrical.

9 (a) Complete this diagram so that

4 sections are red (R)

4 sections are blue (B)

the colours have symmetry about mirror line A.



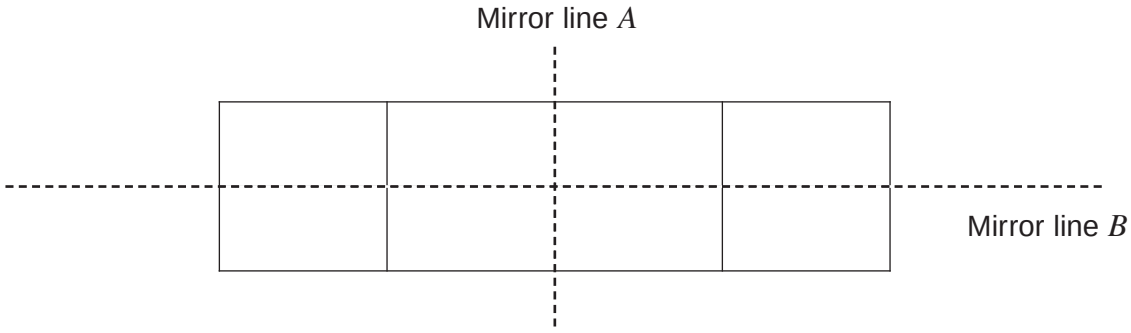
(2 marks)

9 (b) Fill in this diagram so that

4 sections are red (R)

4 sections are blue (B)

the colours have symmetry about **both** mirror lines, A and B.



(3 marks)

Do not write outside the box

10 12 litres of a drink is made by mixing water with 3 litres of orange juice.

What fraction of the drink is water?
Give your answer in its simplest form.

.....

.....

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

11 Complete the formula for each of the following.

The area, A (cm^2), of a square of side x (cm) is A = ...

The volume, V (cm^3), of a cube of side y (cm) is V = ...

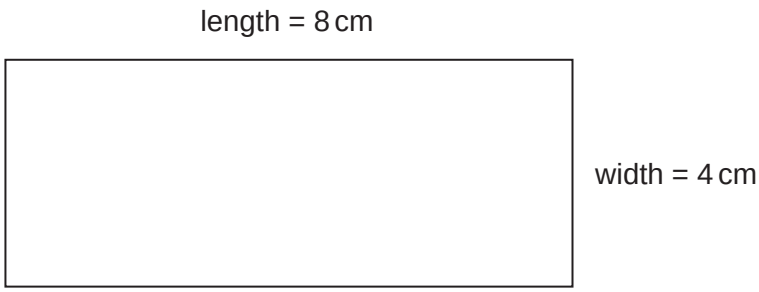
(2 marks)

Turn over for the next question

9

Do not write outside the box

12



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Tick whether each statement is **true** or **false** for this rectangle.

	True	**False**
The length is 4 times the width	☐	☐
The area is 32 cm^2	☐	☐
The perimeter is 32 cm	☐	☐
It has rotational symmetry of order 4	☐	☐
The width is 50% of the length	☐	☐
The ratio of length : width is 2 : 1	☐	☐

(6 marks)

Do not write outside the box

13 (a) Solve $8x = 32$

.....

$x =$ ..... *(1 mark)*

13 (b) Solve $y - 9 = 14$

.....

$y =$ ..... *(1 mark)*

13 (c) Solve $\frac{w}{3} = 7$

.....

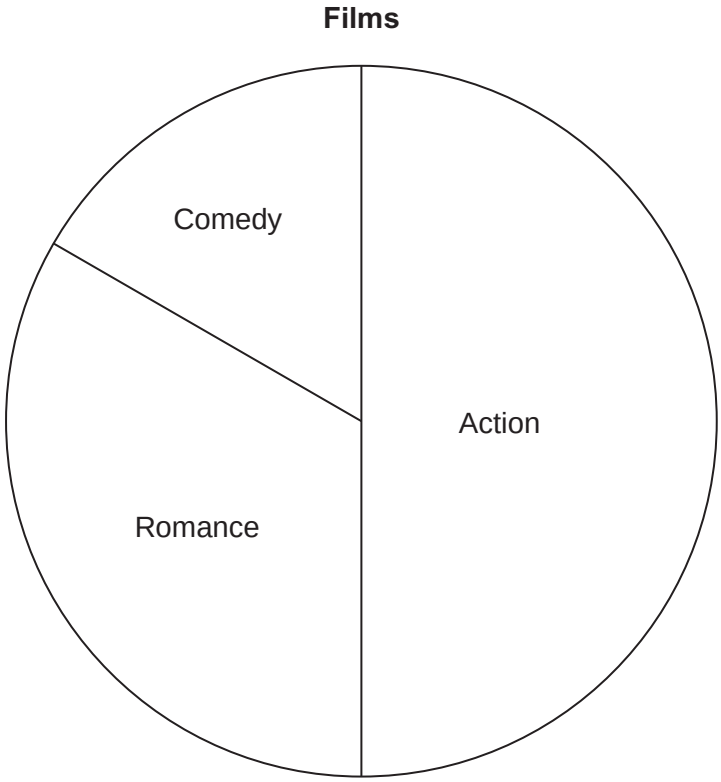
$w =$ ..... *(1 mark)*

Turn over for the next question

9

14 You will need a protractor to answer this question.

The pie chart shows the types of film showing at a multiplex cinema.



There are 3 comedy films.

14 (a) How many films are showing altogether?

.....

.....

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

14 (b) How many **more** romance films are showing than comedy films?

.....

.....

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

Do not write outside the box

*15 Here are two adverts for the same type of bread.

800 gram loaf Normal price £1.36 Buy one get a second loaf half price	400 gram loaf Normal price 92p Buy one get one free

Which is cheaper, two 800 gram loaves or four 400 gram loaves?
You **must** show your working.

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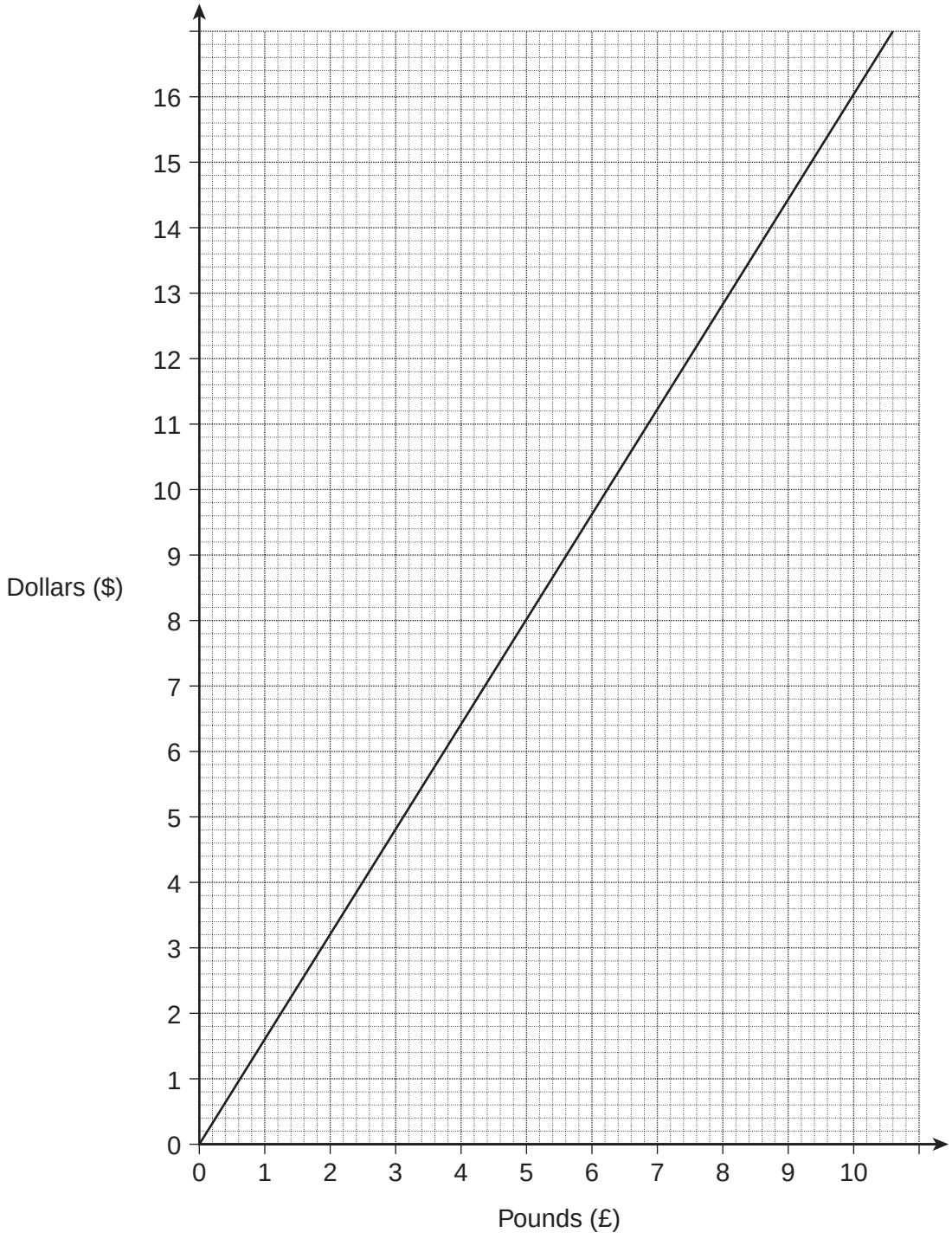
Answer ..... *(5 marks)*

10

Do not write outside the box

16

Conversion graph for dollars and pounds



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16 (a) Use the graph to convert £5 into dollars ($).

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

16 (b) Lucy is going to the USA on holiday.
She converts £500 into dollars ($) at the rate shown by the graph.

How much does she get in dollars ($)?

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.....

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

***16 (c)** After the holiday the exchange rate is £1 = $1.75
She converts $150 back into pounds (£).

How much does she get back?

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Answer £ ..... *(3 marks)*

6

Do not write outside the box

17 Use your calculator to work out each of the following.

17 (a) $\sqrt{334.89}$

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

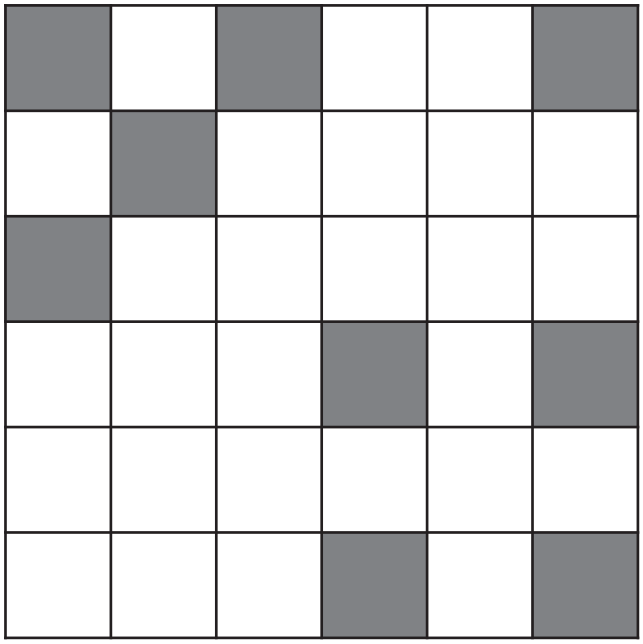
17 (b) $(7.2 - 5.3) \times (1.6 + 2.8)$

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

17 (c) $\frac{1}{2} \times (3.64 \div 2.8)$

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

18 Shade **three** squares so that the shape has rotational symmetry of order 2.



(2 marks)

Do not write outside the box

19 The following letter cards are put in a bag.

P	A	R	A	L	L	E	L

A card is picked at random.

19 (a) Write down the probability that it has the letter L on it.

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

19 (b) Write down the probability that it does **not** have the letter P on it.

.....

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

Turn over for the next question

9

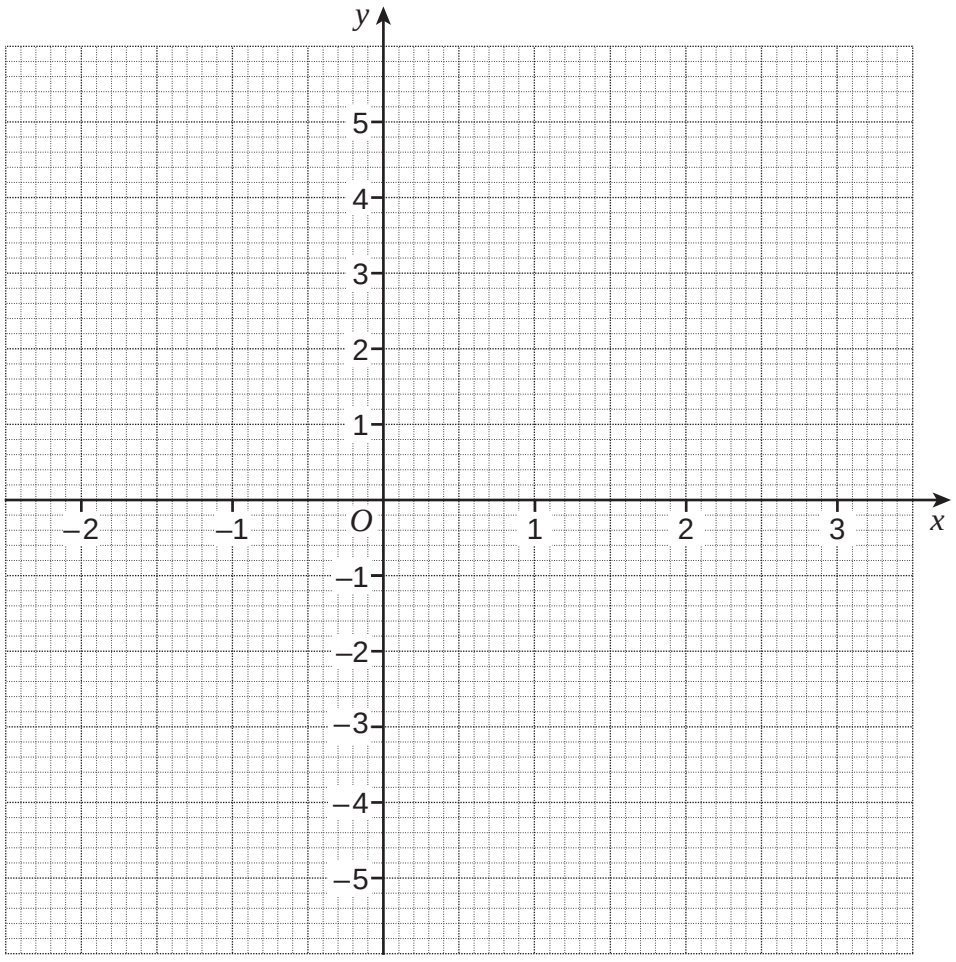
Do not write outside the box

20 (a) Complete the table of values for $y = 2x - 1$

x	–2	–1	0	1	2	3
y	–5	–3		1		5

(2 marks)

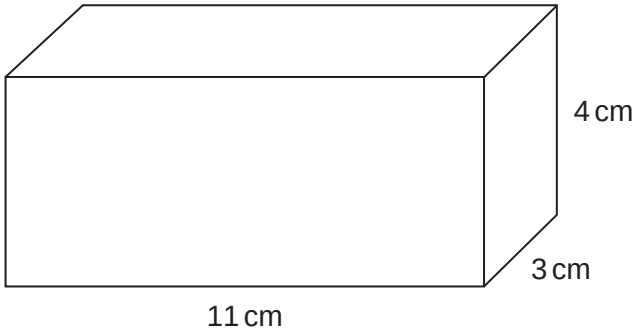
20 (b) Draw the graph of $y = 2x - 1$ for values of x from –2 to 3.



(2 marks)

Do not write outside the box

21 Work out the volume of the cuboid.



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Answer ..... cm^3 *(2 marks)*

22 Solve $3(2x + 4) + 8 = 50$

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x = ... *(4 marks)*

10

Do not write outside the box

23 Here are Jon's marks in two tests.

Test A 18 out of 25

Test B 30 out of 40

Which test gives the higher percentage mark?
You **must** show your working.

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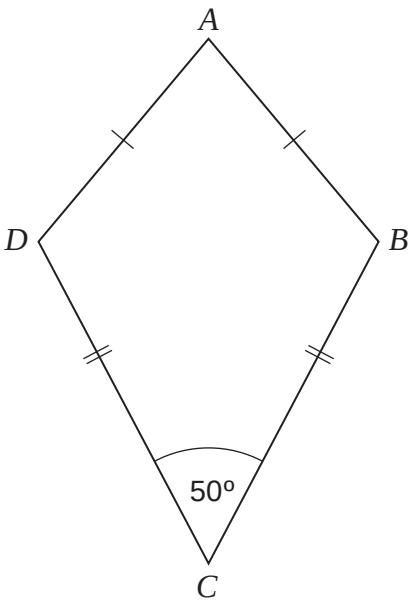
Answer ..... *(3 marks)*

Do not write outside the box

24 The diagram shows a kite.

Angle C = 50º
Angle A is half of angle B.



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Work out the size of angle A.

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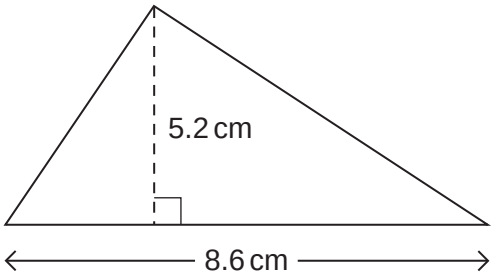
Answer ..... degrees *(4 marks)*

7

Do not write outside the box

25 Work out the area of the triangle.



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Give your answer to 1 decimal place.

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Answer ..... cm^2 *(3 marks)*

26 Show that the equation $x^3 + 8x = 30$ has a solution between $x = 2.2$ and $x = 2.3$

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(2 marks)

Do not write outside the box

27 Mark went fishing on four Saturdays.

	Week 1	Week 2	Week 3	Week 4
Number of fish caught	4	1	6	3
Time fishing	2.5 hours	1.5 hours	5 hours	2.5 hours
Mean weight of fish caught	1.2 kg	2.3 kg	0.8 kg	1.9 kg

27 (a) Work out the **mean** number of fish caught **per hour** in **Week 1**.

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

***27 (b)** Mark says,

"One of the fish I caught weighed 5 kg."

In which week did this happen?
Give a reason for your answer.

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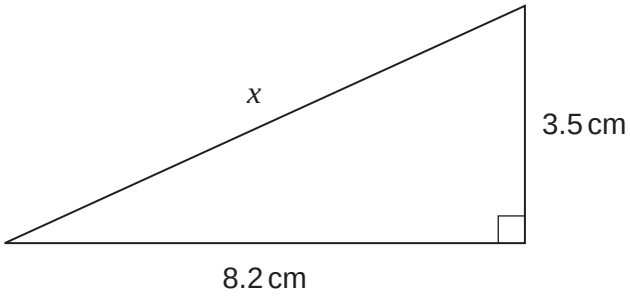
Answer ..... *(2 marks)*

9

28 Work out the length x.



Not drawn accurately

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

29 These expressions represent three numbers.

x $x + 3$ $4x$

Work out the mean in terms of x.
Give your answer in its simplest form.

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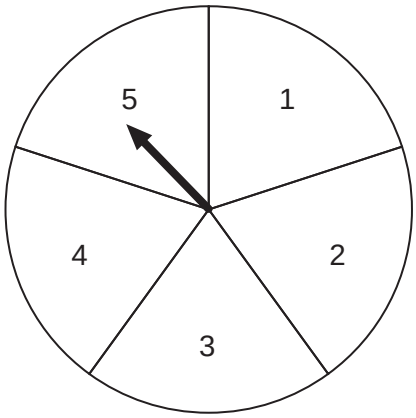
Answer ..... *(3 marks)*

Do not write outside the box

30 Matt made this spinner.
He spins the arrow 200 times.



30 (a) How many times would you expect the arrow to stop on the number 5 if the spinner is fair?

.....

.....

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

30 (b) The table shows the number of times the arrow stops on each number.

Stops on	1	2	3	4	5
Number of times	32	41	65	27	35

Do you think the spinner is fair?
Give a reason for your answer.

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(2 marks)

END OF QUESTIONS

10

There are no questions printed on this page

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ANSWER IN THE SPACES PROVIDED