

Surname						Other Names					
Centre Number						Candidate Number					
Candidate Signature											

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General Certificate of Secondary Education
June 2005



MATHEMATICS (SPECIFICATION A) 3301/2F
Foundation Tier
Paper 2 Calculator

F

Wednesday 15 June 2005 9.00 am to 10.30 am

<p>In addition to this paper you will require:</p> <ul style="list-style-type: none"> • a calculator • mathematical instruments. 	
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For Examiner's Use	
Pages	Mark
3	
4 – 5	
6 – 7	
8 – 9	
10 – 11	
12 – 13	
14 – 15	
16 – 17	
18 – 19	
20 – 21	
22 – 23	
24	
TOTAL	
Examiner's Initials	

Time allowed: 1 hour 30 minutes

Instructions

- Use blue or black ink or ball-point pen. Draw diagrams in pencil.
- Fill in the boxes at the top of this page.
- Answer **all** questions in the spaces provided.
- Do all rough work in this booklet.
- If your calculator does not have a π button, take the value of π to be 3.14 unless otherwise instructed in the question.

Information

- The maximum mark for this paper is 100.
- Mark allocations are shown in brackets.
- Additional answer paper, graph paper and tracing paper will be issued on request and must be tagged securely to this answer booklet.
- You are expected to use a calculator where appropriate.

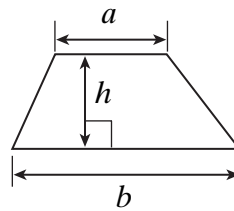
Advice

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

Formula Sheet: Foundation Tier

You may need to use the following formula:

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



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

1



- (a) (i) Arnie orders a burger and fries.
How much does this cost?

.....

Answer £ (1 mark)

- (ii) He pays with a £5 note.
How much change does he get?

.....

Answer £ (1 mark)

- (b) A 'Meal Deal' gives a burger, fries and drink for £2.50
How much cheaper is this than buying the items separately?

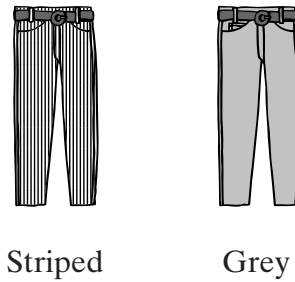
.....

Answer pence (2 marks)

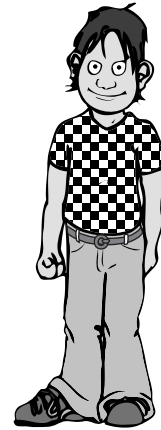
2 Tommy has three T-shirts.



He has two pairs of jeans.



Today he is wearing the checked T-shirt and the grey jeans.




Complete the table to show all the combinations of T-shirt and jeans that Tommy could wear.

T-shirt	Jeans
checked	grey

(2 marks)

- 3 This is the payment plan for Donal's mobile phone.
He receives a bill every month.

PAYMENT PLAN



£5 per month

PLUS

5p per minute

- (a) In January, Donal did not make any calls.
How much was his bill?

.....

Answer £ (1 mark)

- (b) In February, Donal made 100 minutes of calls.
How much was his bill?

.....

.....

Answer £ (2 marks)

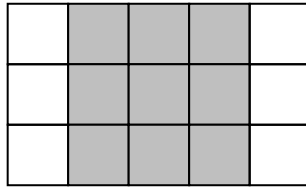
- (c) In March, Donal's bill was £7.50
How many minutes of calls did he make?

.....

.....

Answer minutes (2 marks)

4 (a)

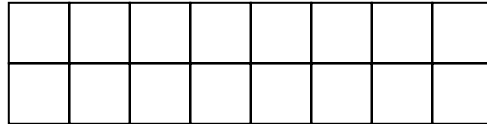


What fraction of this diagram is shaded?
Give your answer in its simplest form.

.....

Answer (2 marks)

(b) Shade $\frac{3}{4}$ of the diagram below.



(1 mark)

(c) **Two** of the following fractions are equal to $\frac{3}{4}$
Circle these **two** fractions.

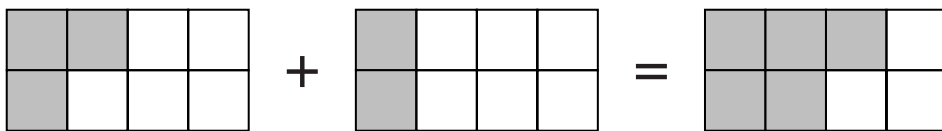
$\frac{9}{12}$ $\frac{10}{15}$ $\frac{15}{20}$ $\frac{8}{12}$

.....

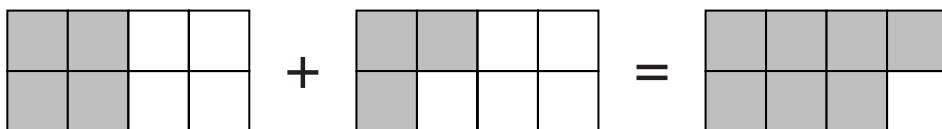
.....

(2 marks)

(d) This diagram shows the fraction calculation $\frac{3}{8} + \frac{1}{4} = \frac{5}{8}$



Write down the fraction calculation shown by this diagram.



Answer (1 mark)

5 Find

- (a) 10% of £6.50

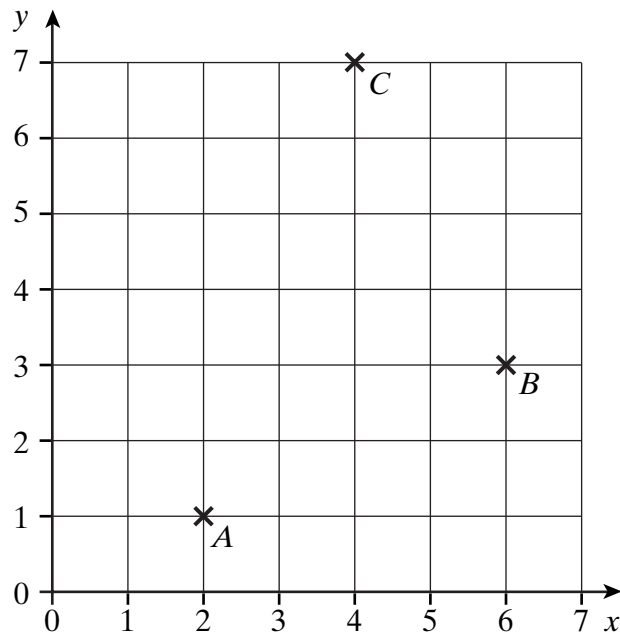
.....

Answer pence (1 mark)

- (b)
- $\frac{3}{4}$
- of 200

.....

Answer (1 mark)

6 Points A , B and C are three corners of a square $ABCD$.

- (a) Write down the coordinates of
- A
- ,
- B
- and
- C
- .

 A (..... ,) B (..... ,) C (..... ,) (2 marks)

- (b) The point
- D
- (0, 5) is the fourth corner of the square.
-
- Mark, with
- X**
- , the position of the point
- D
- on the grid.

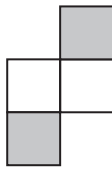
(1 mark)

Turn over ►

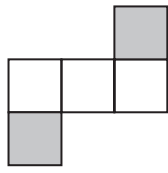
7 Patterns are made from shaded and unshaded squares.



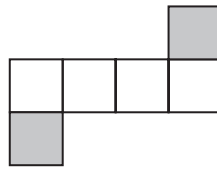
Pattern 1



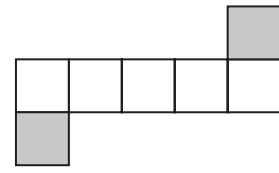
Pattern 2



Pattern 3



Pattern 4



Pattern 5

(a) Draw Pattern 6.

(1 mark)

(b) How many shaded squares will there be in Pattern 20?

.....

Answer (1 mark)

(c) How many unshaded squares will there be in Pattern 20?

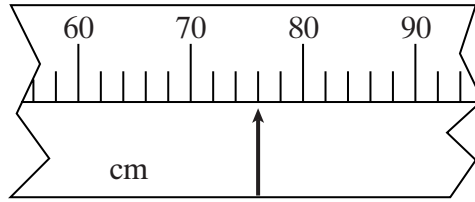
.....

.....

Answer (1 mark)

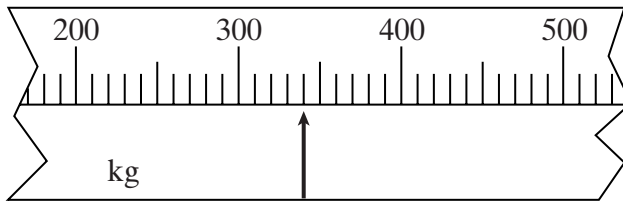
8 Give the values shown by the arrows on these scales.

(a)



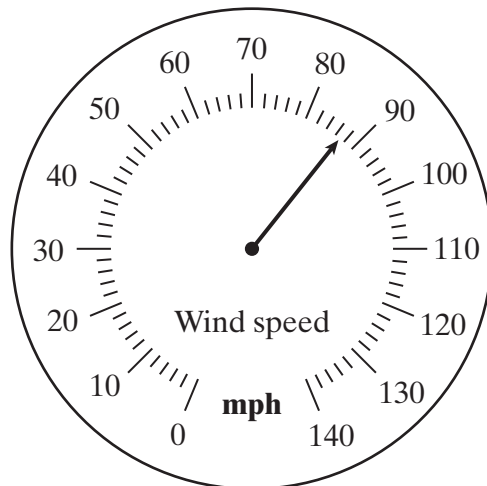
Answer cm (1 mark)

(b)



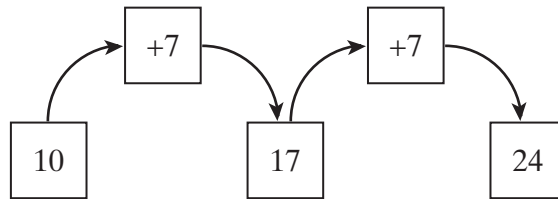
Answer kg (1 mark)

(c)

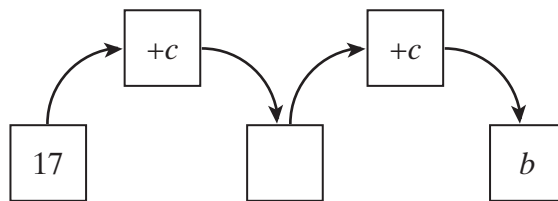
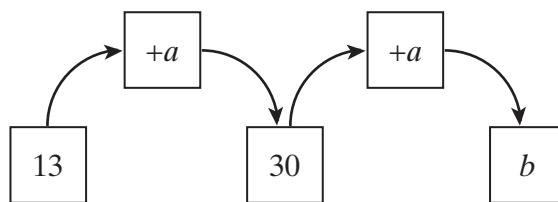


Answer mph (1 mark)

- 9 In all of the following diagrams numbers are increased by two equal steps.
For example:



Find a , b and c .



.....

.....

.....

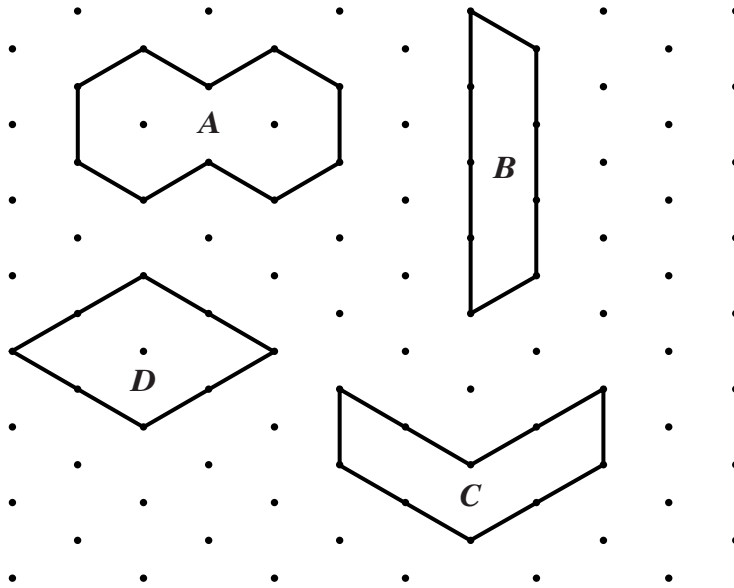
.....

.....

.....

Answer $a = \dots\dots\dots$, $b = \dots\dots\dots$, $c = \dots\dots\dots$ (3 marks)

10 Some shapes are drawn on a 1 centimetre triangular grid.



(a) Find the perimeter of shape *D*.

.....

Answer cm (1 mark)

(b) Which **two** shapes have the same perimeter?

.....

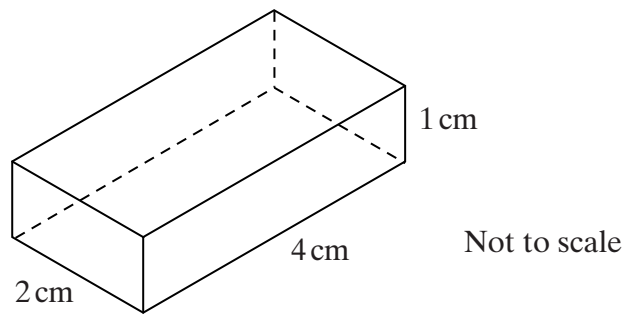
Answer (1 mark)

(c) Which **two** shapes have the same area?

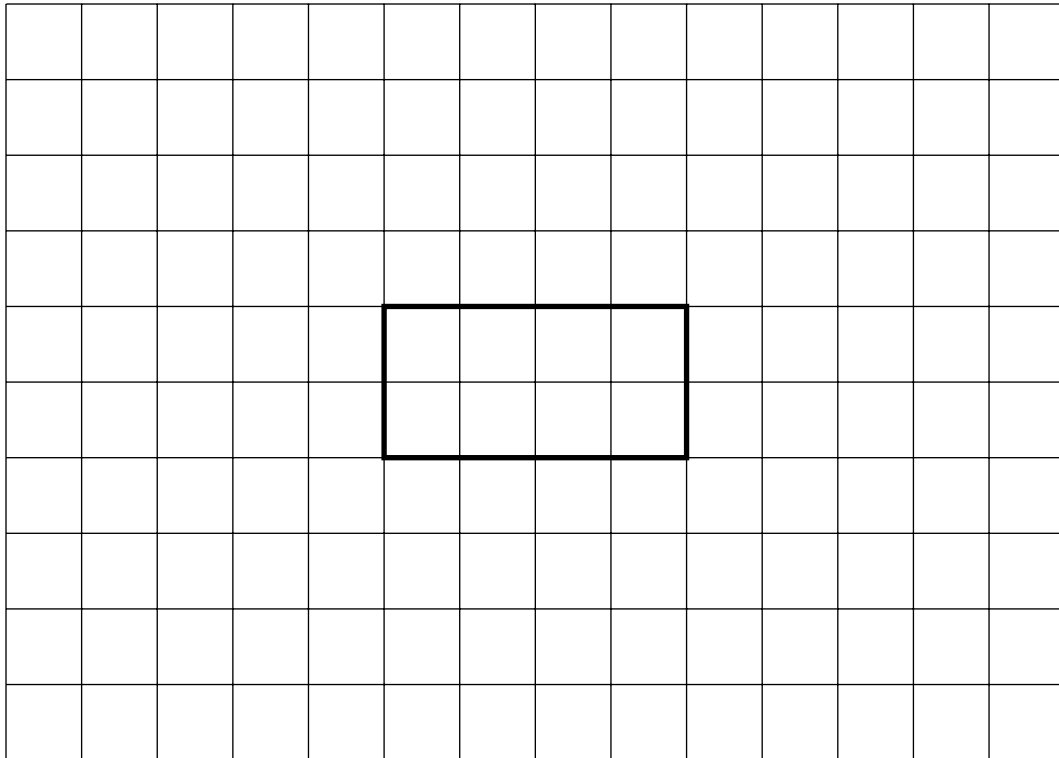
.....

Answer (2 marks)

- 11 The diagram shows a cuboid 4 cm by 2 cm by 1 cm.



On the centimetre grid below, complete the net of the cuboid.



(3 marks)

12 Solve the equations.

(a) $5x = 35$

.....
.....

Answer $x =$ (1 mark)

(b) $4y - 5 = 11$

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

Answer $y =$ (2 marks)

(c) $7z - 3 = 6 + z$

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

Answer $z =$ (3 marks)

13 (a) Calculate $2.7^2 + \sqrt{3.5}$

.....

Answer (1 mark)

(b) Calculate the cube of 4.2

.....

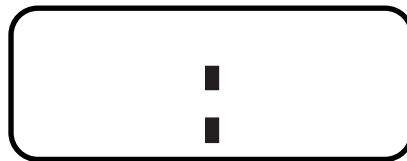
Answer (1 mark)

Turn over 

14 A 24-hour digital clock shows the time at twenty-three minutes past seven in the morning.



(a) Fill in the clock below to show the time at twenty-three minutes past seven in the evening.



(1 mark)

(b) Tick a box to say if each of the following statements is true or false.

	True	False
7 and 23 are both odd numbers	<input type="checkbox"/>	<input type="checkbox"/>
The sum of 7 and 23 is an odd number	<input type="checkbox"/>	<input type="checkbox"/>
7 is a factor of 23	<input type="checkbox"/>	<input type="checkbox"/>
23 minus 7 is a square number	<input type="checkbox"/>	<input type="checkbox"/>

(2 marks)

(c) Round 723 to the nearest ten.

Answer (1 mark)

(d) A plane flies from London to Lisbon.
The plane leaves London at 07 23 and arrives in Lisbon at 09 22.
How long is the flight?
Give your answer in hours and minutes.

.....
.....

Answer hours minutes (1 mark)

(e) A first class return fare costs £723.
The exchange rate is £1 = 1.30 euros.
How much is £723 in euros?

.....
.....

Answer euros (2 marks)

15 A girls' basketball team plays six matches.
The scores are

28 30 25 35 39 26

(a) What is the median score?

.....

Answer (2 marks)

(b) What is the mean score?

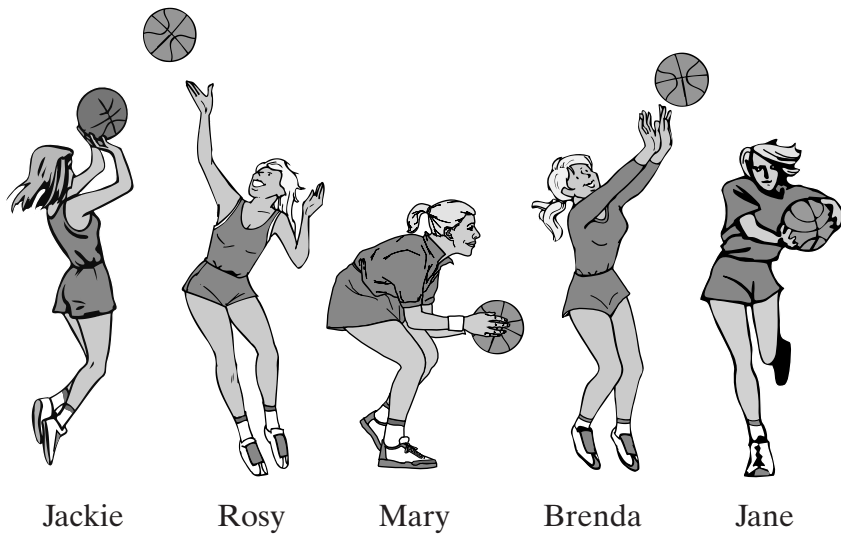
.....

.....

.....

Answer (3 marks)

(c) These are the members of the team.

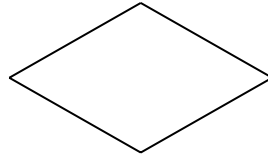


One girl is to be chosen at random to be captain.
What is the probability that her name begins with J?

.....

Answer (2 marks)

- 16 (a) Write down the name of this quadrilateral.



Answer (1 mark)

- (b) Three of these statements are true for a kite.
Draw arrows from the statements that are true to the picture of the kite.
One of them has been done for you.

Two pairs of sides are equal

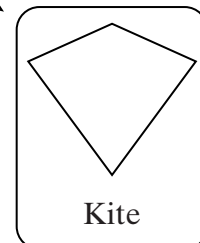
It has 2 lines of symmetry

It has rotational symmetry
of order 2

The diagonals cross at
right angles

Opposite angles are equal

One pair of opposite angles
are equal



(2 marks)

17 The ticket prices for a river cruise are

Adult	£7
Child	£5
Family	£20

A family ticket can be used for up to 2 adults and up to 3 children.

(a) How much does a family of 2 adults and 3 children save by buying a family ticket?

.....

Answer £ (2 marks)

(b) A family of 1 adult and 4 children go on the river cruise.
 Work out the cheapest price they could pay.

.....

Answer £ (2 marks)

18 A drink in Japan costs 374 yen.
 The exchange rate is £1 = 189 yen.
 What is the cost in pounds?

.....

Answer £ (2 marks)

19 Ali is x cm tall.

- (a) Suki is 5 cm taller than Ali.
Write down an expression in x for Suki's height.

.....
Answer cm (1 mark)

- (b) Ali's sister is 2 cm shorter than Ali.
Write down an expression in x for the height of Ali's sister.

.....
Answer cm (1 mark)

- (c) Ali's father is twice as tall as Ali.
Write down an expression in x for the height of Ali's father.

.....
Answer cm (1 mark)

- (d) Darius has a height, in cm, given by the expression $2x - 65$
He is 115 cm tall.

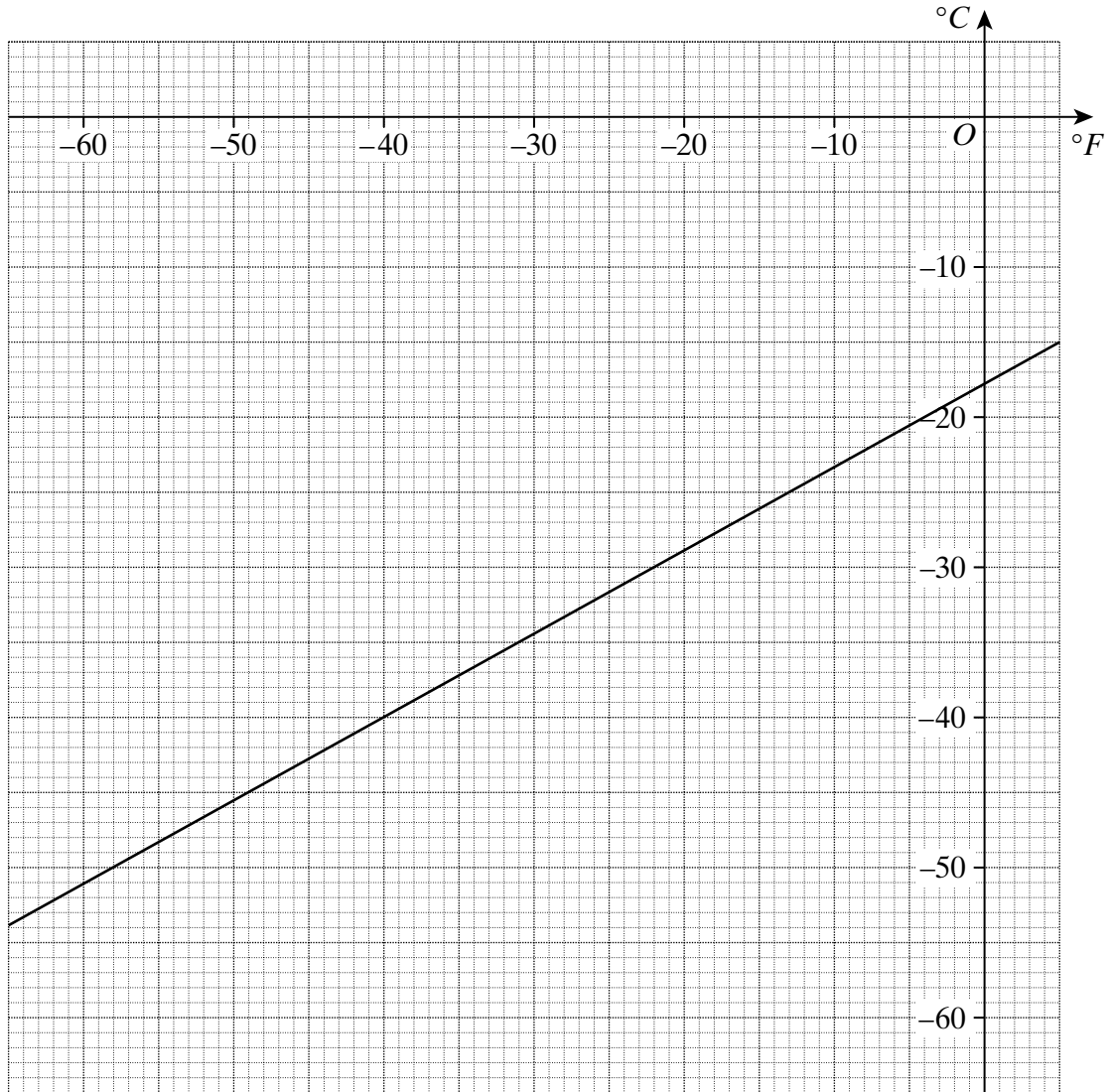
Solve the equation

$$2x - 65 = 115$$

to find Ali's height.

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

20 The graph is used to convert negative temperatures between °F and °C.



(a) Use the graph to convert -10°F into $^{\circ}\text{C}$.

.....

Answer $^{\circ}\text{C}$ (1 mark)

(b) Use the graph to convert -50°C into $^{\circ}\text{F}$.

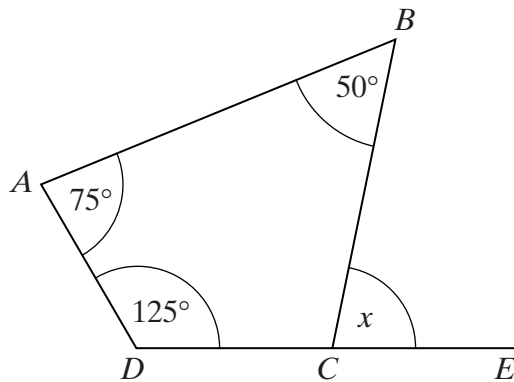
.....

Answer $^{\circ}\text{F}$ (1 mark)



Turn over ►

- 21 (a) $ABCD$ is a quadrilateral.
The side DC is extended to E .



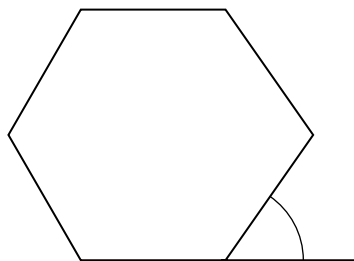
Not drawn accurately

Work out the value of x .

.....
.....

Answer degrees (3 marks)

- (b) Calculate the size of the exterior angle of a regular hexagon.

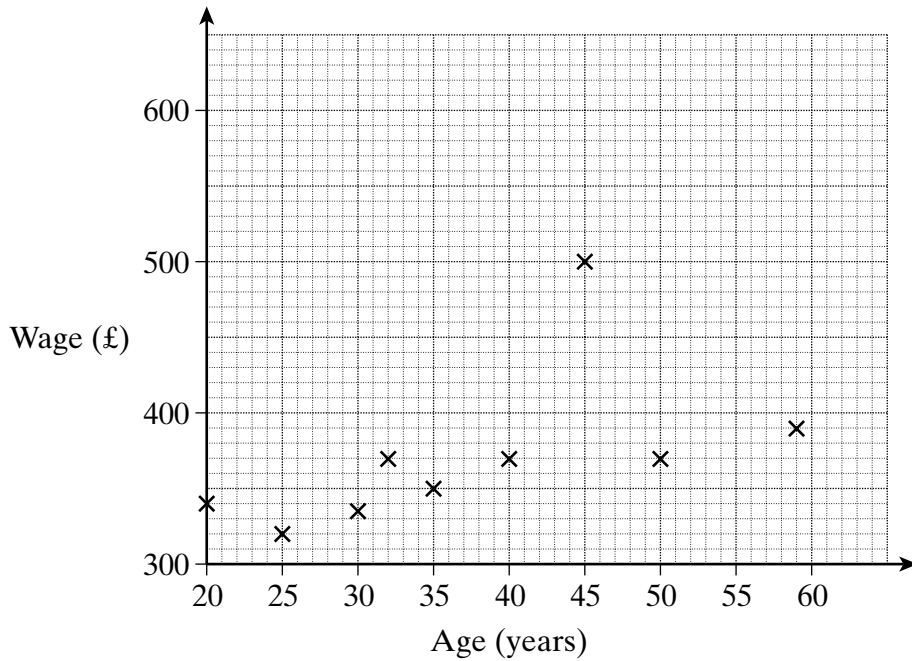


Not drawn accurately

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

Answer degrees (2 marks)

22 The ages and weekly wages of the 9 employees in a small company are shown.



(a) Write down one way in which the graph is misleading.

.....

.....

.....

(1 mark)

(b) The manager, who is 45 years old, has his weekly wage increased from £500 to £600.

(i) Will this alter the median wage of the 9 employees?

Explain your answer.

.....

.....

(1 mark)

(ii) Will this alter the modal wage of the 9 employees?

Explain your answer.

.....

.....

(1 mark)

Turn over ►

23 The number of goals scored in 15 hockey matches is shown in the table.

Number of goals	Number of matches
1	2
3	1
5	5
6	3
9	4

Calculate the mean number of goals scored.

.....

.....

.....

.....

Answer goals (3 marks)

24 Use the formula $v = u + at$

to find the value of v when $u = -10$, $a = 1.8$ and $t = 3.7$

.....

.....

Answer (2 marks)

25 The town of Axon has 35 600 houses.
The ratio of detached houses to other types of houses is 1 : 4
How many detached houses are there?

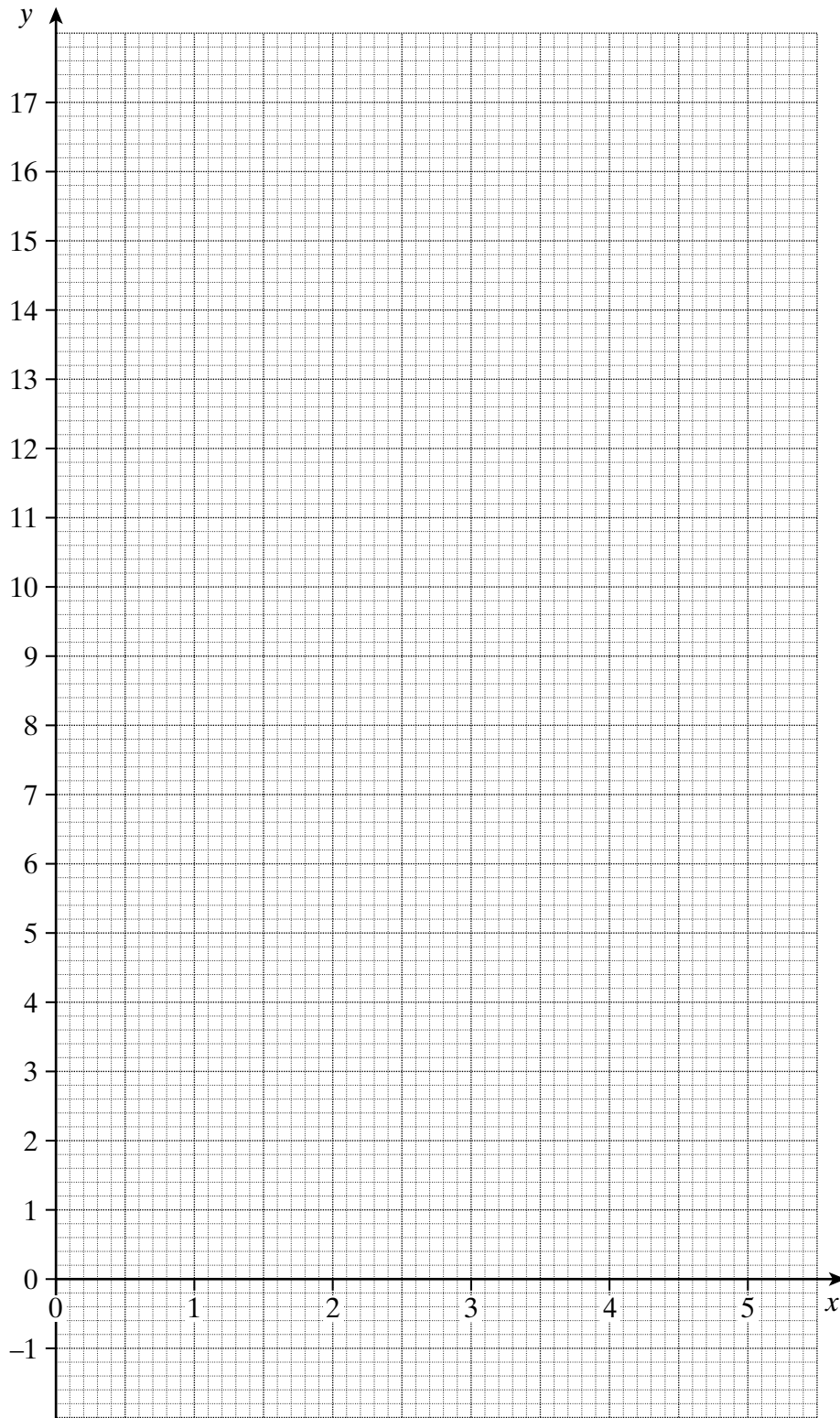
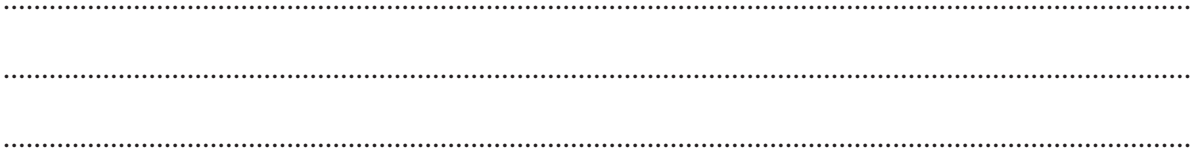
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.....

.....

Answer (2 marks)

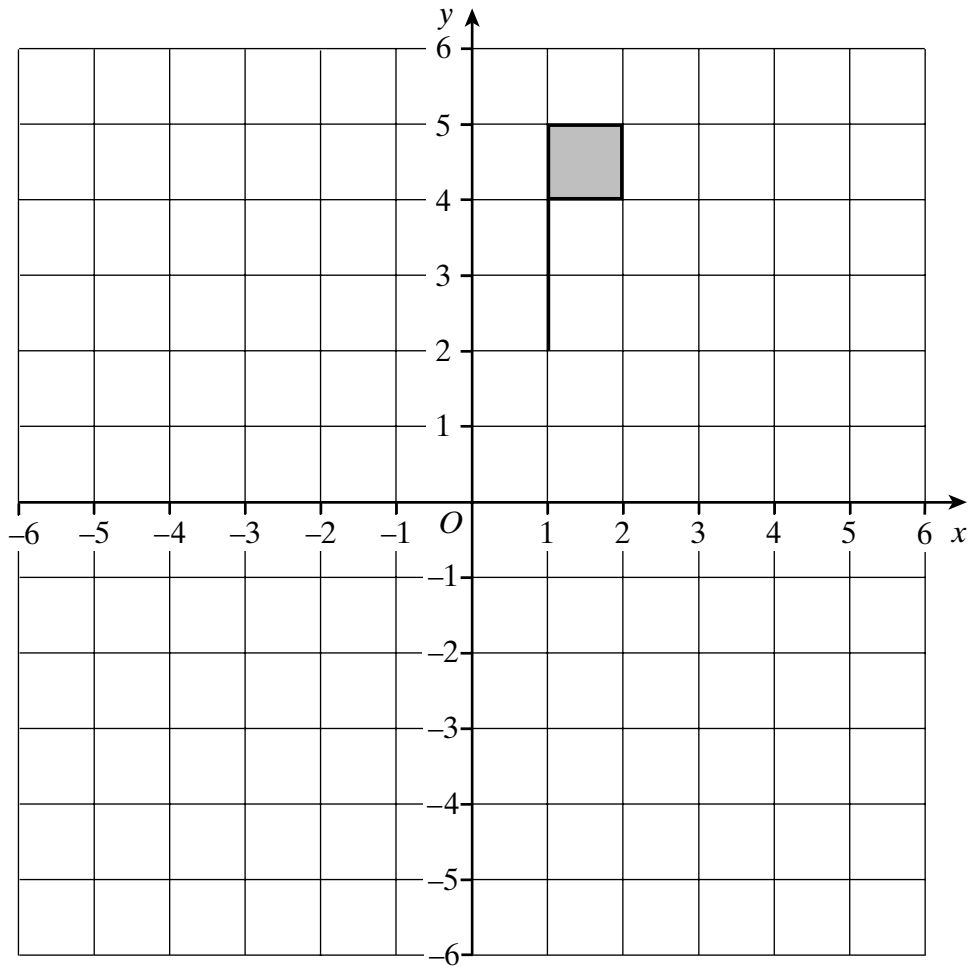
26 On the grid below draw the graph of $y = 3x - 1$ for values of x from 0 to 5.



(3 marks)

Turn over ►

27 The diagram shows a shaded flag.



- (a) Rotate the shaded flag 90° anticlockwise about the origin.
Label this new flag with the letter A.

(3 marks)

- (b) Translate the original shaded flag 2 units to the right and 3 units down.
Label this new flag with the letter B.

(1 mark)

- (c) Reflect the original shaded flag in the line $y = 1$.
Label this new flag with the letter C.

(2 marks)

END OF QUESTIONS

6