

Centre Number										Candidate Number								
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For Examiner's Use	
Examiner's Initials	
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TOTAL	



General Certificate of Secondary Education  
Foundation Tier  
November 2010

# Mathematics (Specification A)

**4306/1F**

**F**

**Paper 1 Non-calculator**

**Tuesday 9 November 2010 9.00 am to 10.30 am**

<p><b>For this paper you must have:</b></p> <ul style="list-style-type: none"> <li>mathematical instruments.</li> </ul> <p>You must <b>not</b> use a calculator.</p>	
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### Time allowed

- 1 hour 30 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. Cross through any work you do not want to be marked.

### Information

- The marks for questions are shown in brackets.
- The maximum mark for this paper is 100.
- You may ask for more answer paper, graph paper and tracing paper. These must be tagged securely to this answer booklet.
- You must **not** use a calculator.

### Advice

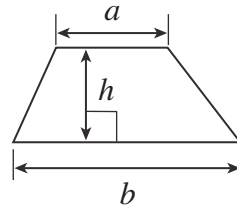
- In all calculations, show clearly how you work out your answer.



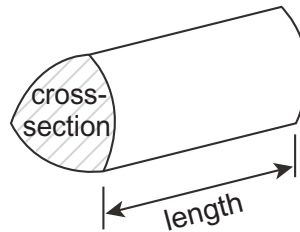
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**Formulae Sheet: Foundation Tier**

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

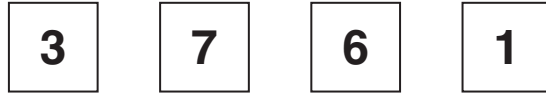


**Volume of prism** = area of cross-section  $\times$  length



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

- 1 Here are four number cards.



The number shown is 3761

- 1 (a) (i) Use all four cards to write down the smallest number.

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(1 mark)

- 1 (a) (ii) Use all four cards to write down the largest **even** number.

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(2 marks)

- 1 (b) Use all four cards to make a correct addition.

$$\square + \square = \square \square$$

(1 mark)

- 1 (c) You need a fifth number card to show the answer to  $13 \times 6$

Write down the fifth number card.

.....

.....

.....

(1 mark)

5
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Turn over ►



2 Ellie has ten coins in her pocket.



2 (a) Show **one** way she can make a total of £1.80 using these coins.

.....

Answer ..... (1 mark)

2 (b) There are **four** different ways she can make a total of £2.50 using these coins.

Here is one way.

£1 50p 50p 20p 10p 10p 10p

List the other three ways.

.....

Answer 1 .....

.....

Answer 2 .....

.....

Answer 3 .....

(3 marks)



2 (c) Can Ellie split her coins into **two** piles so that both piles total the same amount of money?

Tick the correct box.

Yes

No

You **must** show your working.

.....  
.....  
.....

(2 marks)

3 Mr and Mrs Morris take their children to a theme park.

Admission Price	
ADULT	£8.50
CHILD	£5.50

The cost of admission for the family is £33.50

How many children do they take?

.....  
.....  
.....

Answer .....

(3 marks)

Turn over for the next question

9
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Turn over ►



**4** Here is a list of numbers.

5    7    12    13    18    24    25    27

From the list,

**4 (a)** write down the number that is a multiple of 8

Answer ..... (1 mark)

**4 (b)** write down the number that is a factor of 28

Answer ..... (1 mark)






**4 (c)** write down the number that is a multiple of 9 and a factor of 36

Answer ..... (1 mark)



- 5 In a survey, a group of children were asked: 'What is your favourite type of TV programme?'

The pictogram shows some of the results.

Sport	
Films	
Comedy	
Soaps	
Other	

Key:  represents 4 children

- 5 (a) How many children chose Soaps?


.....

Answer ..... (1 mark)

- 5 (b) How many more children chose Sport than Comedy?

.....

Answer ..... (1 mark)

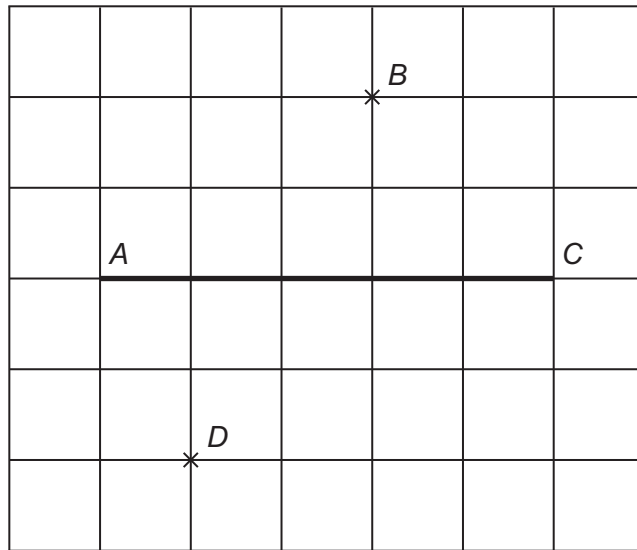
- 5 (c) Give one disadvantage in using the symbol  to represent 4 children.

.....

..... (1 mark)



6 AC is a straight line.



6 (a) Draw a line that is parallel to AC and passes through B. (1 mark)

6 (b) Draw a line that is at right angles to AC and passes through D. (1 mark)

6 (c) Mark with a cross, the point that is half-way between C and D. Label the point E. (1 mark)

7 Here is a sequence of numbers.

35 30 25 20 15

7 (a) Write down the next number in the sequence.  
Answer ..... (1 mark)

7 (b) Write down the rule for continuing the sequence.  
Answer ..... (1 mark)

7 (c) Which of the following expressions is the  $n$ th term of the sequence?  
Circle the correct answer.

$5n + 30$        $5n - 40$        $30 - 5n$        $40 - 5n$

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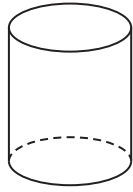
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(1 mark)

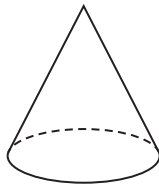




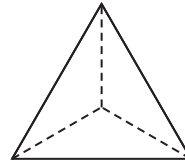
8 Here are five solid shapes.



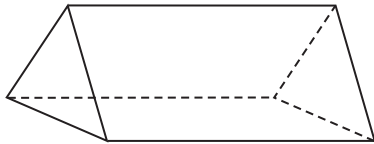
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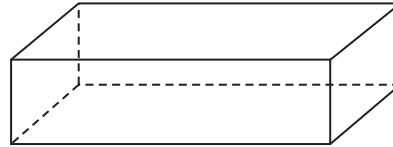
B



C



D



E

8 (a) (i) What name is given to shape A?

Answer ..... (1 mark)

8 (a) (ii) What name is given to shape B?

Answer ..... (1 mark)

8 (b) How many edges does shape C have?

Answer ..... (1 mark)

8 (c) How many faces does shape D have?

Answer ..... (1 mark)

8 (d) Shape E is a cuboid.  
All the faces are rectangles.

How many planes of symmetry does shape E have?

Answer ..... (1 mark)



**9** There are 800 students at Abbey High School.  
120 of these students are on a school trip.

**9 (a)** Work out the number of students who are **not** on the trip.

.....  
.....

Answer ..... (1 mark)

**9 (b)** Sally says that more than 20% of the students are on the trip.

Is she correct?  
Tick a box.

Yes No

Show working to support your answer.

.....  
.....  
.....

(2 marks)

**10** A school shop buys pens for 30p each.  
The shop sells them for 50p each.  
The shop makes £7 profit.

How many pens does the shop buy?

.....  
.....  
.....  
.....  
.....

Answer ..... (3 marks)



11 The values of some expressions for  $x = 4$  and  $x = 7$  are shown.

Expression	Value when $x = 4$	Value when $x = 7$
$x^2$	16	
$2x$		14
	9	12

11 (a) Fill in the **three** missing entries.

.....  
 .....  
 ..... (3 marks)

11 (b) Work out the value of  $x^2 + 3x + 5$  when  $x = 4$

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

12 (a) (i) Round the number 6.518 to one decimal place.

Answer ..... (1 mark)

12 (a) (ii) Round the number 6.518 to two decimal places.

Answer ..... (1 mark)

12 (b) Write down the value of  $10^2$

Answer ..... (1 mark)

12 (c) Write down the value of  $\sqrt{144}$

Answer ..... (1 mark)

12 (d) Tom says that 6 is a cube number because  $2^3 = 6$

Why is Tom wrong?

.....  
 ..... (1 mark)



13 (a) How long is it from 10:30 am to 11:20 am?

.....

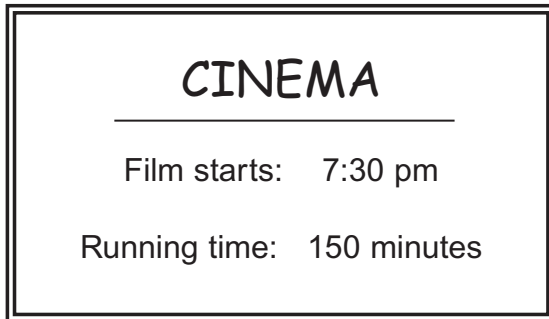
Answer ..... minutes (1 mark)

13 (b) How many minutes are there in  $1\frac{3}{4}$  hours?

.....

Answer ..... minutes (1 mark)

13 (c) Here is a sign outside a cinema.



Jack says:



This means that I can see the whole film and catch the last bus home at 9:45 pm

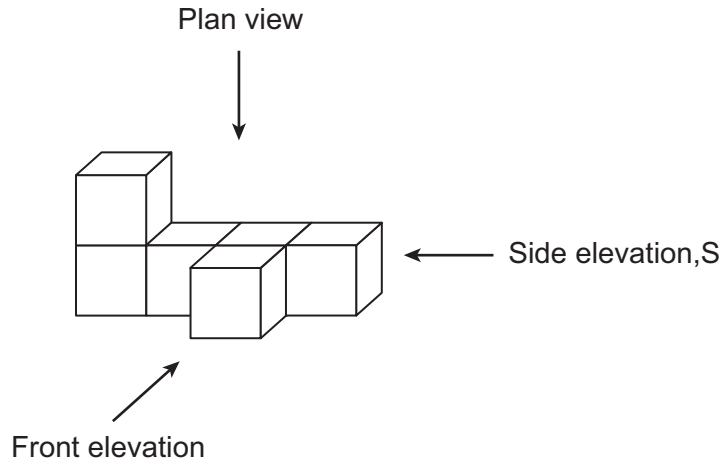
Will Jack be able to see the whole film and catch the last bus? Show your working clearly.

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.....

(2 marks)



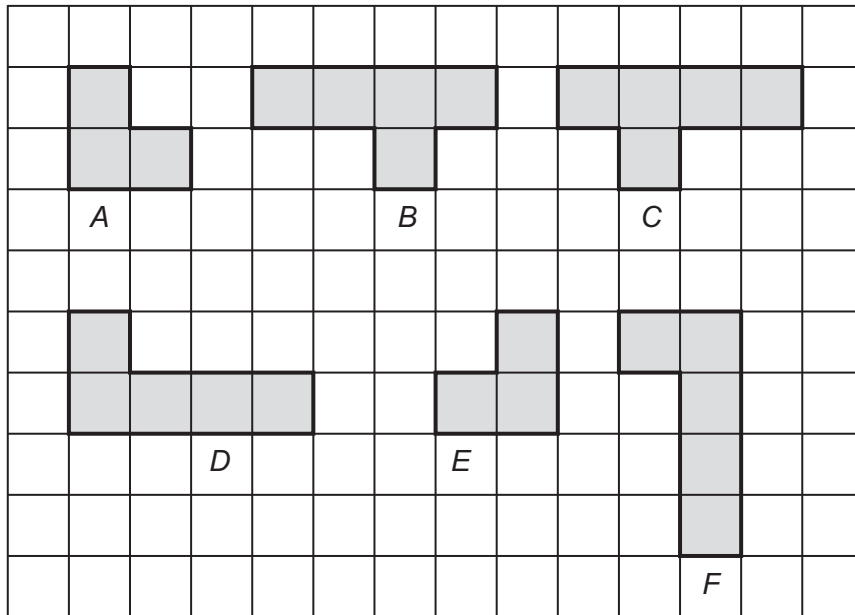
14 This solid shape is made from cubes.



14 (a) How many cubes are there in the solid shape?

Answer ..... (1 mark)

14 (b) Here are some diagrams.



14 (b) (i) Which is the plan view?

Answer ..... (1 mark)

14 (b) (ii) Which is the front elevation?

Answer ..... (1 mark)

14 (b) (iii) Which is the side elevation, S?

Answer ..... (1 mark)



**15 (a)** Solve  $w + 4 = 9$

.....

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

**15 (b)** Solve  $4x - 2 = 10$

.....

.....

Answer  $x =$  ..... (2 marks)

**15 (c)** Solve  $\frac{y}{3} = -2$

.....

.....

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

**15 (d)** Solve  $5t + 12 = 3(t + 5)$

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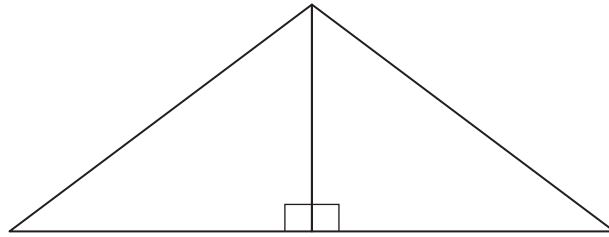
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Answer  $t =$  ..... (3 marks)



**16** Two congruent right-angled triangles are put together to make an isosceles triangle as shown.



**16 (a)** Use measurements to work out the perimeter of the isosceles triangle.

.....  
.....

Answer ..... cm (2 marks)

**16 (b)** Work out the area of the isosceles triangle.  
State the units of your answer.

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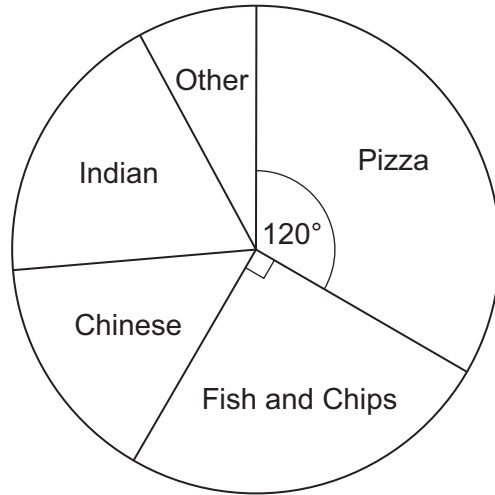
Answer ..... (3 marks)

**16 (c)** Draw a sketch to show how the two right-angled triangles can be put together to make a kite.

(1 mark)



17 The pie chart shows the results of a survey about the takeaway food some students prefer.



60 students prefer Fish and Chips.

How many students prefer Pizza?  
You **must** show your working.

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.....

Answer ..... (3 marks)

18 The difference between the squares of two whole numbers is sometimes a prime number.

For example  $5^2 - 2^2 = 21$  and 21 is **not** prime  
 but  $4^2 - 3^2 = 7$  and 7 is prime

18 (a) Find a different example where the answer is **not** prime.

.....

.....

Answer ..... (1 mark)

18 (b) Find a different example where the answer is prime.

.....

.....

Answer ..... (1 mark)





19 Sam and Pat are playing a game with dice.

19 (a) Sam plays the game using a **biased** dice. The probability that he throws a six is 0.1

19 (a) (i) Write down the probability that he does **not** throw a six.

.....

Answer ..... (1 mark)

19 (a) (ii) Sam throws this biased dice 120 times.

Work out an estimate for the number of sixes that he will throw.

.....

.....

Answer ..... (2 marks)

19 (b) Pat plays the game using a **fair** dice. She throws this fair dice 120 times.

Is she likely to throw more sixes than Sam? Tick the correct box.

Yes

No

Give a reason for your answer.

.....

.....

.....

(2 marks)

20 Use approximations to estimate the value of  $\frac{52.3 \times 97.8}{19.4}$

You **must** show your working.

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.....

.....

.....

Answer ..... (2 marks)

12

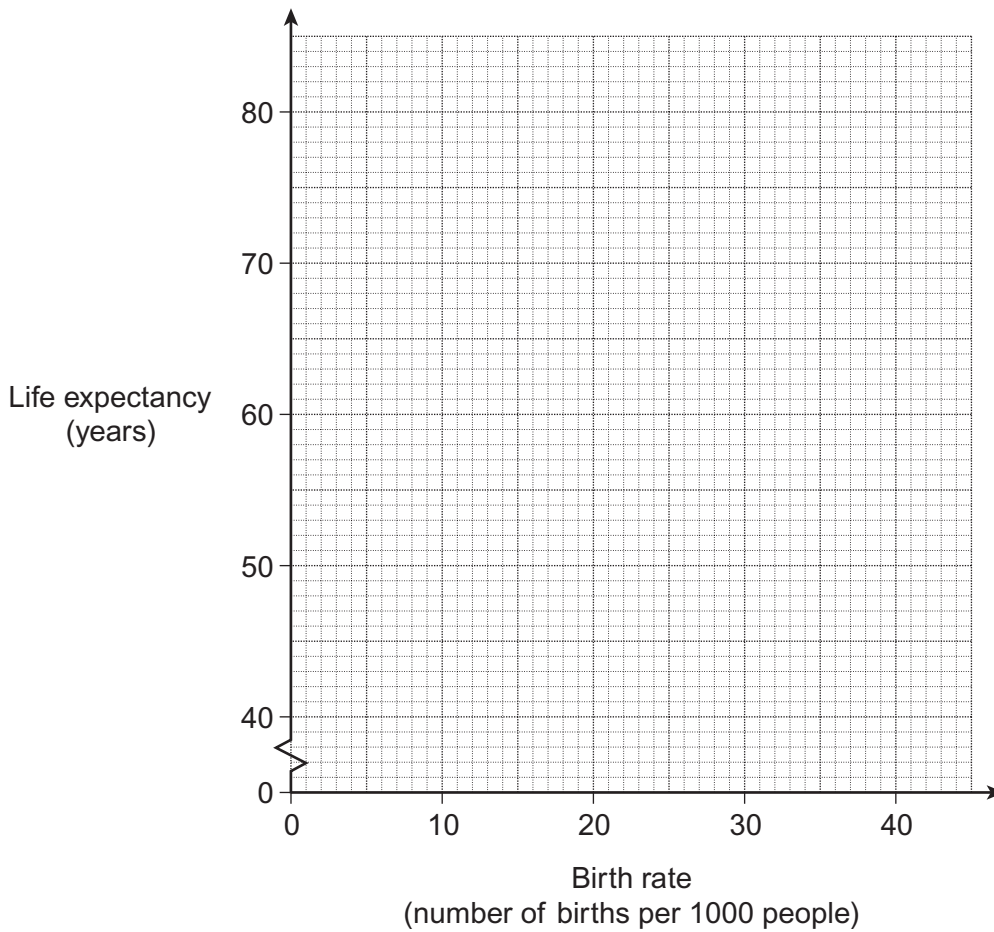
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21 The birth rate and the life expectancy for seven countries are shown in the table.

Country	Birth rate (number of births per 1000 people)	Life expectancy (years)
Chile	15	77
Egypt	22	72
Gambia	39	59
India	22	69
Japan	8	82
Nepal	30	64
United Kingdom	11	79

21 (a) Plot the data as a scatter graph on the grid below.



(2 marks)



21 (b) Describe the strength and type of correlation.

Answer Strength .....

Type of correlation .....

(2 marks)

21 (c) Draw a line of best fit on your scatter graph.

(1 mark)

21 (d) Use the line of best fit to estimate the life expectancy for Turkey, whose birth rate is 16 births per 1000 people.

Answer ..... years

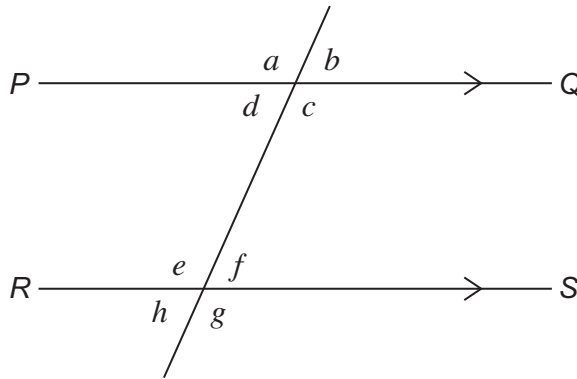
(1 mark)

21 (e) Why might it **not** be reliable to use the line of best fit to estimate the life expectancy for Niger, whose birth rate is 50 births per 1000 people?

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.....  
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(1 mark)

22 On the diagram  $PQ$  is parallel to  $RS$ .



22 (a) Which angle is vertically opposite to angle  $a$ ?

Answer .....

(1 mark)

22 (b) Which angle is alternate to angle  $f$ ?

Answer .....

(1 mark)

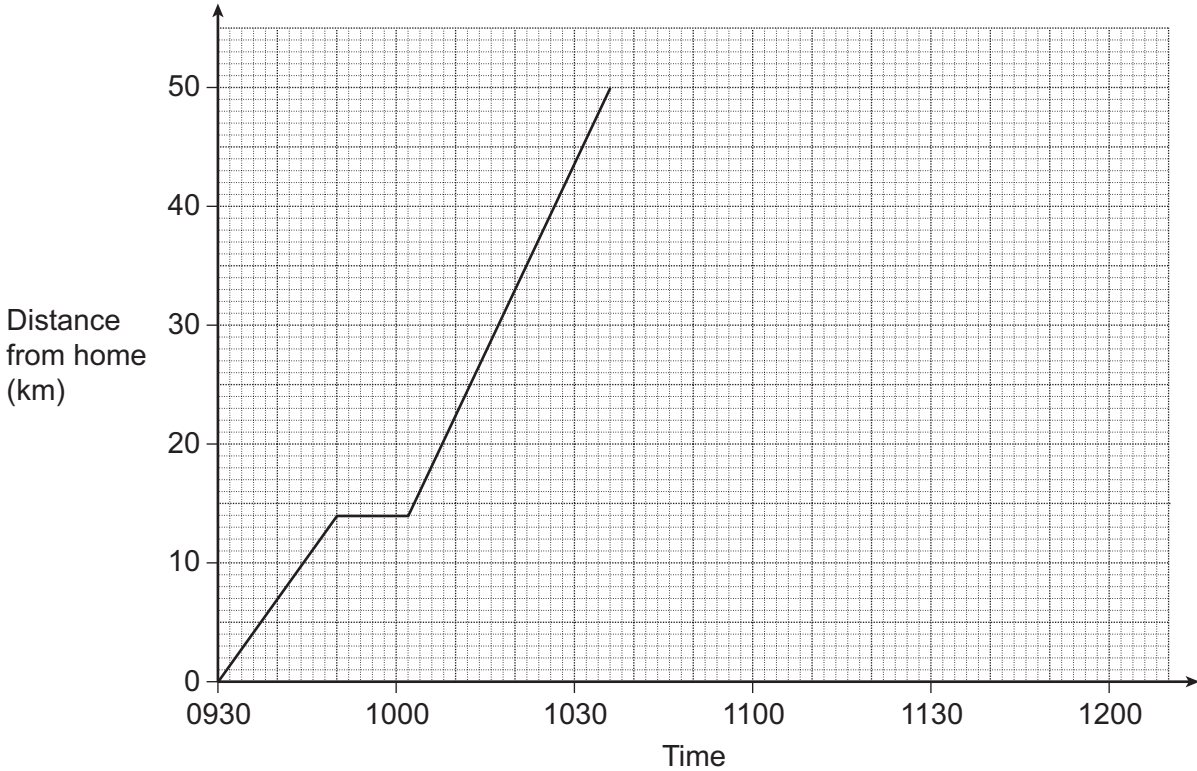
22 (c) Which angle is corresponding to angle  $c$ ?

Answer .....

(1 mark)



**23** Marcus leaves home at 0930 to drive to Leeds, 50 km away. He stops at a petrol station on his way to Leeds. The graph shows his journey to Leeds.



**23 (a)** How far has he gone before he stops at the petrol station?

Answer ..... km (1 mark)

**23 (b)** How many minutes is he at the petrol station?

.....

Answer ..... minutes (1 mark)

**23 (c)** Marcus stays in Leeds until 1110. He leaves Leeds and arrives home at 1150, without stopping on the way.

**23 (c) (i)** Complete the graph.

(1 mark)

**23 (c) (ii)** Calculate his average speed for the return journey. Give your answer in kilometres per hour.

.....

.....

.....

Answer ..... km/h (2 marks)



24

Harry is going to buy a new car.  
Here is some information about the running costs of the car.

Average amount of fuel used per <b>100</b> km	5 litres
Average cost of fuel per litre	£1.20
Road Tax and Insurance, per year	£450
Total servicing costs for <b>three</b> years	£500

Harry drives 30 000 kilometres a year, on average.  
He plans to keep the car for three years.

What is Harry's expected total running costs for the three years?  
You **must** show your working.

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Answer £ ..... (5 marks)

**END OF QUESTIONS**

10



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