

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

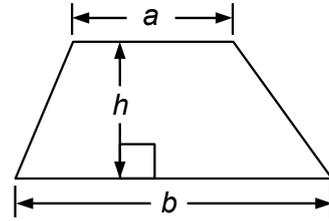


Written by Shaun Armstrong

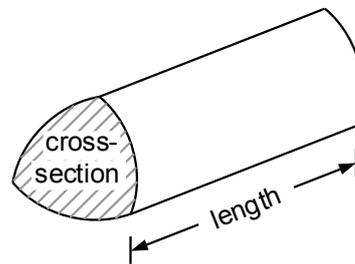
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Formulae Sheet: Foundation Tier

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

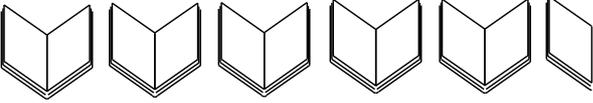
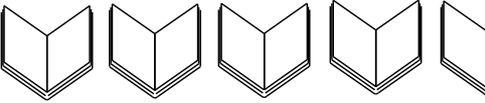
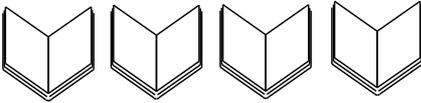


Volume of prism = (area of cross-section) \times length



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]

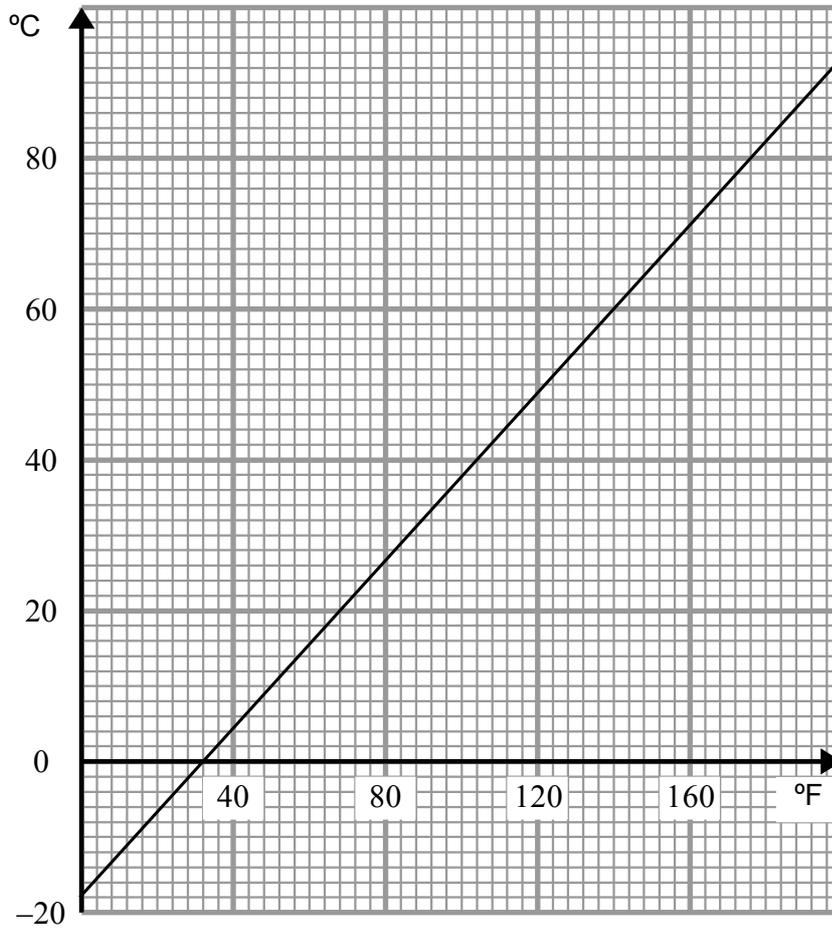
(c) Who read 2 more books than Elsa?

(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.

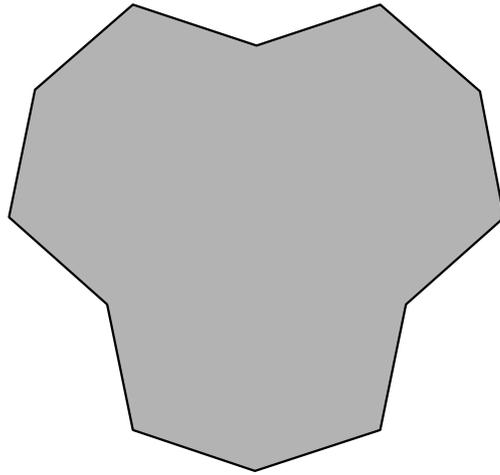
(b) _____ $^{\circ}\text{F}$ [1]

- (c) Water freezes at 0°C .

At what temperature does water freeze in degrees fahrenheit?

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

3 (a)



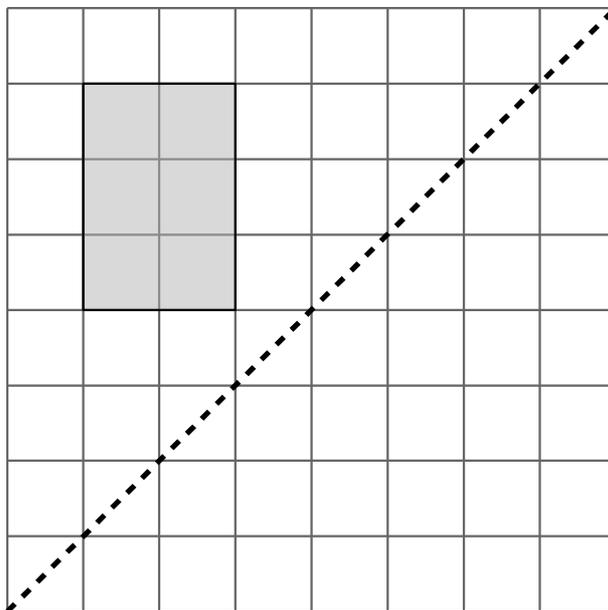
(i) Write down the order of rotational symmetry of the shape above.

(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]

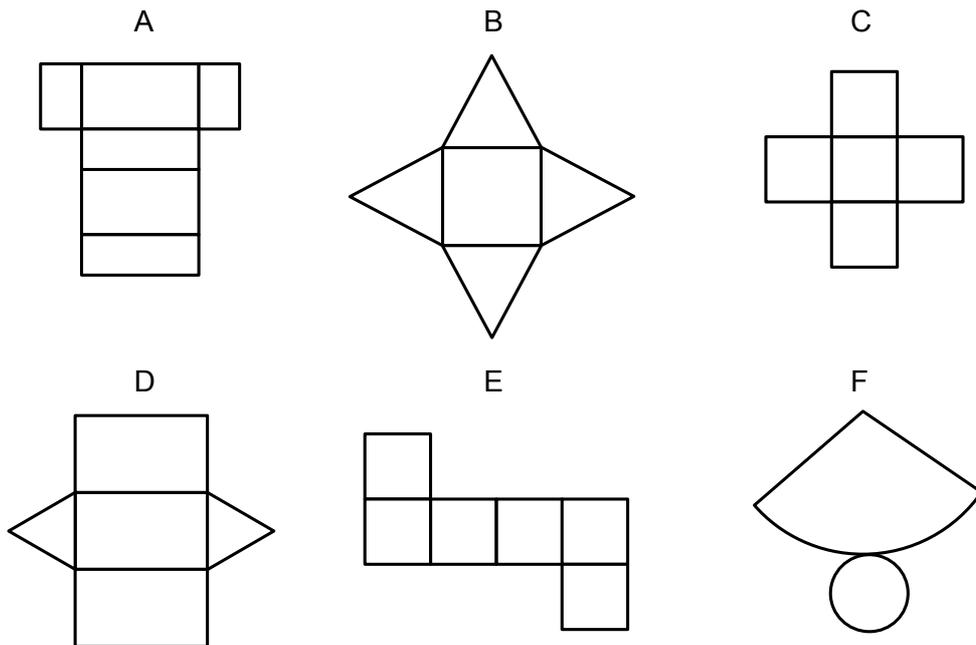
(c) What is 36 as a percentage of 300?

(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]

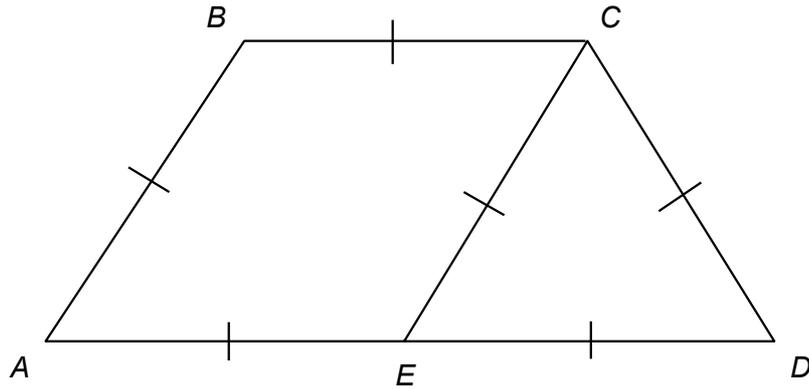
(b) triangular prism,

(b) _____ [1]

(c) cube.

(c) _____ [1]

6



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]

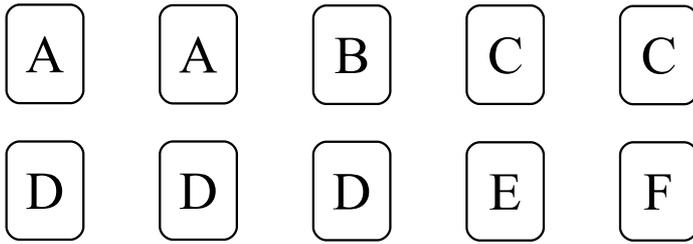
(d) What type of angle is angle ABC ?

(d) _____ [1]

(e) Work out the size of angle ABC .

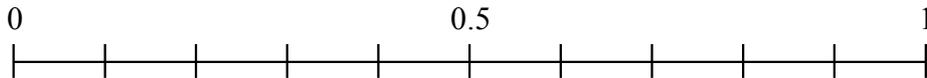
(e) _____ ° [2]

7 Here are 10 letters printed on plastic tiles.



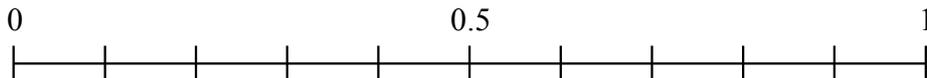
The tiles are put into a bag and one is picked out at random.

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



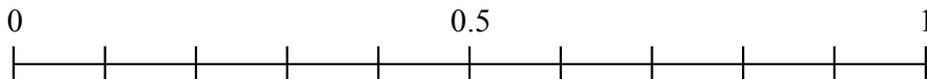
[1]

(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.

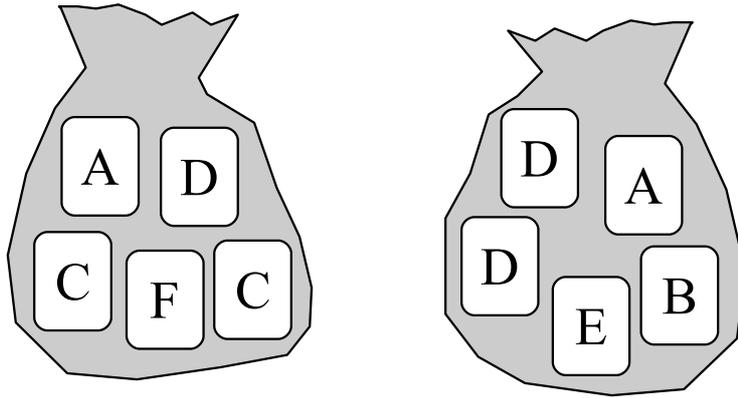


[1]

(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.

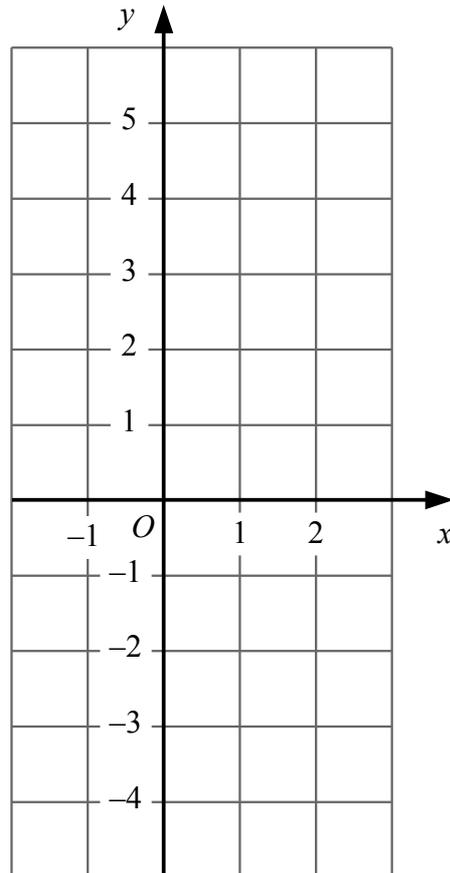
£ _____ [5]

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]

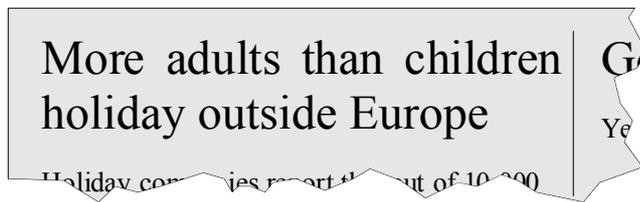
13 This two-way table gives some information about where 80 people went on their last holiday.

	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]

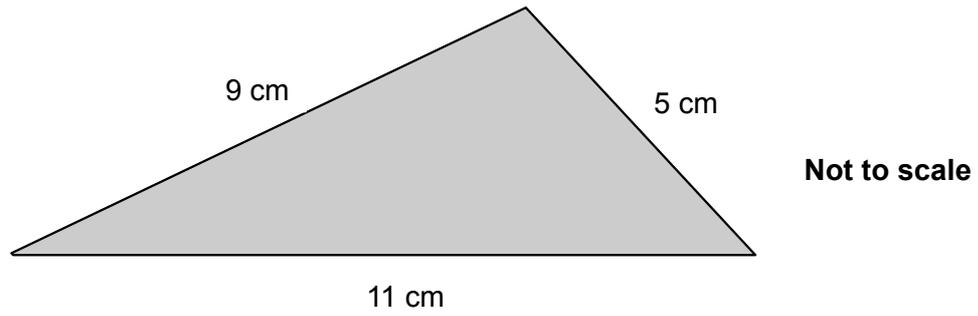
(b) Simplify $8x - 3(2x - 1)$

(b) _____ [2]

(c) Factorise $6p + 10$

(c) _____ [1]

15 (a)



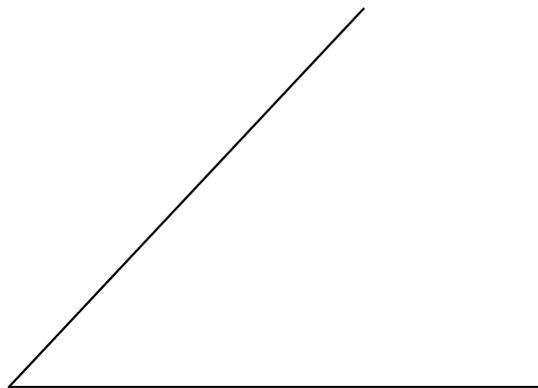
The sketch above shows a triangle with sides of length 5 cm, 9 cm and 11 cm.

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]

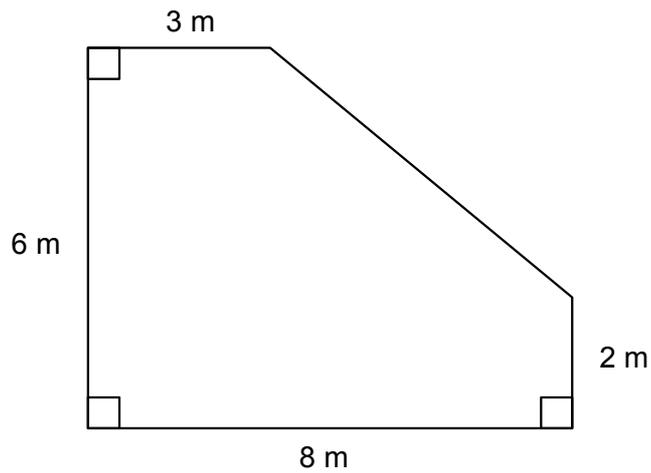
They estimate that they will each spend £10 on lunch and £20 on dinner per day.
 Erina says they could reduce the total cost of their holiday by about one quarter if they went full board.

- (b)** Is Erina correct?

You must show your working.

(b) _____ [4]

18



Not to scale

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.

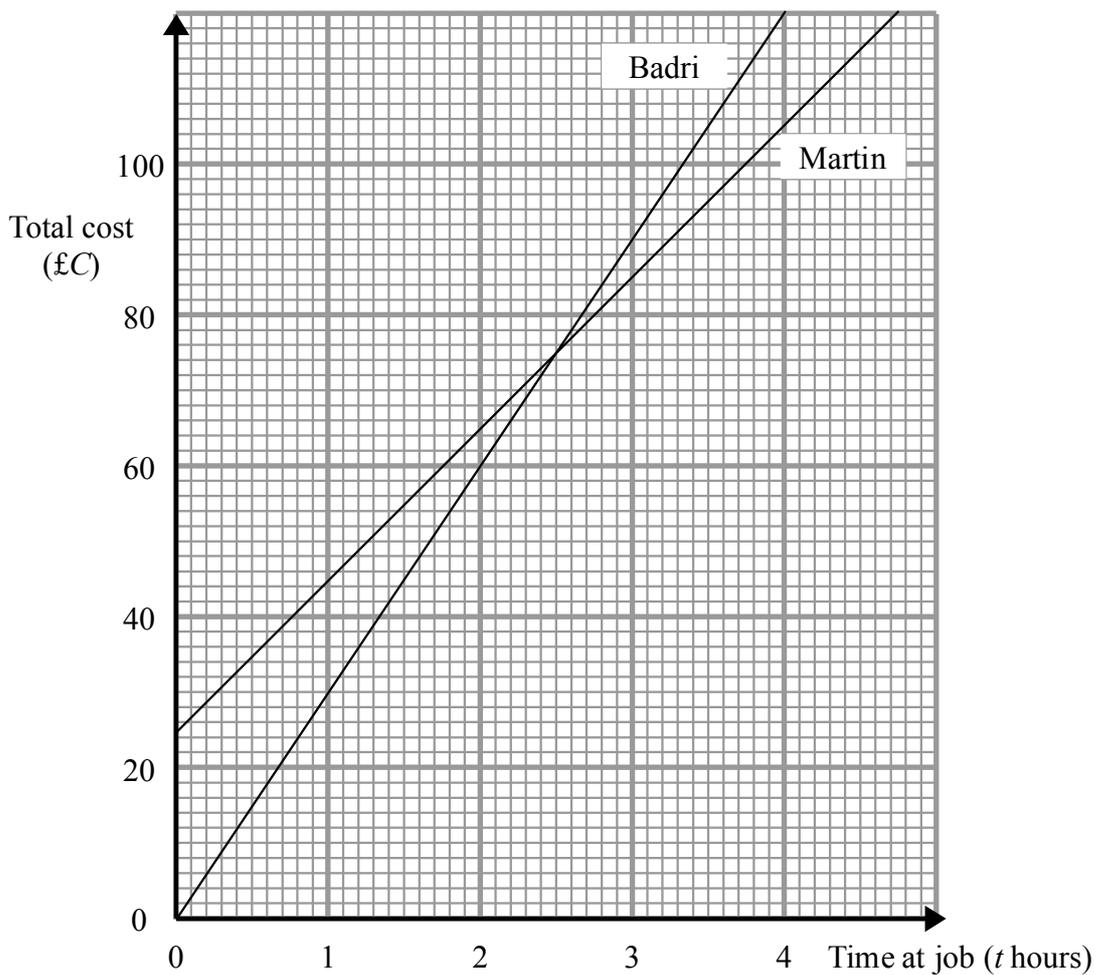
Martin charges a £25 call-out fee and £20 per hour of work.

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]

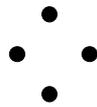
(c) Write down the value of t at the point where the two graphs intersect.

(c) _____ [1]

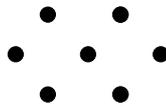
(d) Explain how your answer to part (c) is useful to someone choosing between Martin and Badri to do a plumbing job.

_____ [1]

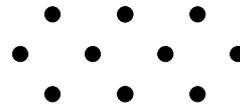
21 Here are some patterns made with dots.



Pattern 1



Pattern 2



Pattern 3

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

Show how you obtained your answer.

_____ [4]

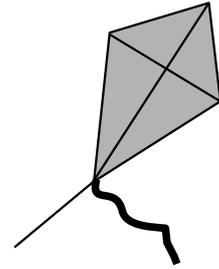
22 Rhys is flying a kite.

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]