

For OCR

F

GENERAL CERTIFICATE OF SECONDARY EDUCATION

MATHEMATICS

(Foundation Tier)

Candidates answer on the Question Paper

Other Materials Required:

- Geometrical instruments
- Tracing paper (optional)

PAPER 1A

Duration: 1 hour 30 minutes

Name

Class

INSTRUCTIONS TO CANDIDATES

- Write your name in the box above.
- Read each question carefully and make sure that 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.
- Answer **all** the questions.
- Write your answer to each question in the space provided.

INFORMATION FOR CANDIDATES

- The number of marks is given in brackets [] at the end of each question or part question.
- Your Quality of Written Communication is assessed in questions marked with an asterisk (*).
- The total number of marks for this paper is **100**.



WARNING

You are **NOT** permitted to use
a calculator for this paper

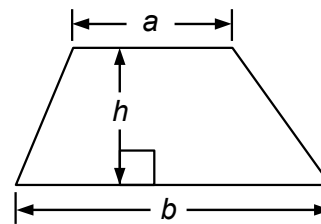


Written by Shaun Armstrong

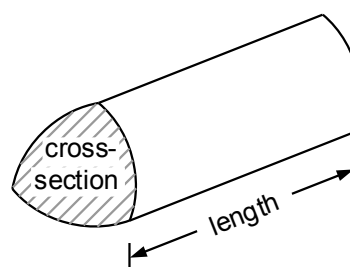
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Formulae Sheet: Foundation Tier

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







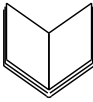



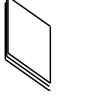

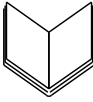


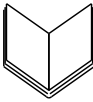
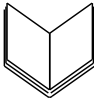

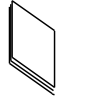



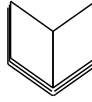


Volume of prism = (area of cross-section) \times length



PLEASE DO NOT WRITE ON THIS PAGE

- 1 The pictogram shows how many books five children read over the summer.

Abraham	    
Busrah	     
Carli	  
Dabir	    
Elsa	   

Key:  represents 2 books

- (a) Who read the most books?

(a) _____ [1]

- (b) How many books did Carli read?

(b) _____ [1]

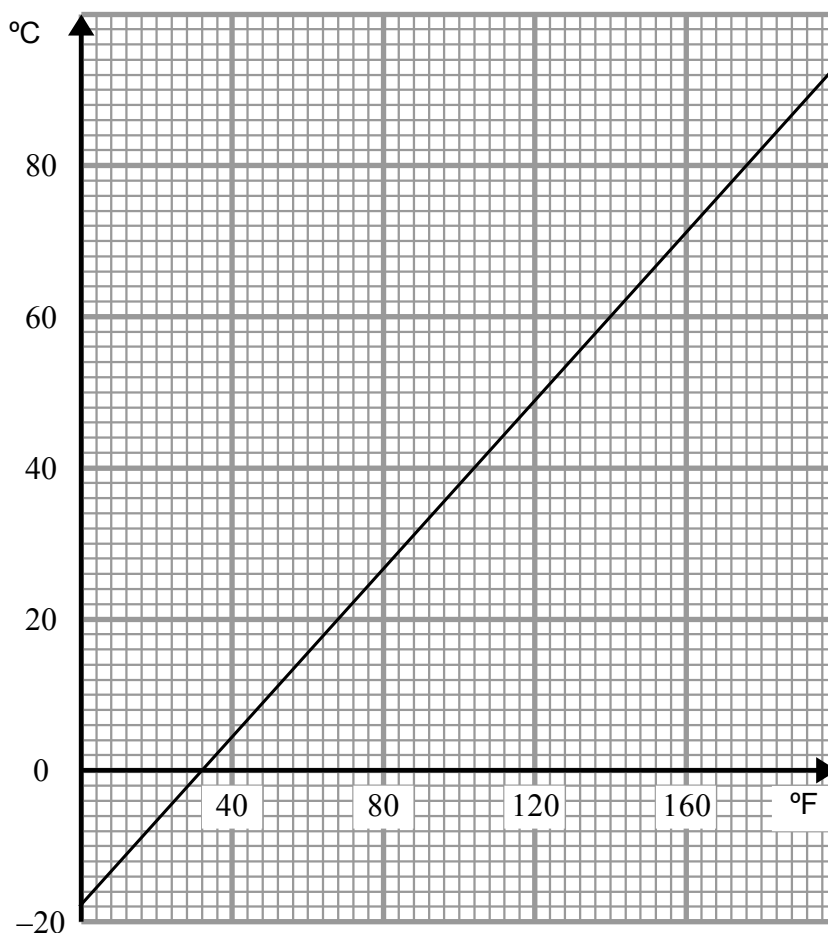
- (c) Who read 2 more books than Elsa?

(c) _____ [1]

- (d) Who read 50% more books than Carli?

(d) _____ [1]

- 2 This conversion graph can be used to change between degrees fahrenheit ($^{\circ}\text{F}$) and degrees celsius ($^{\circ}\text{C}$).



- (a) Use the graph to change 140°F into degrees celsius.

(a) _____ $^{\circ}\text{C}$ [1]

- (b) Use the graph to change 80°C into degrees fahrenheit.

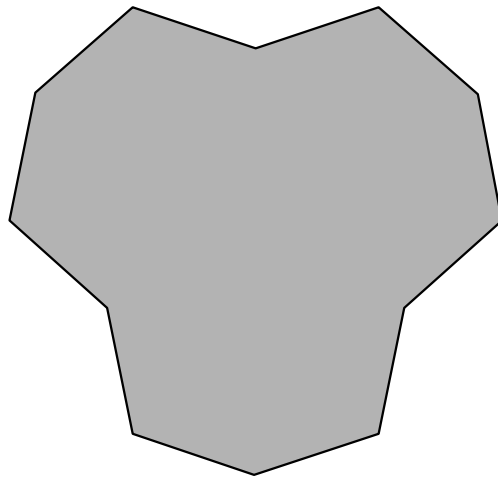
(b) _____ $^{\circ}\text{F}$ [1]

- (c) Water freezes at 0°C .

At what temperature does water freeze in degrees fahrenheit?

(c) _____ $^{\circ}\text{F}$ [1]

3 (a)



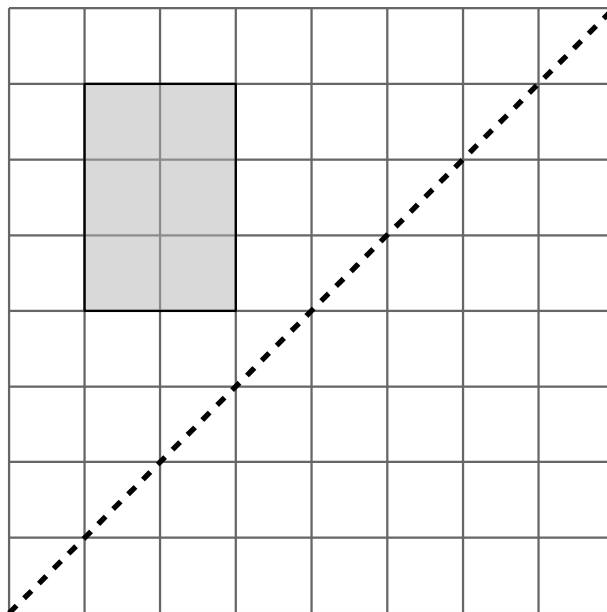
(i) Write down the order of rotational symmetry of the shape above.

(a)(i) _____ [1]

(ii) Draw all the lines of symmetry on the shape above.

[1]

(b)



Draw the reflection of the shaded shape in the dotted line on the diagram above.

[2]

- 4 (a) Write 0.75 as a fraction.

(a) _____ [1]

- (b) Write 30% as a decimal.

(b) _____ [1]

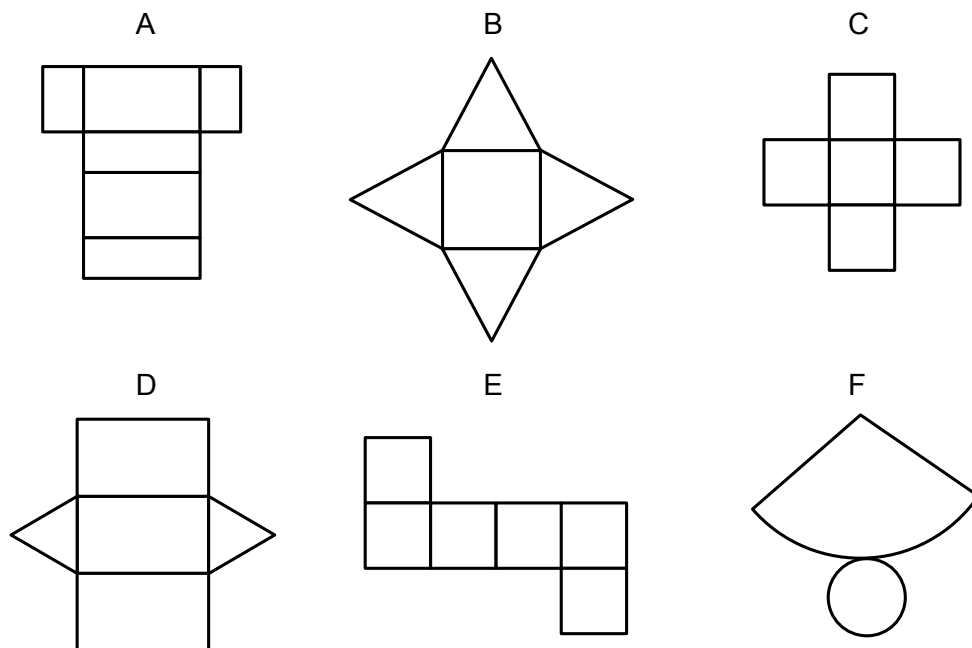
- (c) What is 36 as a percentage of 300?

(c) _____ % [2]

- (d) Work out $\frac{2}{3}$ of 66.

(d) _____ [2]

5



Write down the letter of the shape above that is the net of a

- (a) pyramid,

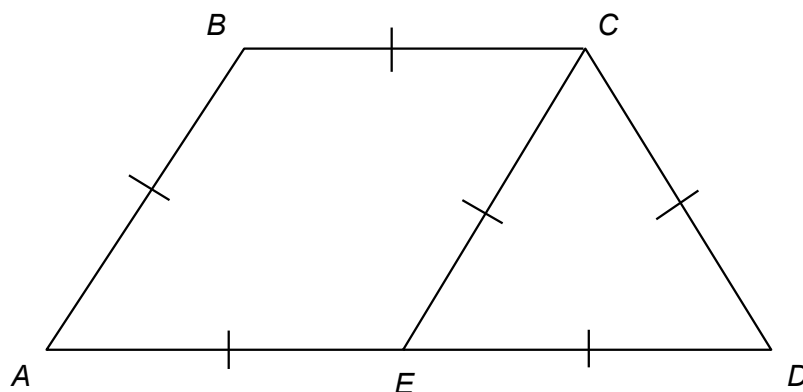
(a) _____ [1]

- (b) triangular prism,

(b) _____ [1]

- (c) cube.

(c) _____ [1]



Not to scale

In the diagram above, AB , BC , CD , DE , AE and CE are all the same length.

(a) What type of triangle is CDE ?

(a) _____ [1]

(b) What type of quadrilateral is $ABCE$?

(b) _____ [1]

(c) What type of quadrilateral is $ABCD$?

(c) _____ [1]

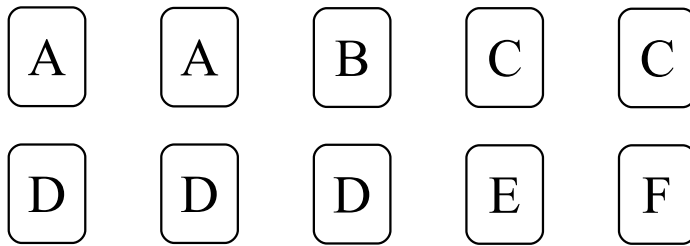
(d) What type of angle is angle ABC ?

(d) _____ [1]

(e) Work out the size of angle ABC .

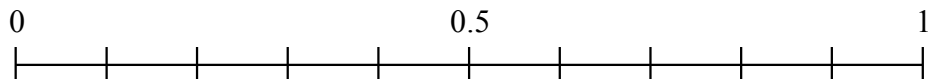
(e) _____° [2]

- 7 Here are 10 letters printed on plastic tiles.



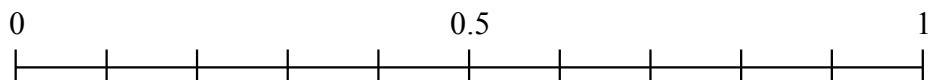
The tiles are put into a bag and one is picked out at random.

- (a) Use an arrow to show the probability that the letter B will be picked.



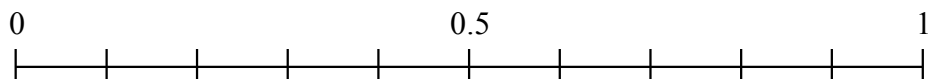
[1]

- (b) Use an arrow to show the probability that the letter C will **not** be picked.



[1]

- (c) Use an arrow to show the probability that a vowel will be picked.

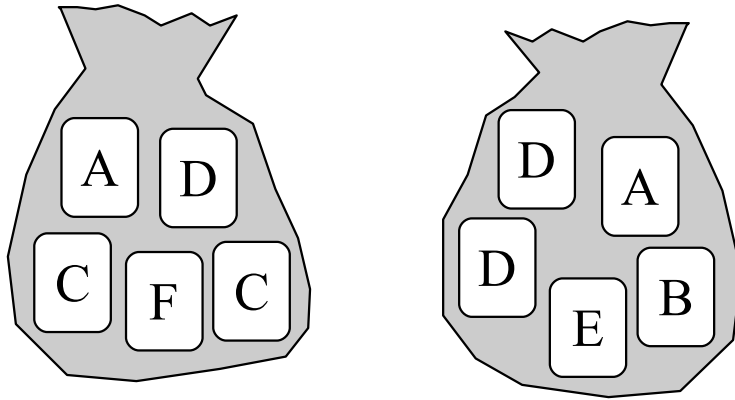


[1]

- (d) Describe another event with the same probability as a vowel being picked.

[1]

The tiles are now separated and put into two bags as shown.



Libby picks one tile at random from each bag.

(e)* Work out the probability that the two letters Libby picks are the same.

(e) _____ **[3]**

8 Complete each sentence with one of these words.

square factor prime multiple cube

(a) 28 is a _____ of 7. [1]

(b) 9 is the _____ root of 81. [1]

(c) 15 is a _____ of 60 [1]

9 (a) What is the value of 8^2

(a) _____ [1]

(b) What is the value of $\sqrt[3]{125}$

(b) _____ [1]

(c) Work out $3 \times 7 - 5$

(c) _____ [1]

(d) Estimate the value of $70.2 - 4.89 \times 8.13$

(d) _____ [3]

- 10** Jack drives from Leeds to Edinburgh.
He leaves Leeds at 1150 and arrives in Edinburgh at 1520.

The next day his car breaks down and he gets a train back to Leeds.
The train departs at 1340 and arrives at 1635.

Work out the ratio

journey time by car : journey time by train

Give your answer in its simplest form.

_____ **[3]**

- 11** Ghadah runs an online store.
She bought 30 decorative mirrors for £15 each.

Ghadah sold 16 of the mirrors on her website for £25 each.
She then reduced the price by £5 and sold 12 more mirrors.
She sold the last two mirrors on an online auction site for £16.50 and £9.20

Work out how much profit Ghadah made on the mirrors.

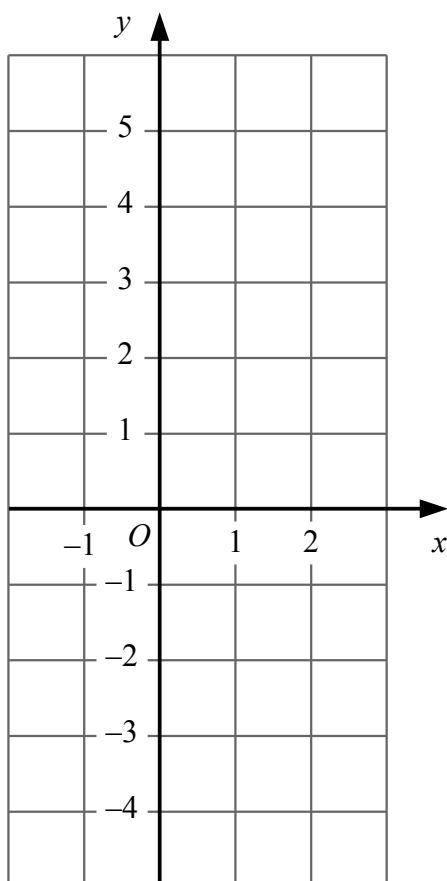
£ _____ **[5]**

- 12 (a) Complete this table of values for $y = 3x - 1$

x	-1	0	1	2
y	-4			

[2]

- (b) On the grid, draw the line $y = 3x - 1$



[2]

- (c) Here are the equations of three more lines.

$$y = 2x - 1$$

$$y = 2 - 3x$$

$$y = 3x + 3$$

☐
☐
☐

Tick the box under each equation of a line that is parallel to the line $y = 3x - 1$

[1]

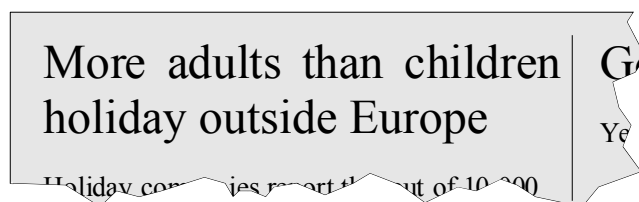
- 13** This two-way table gives some information about where 80 people went on their last holiday.

	UK	Rest of Europe	Outside Europe	Total
Adult	26		10	55
Child			5	25
Total		30		80

- (a)** Complete the table.

[3]

Here is the heading of a newspaper article.



- (b)** Do the figures in the table support the statement in the newspaper article? Explain your answer.

_____ because _____

_____ **[2]**

- 14 (a)** Simplify $w \times w^4$

(a) _____ **[1]**

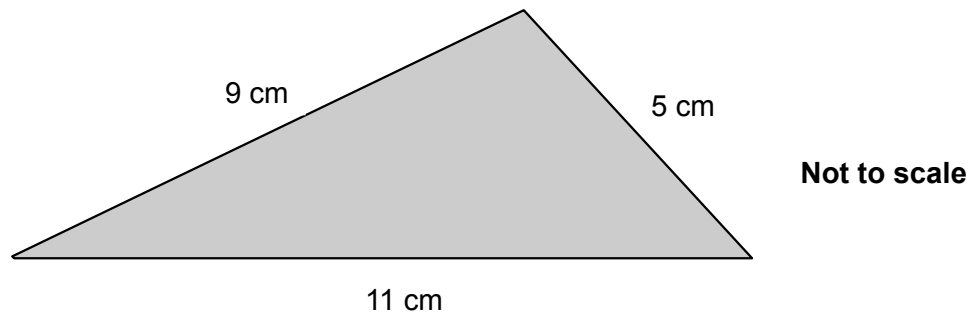
- (b)** Simplify $8x - 3(2x - 1)$

(b) _____ **[2]**

- (c)** Factorise $6p + 10$

(c) _____ **[1]**

15 (a)



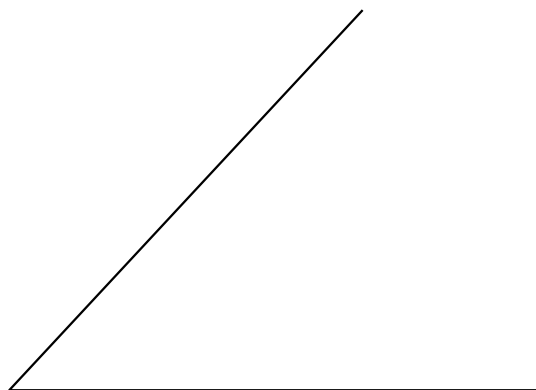
The sketch above shows a triangle with sides of length 5 cm, 9 cm and 11 cm.

Use a ruler and pair of compasses to make an accurate drawing of the triangle.
The longest side has been drawn for you.



[3]

- (b) Use a ruler and pair of compasses to construct the bisector of this angle.
Leave in your construction lines.



[2]

- 16** Holly is carrying out a survey about healthy eating.

This is one of the questions.

How many pieces of fruit did you eat yesterday?

Tick one box

☐

1 to 2

☐

3 to 4

☐

4 or more

- (a)** Write down two criticisms of the **response section** for this question.

[2]

Holly carries out her survey by asking her questions of several groups of people. After asking each question, she goes round the group and records each person's answer.

- (b)** Give one reason why this is **not** a good survey method.

[1]

- 17** Dan and Erina are booking a holiday.
The prices are shown in the table below.
Full board includes breakfast, lunch and an evening meal.

	Price per person for 7 nights (£)		
Departure date	31 Jul	7 Aug	14 August
Self Catering	366	372	392
Bed and Breakfast	384	390	412
Full Board	448	455	480

They want to go on the 7th August and stay for 7 nights.
They plan to book bed and breakfast.

- (a)** What is the cost of their holiday.

(a) £ _____ [2]

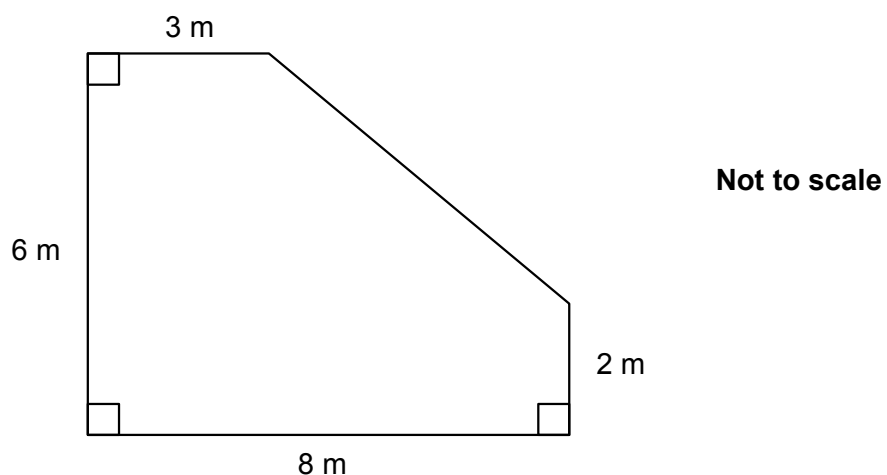
They estimate that they will each spend £10 on lunch and £20 on dinner per day.
Erina says they could reduce the total cost of their holiday by about one quarter if they went full board.

- (b)** Is Erina correct?

You must show your working.

(b) _____ [4]

18



Mr. Tait wishes to have decking over the region of his garden shown above.
The cost will be £50 per square metre.

Work out the total cost.

£ _____ [5]

19* Lanika needs a sheet of card that is at least $\frac{3}{10}$ mm thick.

At home, she finds some card but she doesn't know how thick it is.
Lanika finds that there are 45 sheets of card with a total thickness is 14 mm.

Is the card thick enough for Lanika to use?
Show how you decide.

_____ [3]

20 Martin and Badri are plumbers.

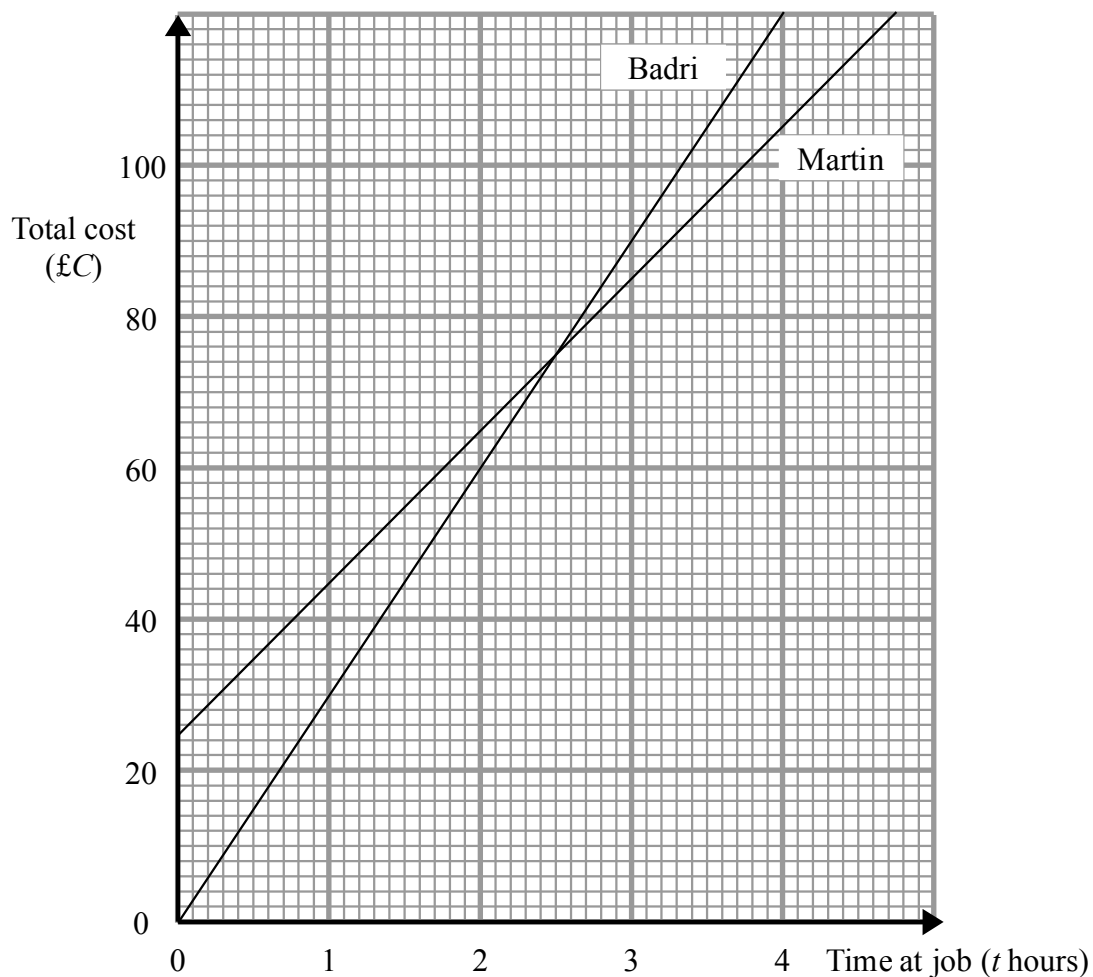
Martin charges a £25 call-out fee and £20 per hour of work.

Badri doesn't charge a call out fee but charges £30 per hour of work.

(a) Calculate how much less Badri charges for a 1 hour job.

(a) £ _____ [2]

The total charge (£C) for a job taking t hours is shown on the graph below for each plumber.



The total that Martin charges is given by the formula $C = 25 + 20t$

(b) Write down a formula for the total that Badri charges.

(b) _____ [1]

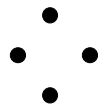
(c) Write down the value of t at the point where the two graphs intersect.

(c) _____ [1]

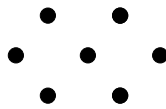
(d) Explain how your answer to part (c) is useful to someone choosing between Martin and Badri to do a plumbing job.

_____ [1]

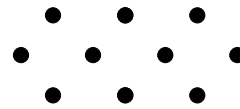
21 Here are some patterns made with dots.



Pattern 1



Pattern 2



Pattern 3

Work out how many dots there will be in Pattern 50.

Show how you obtained your answer.

_____ [4]

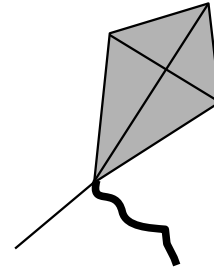
22 Rhys is flying a kite.

The string is 18 m long.

He holds the end of the string 1.5 m above the ground.

The string is straight and makes an angle of 38° with the horizontal.

Use a scale drawing to find the height of the kite above the ground.



_____ m [5]