OXFORD CAMBRIDGE AND RSA EXAMINATIONS
GCSE

J567/02
MATHEMATICS B
Paper 2 (Foundation Tier)

FRIDAY 8 NOVEMBER 2013: Morning
DURATION: 1 hour 30 minutes
plus your additional time allowance

MODIFIED ENLARGED

Candidate forename		Candidate surname	

Centre number					Candidate number				

Candidates answer on the Question Paper.

OCR SUPPLIED MATERIALS:

None

OTHER MATERIALS REQUIRED:

Geometrical instruments
Tracing paper (optional)
Scientific or graphical calculator

YOU ARE PERMITTED TO USE A CALCULATOR FOR THIS PAPER

## READ INSTRUCTIONS OVERLEAF

INSTRUCTIONS TO CANDIDATES

• Write your name, centre number and candidate number in the boxes on the first page. Please write clearly and in capital letters.

• Use black ink. HB pencil may be used for graphs and diagrams only.

• Answer **ALL** the questions.

• Read each question carefully. Make sure you know what you have to do before starting your answer.

• Your answers should be supported with appropriate working. Marks may be given for a correct method even if the answer is incorrect.

• Write your answer to each question in the space provided. Additional paper may be used if necessary but you must clearly show your candidate number, centre number and question number(s).

INFORMATION FOR CANDIDATES

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

• Use the π button on your calculator or take π to be 3.142 unless the question says otherwise.

• Your quality of written communication is assessed in questions marked with an asterisk (*).

• The total number of marks for this paper is 100.

FORMULAE SHEET: FOUNDATION TIER

Area of trapezium $= \frac{1}{2}(a + b)h$
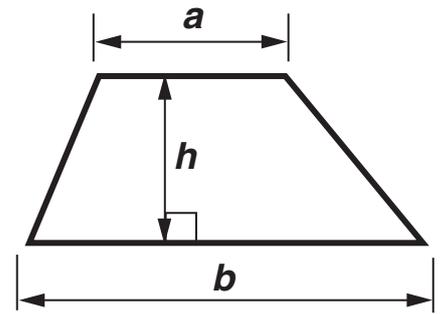
Volume of prism = (area of cross-section) × length
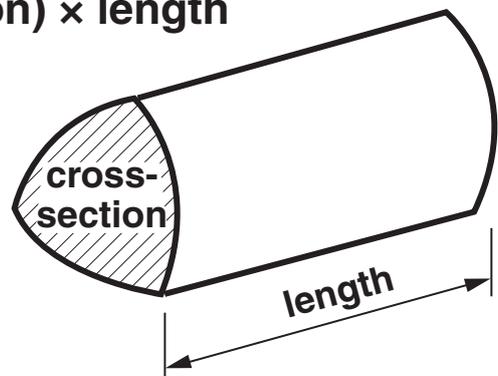
Answer ALL the questions.

1   (a) Round 56 856 to the nearest hundred.

(a) _____ [1]

(b) Round 56 856 to the nearest ten.

(b) _____ [1]

(c) Work out $\frac{3}{8}$ of 96.

(c) _____ [2]

(d) Shade $\frac{1}{5}$ of this shape. [1]
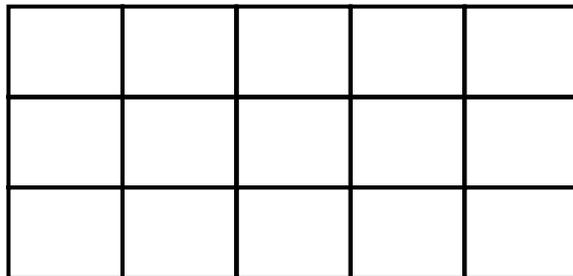
(e) Write 0.45 as a percentage.

(e) _____ % [1]

(f) A bottle of water costs two pounds and seven pence.
Eleanor buys 8 bottles.

Calculate the total cost.

(f) £ _____ [2]

2 **Here are the first four numbers of a sequence.**

   8   14   20   26

   (a) **Write down the next number in the sequence.**

                                                   (a) _____ [1]

   (b) **Explain how you worked out your answer.**

   _____ [1]

3 **(a)** Nina looks up some weather data on the internet. She finds the temperature in Timbuktu is 54.5 °C and the temperature in Vostok is ⁻89.2 °C.

How much warmer is it in Timbuktu than Vostok?

(a) _____ °C [2]

(b) Work out.

(i) 36 + ⁻59

(b)(i) _____ [1]

(ii) (⁻18)^2

(ii) _____ [1]

4 This chart shows the distances, in miles, between some cities.

London					
10574	**Sydney**				
5362	7435	**San Francisco**			
3466	9949	2569	**New York**		
289	10712	5088	3183	**Dublin**	
3956	9255	1857	713	3667	**Chicago**

(a) How many miles is it between Sydney and Dublin?

(a) _____ [1]

(b) Hank flies from London to New York.
He then flies from New York to San Francisco.

How many miles does he fly altogether?

(b) _____ **[2]**

(c) Bruce is flying from Sydney to Chicago.
He sleeps for one third of the journey.

For how many miles does Bruce sleep?

(c) _____ **[2]**

5 (a) Here is a triangle.
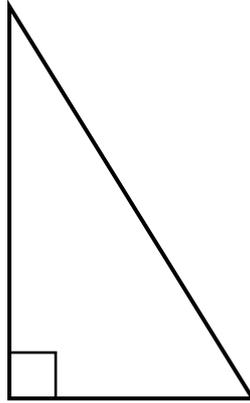

    (i) What is the mathematical name of this triangle?

                    (a)(i) _____ **[1]**

    (ii) Measure the perimeter of the triangle in centimetres.

                    (ii) _____ **cm [2]**

(b) **Calculate the area of this rectangle.**
     Give the units of your answer.

9 cm
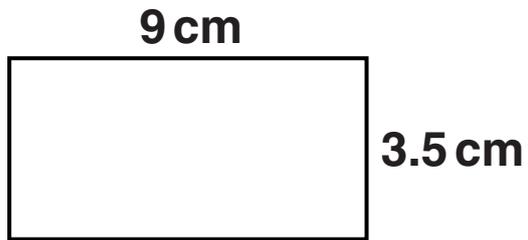
3.5 cm   NOT TO SCALE

(b) _____ [2]

6 A fair ordinary dice is rolled and then a fair spinner is spun.
The spinner is split into 2 equal sections, blue (b) and yellow (y).

(a) List all the possible outcomes of rolling the dice and spinning the spinner.
You may not need to use all the rows in the table.
The first one has been done for you. [2]

Dice	Spinner
1	b

(b) (i) What is the probability of getting an even number and blue?
Give your answer in its simplest form.

(b)(i) _____ **[2]**

(ii) Which of these is more likely?

Getting a number less than 6 and yellow,

or

Getting an odd number and blue.

Explain how you decide.

_____

_____

_____ **[2]**

7 (a) Baby Gabriel has 8 bibs in his drawer:

   2 blue
   1 black and white
   4 green
   1 yellow.

His mum takes a bib from the drawer without looking. The following diagram shows five arrows pointing to a probability line.
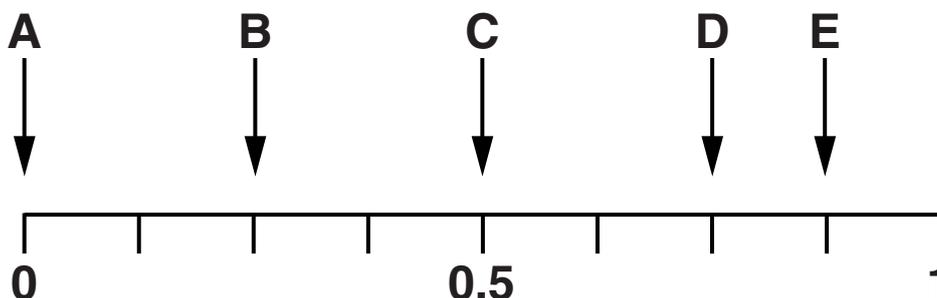
Which arrow shows the probability that the bib she takes is

(i) green,

(a)(i) _____ [1]

(ii) blue,

(ii) _____ [1]

(iii) not yellow?

(iii) _____ [1]

(b) This diagram shows the positions of places near to Gabriel's home.

N   Petrol station ●   Shops ●

　　　　　　　Gabriel's home
　　Park ●　　　　　　　●

　　　　Nursery ●　　Garden centre ●
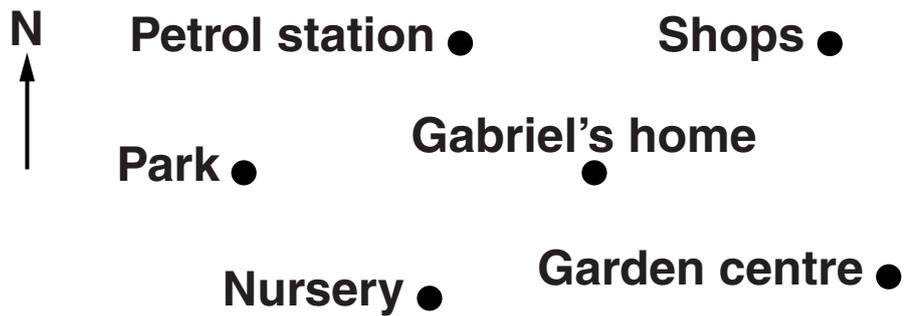
Use compass directions to complete the sentences.

(i) The shops are _____

of Gabriel's home. [1]

(ii) The park is _____

of Gabriel's home. [1]

(c) Gabriel and his mum go to the shops and then to the Post Office.
This graph shows their journey.
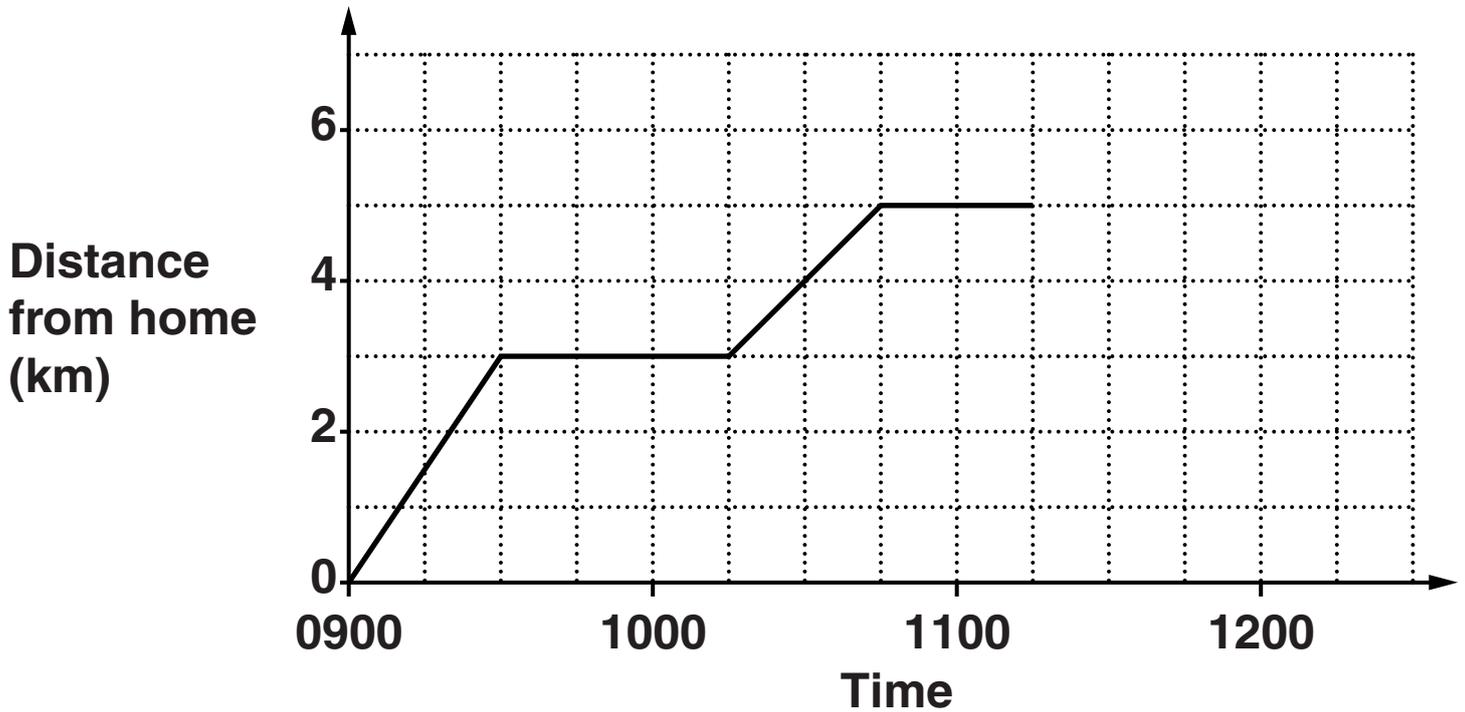
(i) At what time did they arrive at the shops?

(c)(i) _____ [1]

(ii) How long did they spend at the shops?

(ii) _____ minutes [1]

(iii) They arrived home 30 minutes after they left the Post Office.

Show their journey home on the graph. [1]

8 **(a)** **What is the square of 8?**

(a) _____ [1]

(b) **Work out.**

(i) $\sqrt{20.25}$

(b)(i) _____ [1]

(ii) **the cube of 6**

(ii) _____ [1]

(iii) 4^5

(iii) _____ [1]

(iv) $5^2 - 3^3$

(iv) _____ [2]

(c) Write $3\frac{2}{7}$ as an improper fraction.

(c) _____ [1]

9 (a) Mrs Adam goes with her 5 grandchildren to have a photograph taken.

Here are the heights of the grandchildren.

Eve	Charlie	Ray	Sam	Lucie
1.63 m	1.06 m	2.02 m	1.6 m	1.98 m

The children are lined up in order of height, tallest first.

Write the order the grandchildren should stand in for the photograph.

_____ tallest

_____

_____

_____

_____

[2]

(b) The photograph measures 15 cm by 10 cm. Mrs Adam orders an enlargement of the photograph with a scale factor of 2.5.

What are the measurements of the enlarged photograph?

(b) _____cm by _____cm [2]

10 **Edward wants to hire a car.**
He sees this advert.

> ## Drosier Car Hire
>
> **£12 each day**
> **plus £40**

(a) How much would it cost him to hire a car for 8 days?

(a) £ _____ [2]

(b) Edward can afford to spend £200.

What is the maximum number of days that he can afford to hire a car?

(b) _____ **[2]**

(c) The scale drawing below shows the area where Edward is staying. The position of the hotel and the position of the car hire depot are shown. The scale of the drawing is 1 cm represent 4 km.

N

• **Hotel**

• **Drosier Car Hire depot**
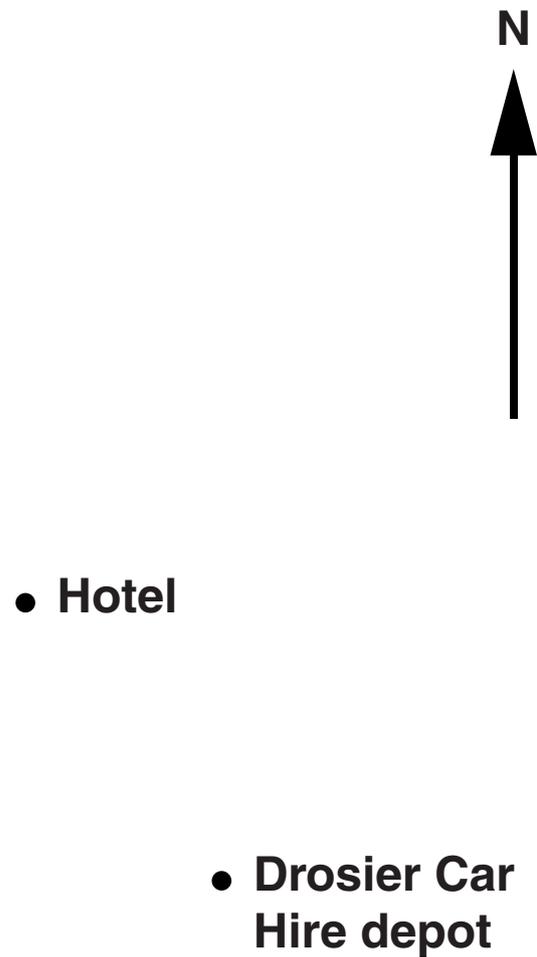
(i) Measure the bearing of the car hire depot from the hotel.

(c)(i) _____ ° [1]

(ii) What is the real distance from the car hire depot to the hotel?

(ii) _____ km [2]

(iii) Edward is going to visit a cathedral. The cathedral is 30 km on a bearing of 285° from the hotel.

Mark the position of the cathedral on the diagram. [2]

11 Here is a quadrilateral.

NOT TO SCALE
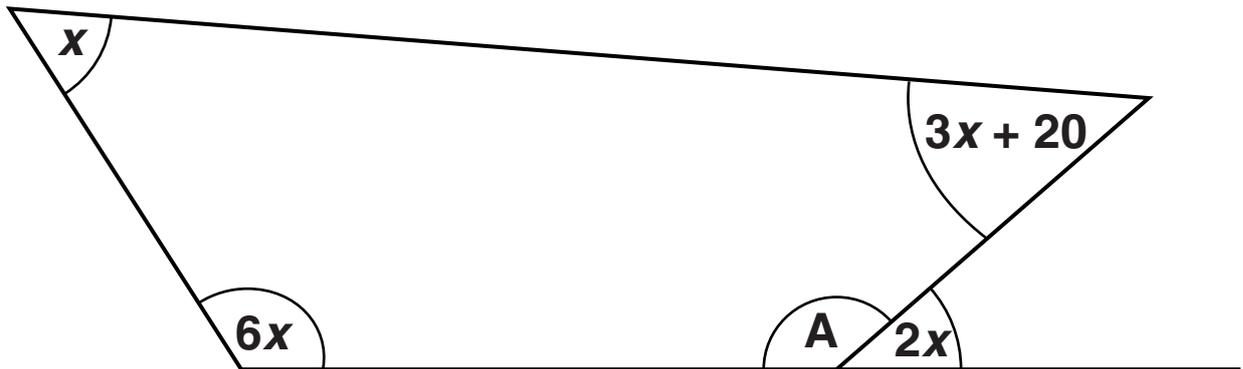
(a) Explain why angle A in the quadrilateral is 180 − 2x.

_____

_____ [1]

(b) **Work out the size of the angle marked *x* in the quadrilateral opposite.**
Show all your working.

(b)_____° [5]

12 (a) Complete this table for $y = 4x - 2$ by filling in the two missing numbers. [2]

x	-2	-1	0	1	2
y		-6	-2		6

(b) On the grid opposite, draw the graph of $y = 4x - 2$.
[2]

(c) Use your graph to find the value of x when $y = 4$.

(c) x = _____ [1]

29
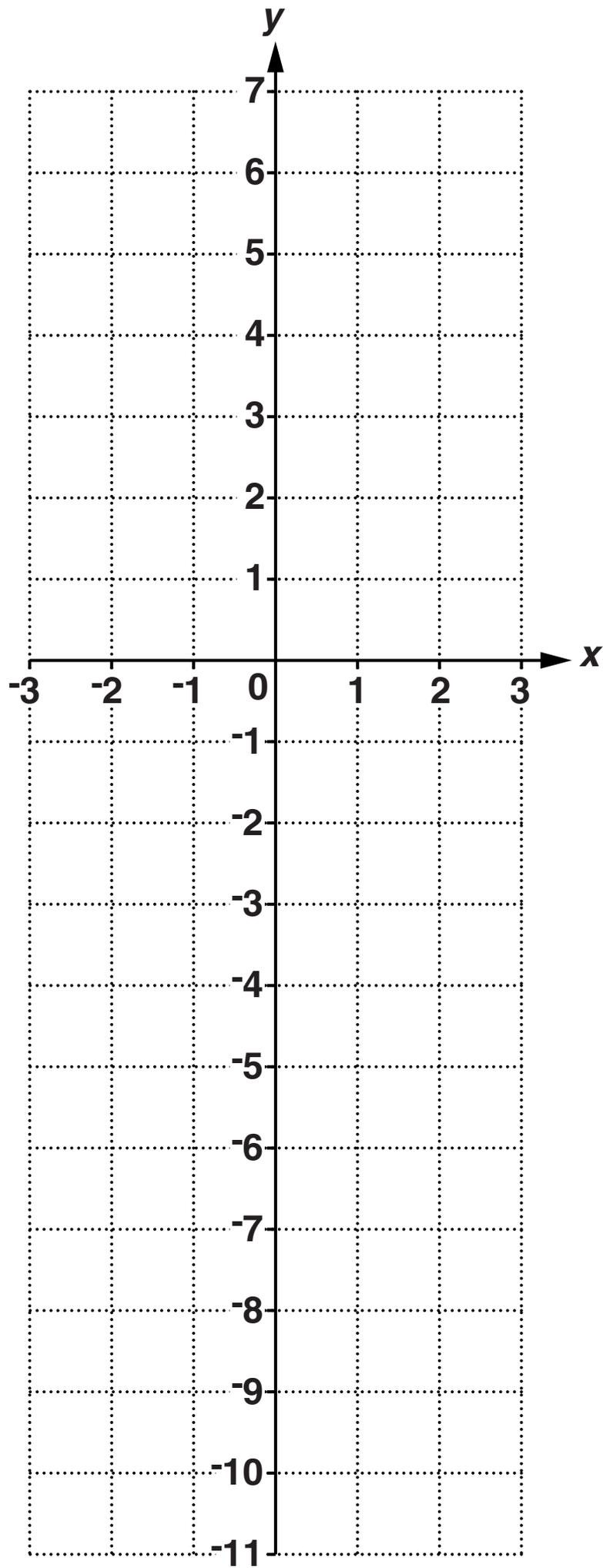
13 (a) Lucinda is making mushroom soup.

> **Mushroom Soup**
> **Serves 4 people**
>
> **500 g mushrooms**
> **1 litre chicken stock**
> **100 g butter**
> **3 tablespoons flour**
> **4 tablespoons cream**

She needs to make enough soup to serve 6 people.

(i) How much butter does she need?

(a)(i) _____ g [1]

(ii) Mushrooms are sold in 300 g packs.

How many packs does Lucinda need to buy?

(ii) _____ [2]

30

(b) The soup takes 15 minutes to prepare and 20 minutes to cook.
Lucinda wants to serve the soup at 1315.

At what time should she start preparing the soup?

(b) _____ **[2]**

(c)* Jo has 22 litres of hot chocolate to pour into mugs. The mugs are cylinders with an internal diameter of 9 cm and an internal height of 12 cm. The measurements are shown on the diagram. Each mug is filled to 1 cm from the top.

9 cm

12 cm
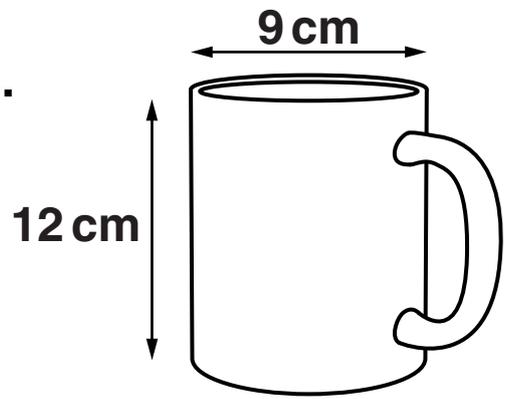
How many mugs can Jo fill?

(c) _____ [5]

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14 **A train travels from Kelford to Brightwood.**
The graph opposite shows the first ten minutes of
the train's journey.

The two stations are 70 kilometres apart.
The train is due to arrive at Brightwood at 10:00 am.

Will it arrive on time if it continues to travel at the
same speed?
Show clearly how you decide.

_____

_____

_____ **[3]**

Distance from Kelford (km)

Brightwood →

Kelford →

90
80
70
60
50
40
30
20
10
0

9:00   9:10   9:20   9:30   9:40   9:50   10:00

Time (am)

35
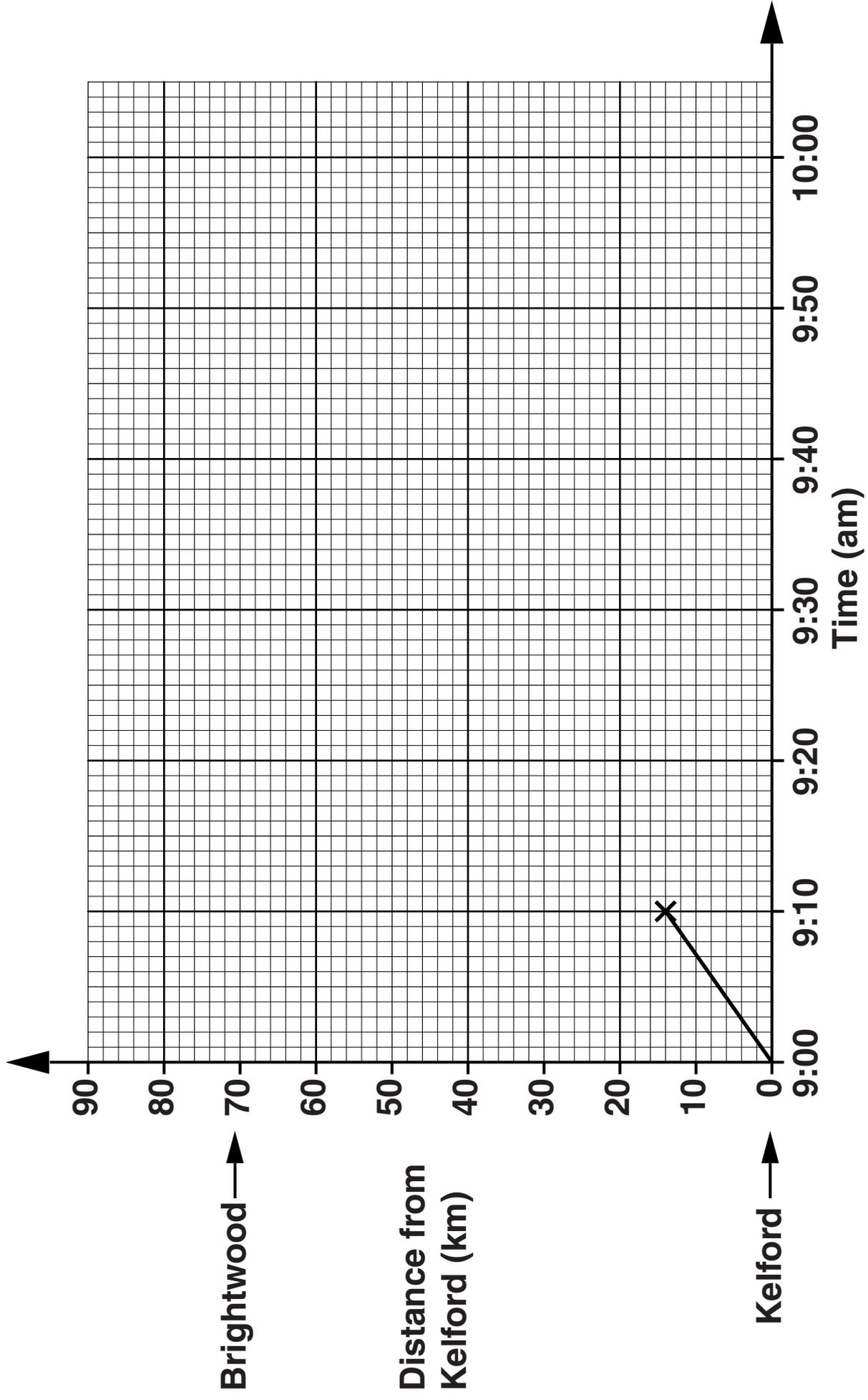
15 Calculate.

$$\frac{6.3^2 - 3.7}{5.8}$$

Write your answer correct to 2 decimal places.

_____ **[2]**

16 In 2011, Greenmeadows Tennis Club had 25 members and in 2012 it had 31 members.

Calculate the percentage increase in the number of members.

_____ % [3]

17 (a) The lengths of Desmond's telephone calls, in minutes, are summarised in the table below.

Length of call (t minutes)	Number of calls		
$0 < t \leqslant 10$	0		
$10 < t \leqslant 20$	3		
$20 < t \leqslant 30$	3		
$30 < t \leqslant 40$	6		
$40 < t \leqslant 50$	8		
$50 < t \leqslant 60$	5		

Calculate an estimate of the mean length of Desmond's calls.

(a) _____ minutes [4]

(b) The table below summarises the lengths, in minutes, of Harriet's calls in November and December.

	Mean	Range
November	34.2	67.4
December	39.7	43.8

(i) In which month were Harriet's calls longer on average?
Explain how you decide.

_____

_____

_____ [1]

(ii) In which month were the lengths of Harriet's calls more spread out?
Explain how you decide.

_____

_____

_____ [1]

18 **The scale diagram below shows a coastline, CL.**
A and B are two rocks in the sea.
The scale of the diagram is 1 cm represents 500 m.

C ━━━━━━━━━━━━━━━━━━━━━━━━━━━ L

N
↑

•B

A•
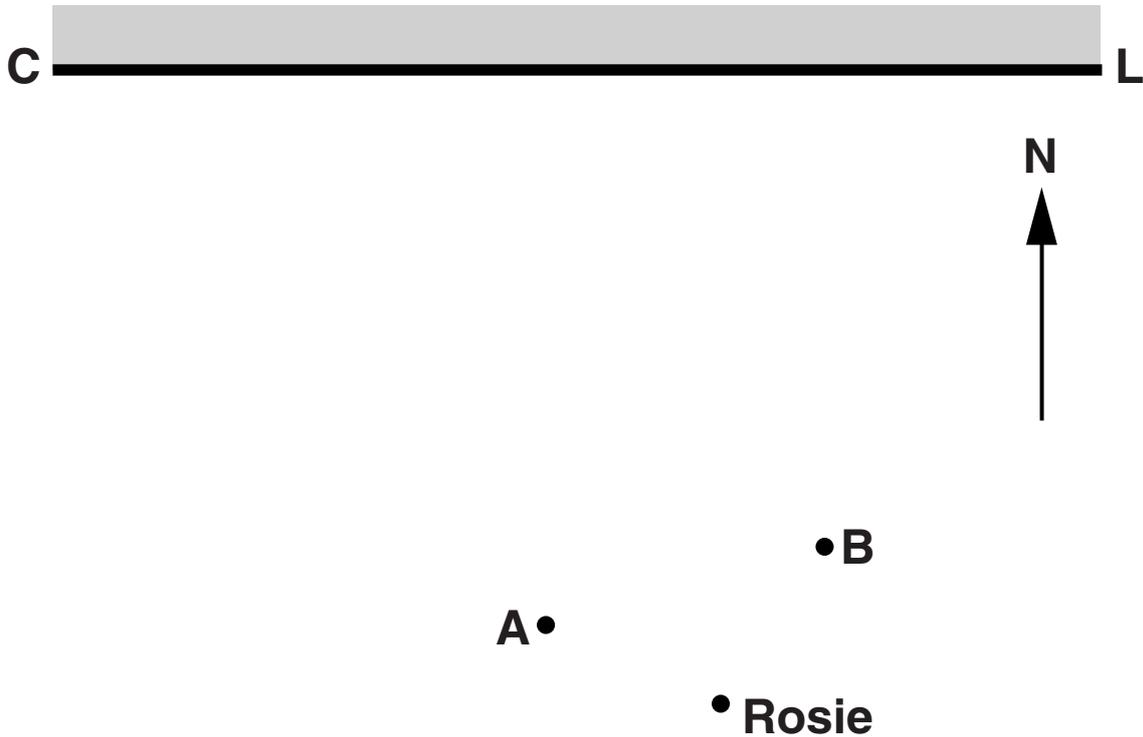
•Rosie

SCALE: 1 cm REPRESENTS 500 m

Rosie is sailing her boat.
She sails on a course towards the coast so that she is an equal distance from the rocks, A and B.

When she is less than 1 km from the coast she turns and sails due West.
She now sails so that she is between 500 m and 1 km from the coast.

Construct a route that Rosie could take.
You must leave in all your construction lines. [4]

19 **The diagram below shows a triangle ABC.**
AB = 14.7 cm, BC = 11.5 cm and AC = 19.4 cm.

A figure shows triangle ABC with C at top, A at lower left, B at lower right. Side AC = 19.4 cm, side BC = 11.5 cm, side AB = 14.7 cm.

NOT TO SCALE
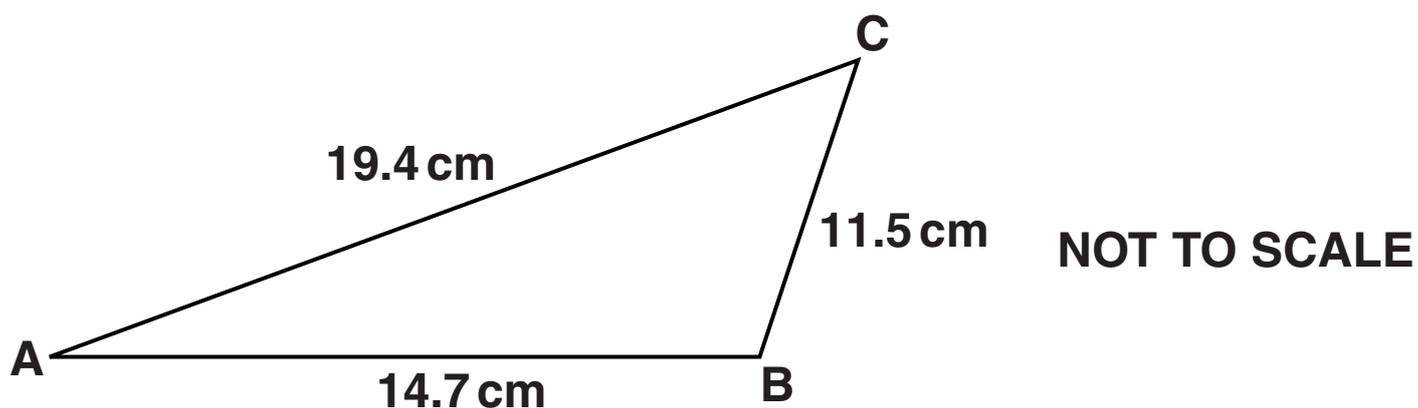
Show that triangle ABC is NOT a right-angled triangle.

[3]

END OF QUESTION PAPER

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OCR

RECOGNISING ACHIEVEMENT