

- Check your answers if you have time at the end.
- Try to answer every question.

- Keep an eye on the time.
- Read each question carefully before you start to answer it.

**Advice**

- use this as a guide as to how much time to spend on each question.
- The marks for **each** question are shown in brackets.
- The total mark for this paper is 80.

**Information**

You must show all your working out.

Diagrams are **NOT** accurately drawn, unless otherwise indicated.

unless the question instructions otherwise.

If your calculator does not have a  $\pi$  button, take the value of  $\pi$  to be 3.142

**Calculators may be used.**

- there may be more space than you need.

Answer the questions in the spaces provided

Answers **ALL** questions.

centre number and candidate number,

Fill in the boxes at the top of this page with your name,

Use black ink or ball-point pen.

**Instructions**



Total Marks

Tracing paper may be used.

Protractor, pair of compasses, pen, HB pencil, eraser, calculator.

1MA1/2E

Paper Reference

Time: 1 hour 30 minutes

Mock Set 1 - Autumn 2016

Foundation Tier

**Paper 2 (Calculator)**

# Mathematics

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Centre Number

Level 1/Level 2 GCSE (9 - 1)

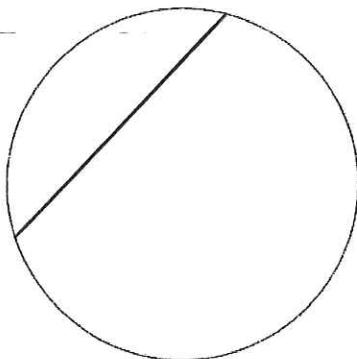
Pearson Edexcel

Other names

Surname

Write your name here

(Total for Question 3 is 1 mark)



3

Draw a chord of this circle.

(Total for Question 2 is 1 mark)

$$2 : 3$$

2

Write down the ratio of red sweets to yellow sweets.

$\frac{5}{2}$  of the sweets are red.

There are only red sweets and yellow sweets in a bag.

(Total for Question 1 is 1 mark)

$$4.913$$

1

Work out  $1.73$

Write all numbers shown on the calculator.

You must write down all the stages in your working.

Write your answers in the spaces provided.

Answer ALL questions.

(Total for Question 5 is 2 marks)

Should have been left with 6  
 (Cross off double combinations)  
~~AB, AC, AP, BP, BA, CP, CB~~

Write down all the possible combinations of fruit Jess can take.

Jess takes 2 pieces of fruit from the bowl.

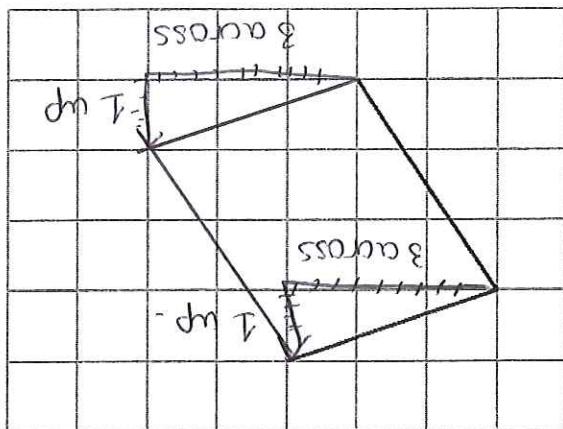
1 apple  
1 banana  
1 orange  
and 1 peach

A bowl contains

5

(Total for Question 4 is 1 mark)

The points have  
to be the same  
distance apart



On the grid, complete the diagram of a parallelogram.

4

(Total for Question 6 is 2 marks)

(1)

QR can multiply of 42

42

of 7

42 is also a multiple

↑  
42

18 84 30 36 42

Give an example to show Rizvi is wrong.

"No terms of the sequence are multiples of 7"

(b) Rizvi says,

(1)

② Numbers in the sequence are a multiple of 6 and 603 is not in the 6 times table.

You must explain your answer.

(a) Is 603 a term of the sequence?

The term-to-term rule for this sequence is "add 6".

The first term of a sequence of numbers is 18

N<sub>n</sub> term  $\rightarrow$  6n + 12

6

(Total for Question 7 is 2 marks)

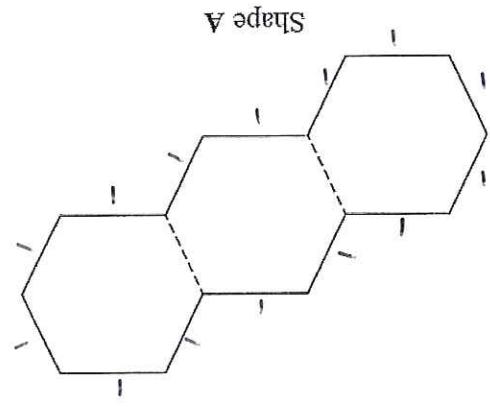
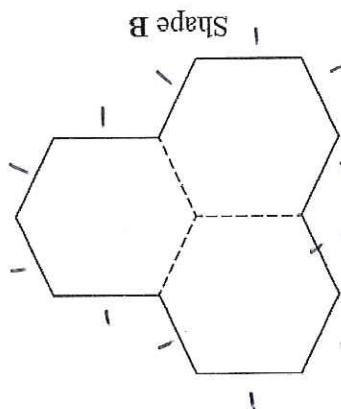
Shape A  $\rightarrow$  14 sides  
 Shape B  $\rightarrow$  12 sides

larger perimeter

Count which shape has the most sides  $\Rightarrow$  this will have the

You must show how you get your answer.

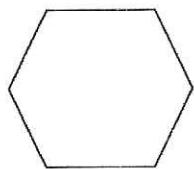
Which shape has the greater perimeter, shape A or shape B?



The other three hexagons are joined to make shape B.

Three of the hexagons are joined to make shape A.

There are six identical hexagons.



Here is a regular hexagon.  
 All sides the same.  
 All angles the same.

(Total for Question 10 is 3 marks)

£ 65.25

$$15 \times £4.35 = £65.25$$

② How much

$$120 \div 8 = 15 \text{ packs}$$

① How many packs

Work out how much Uzma will have to pay for the toys.

A pack of 8 toys costs £4.35.

Uzma is planning a party for 120 children.  
She is going to give every child a toy.

10

(Total for Question 9 is 2 marks)

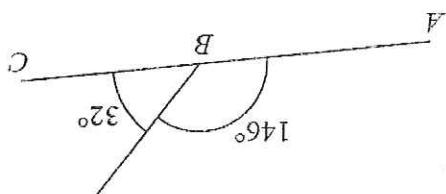
$$\textcircled{2} \quad 146^\circ + 32^\circ = 178^\circ \text{ not } 180^\circ$$

① Angles on a straight line add up to  $180^\circ$ .

Explain why Tom is correct.

“ABC cannot be a straight line.”

Have to show



6

(Total for Question 8 is 3 marks)

km

$$425000 \div 100000 = 4.25 \text{ km}$$

$$\begin{array}{r} 8.5 \text{ cm} : 425000 \text{ cm} \\ \times 8.5 \\ \hline 1 \text{ cm} : 50000 \end{array}$$

Work out the length of the real road in kilometres.

altogether  $\div 100000$

km m cm mm

km represents 50,000 cm on a map

The length of a road on the map is 8.5 cm.

8

A road map has a scale of 1 : 50 000

(Total for Question 11 is 3 marks)

(2)

- (a) Didn't use opposite operation of  $\times 2$  when working  
 $\dots \dots \dots \dots \dots \dots$
- (b) Order of operation wrong  $\div$  a first then  $- 6$   
 $\dots \dots \dots \dots \dots \dots$

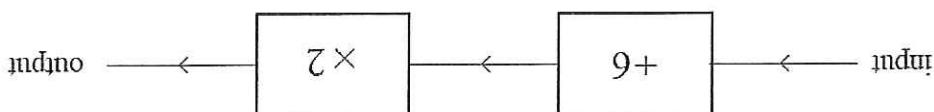
(c) Explain what she has done wrong.

Abbie is wrong.

$$\begin{array}{r} 30 \times 2 = 60 \\ 36 - 6 = 30 \end{array}$$

Here is her working.

Abbie says that when the output is 36 the input is 60



Here is a number machine.

(a)

- ..... divisible by 3  
 $34 \dots \dots \dots \dots \dots \dots$  is not a multiple of 3 or 34 is not

(b) Explain how you know Daisy's answer is wrong.

Daisy thinks of a whole number.  
 She multiplies the number by 3.  
 Daisy's answer is 34.

(Total for Question 13 is 3 marks)

£0.86

$$\text{Most money she could save} \\ \text{£4.85} - \text{£3.99} = \text{£0.86}$$

Buy the most expensive options to find the greatest saving  
Work out the most money that Laura can save by using the Special Offer.

Laura is going to buy one drink and two different snacks.

Drinks		Snacks		Special Offer	
coffee	£1.50	Popcorn	£1.25	orange	95p
cola	£1.75	chocolates	£1.15	ice cream	£1.60
orange juice	£1.75	chocolate	85p		

Buy one drink and two different snacks for £3.99

(Total for Question 12 is 3 marks)

2.18

$$8.143167673 = 2.17731756 \\ \text{to 2 dp} = 2.18$$

Give your answer correct to 2 decimal places.

$$\begin{array}{r} 4.8 - 1.06 \\ \sqrt{2.7 + 6.5} \\ \downarrow \end{array}$$

12 Work out the value of

(Total for Question 14 is 3 marks)

$$35.5\% \text{.....}%$$

$$\begin{array}{r} 64.5\% \\ + 37\% \\ \hline 100 \end{array}$$

$$100 - 64.5 = 35.5\%$$

Children  $\rightarrow$  What's here?Women  $\rightarrow$  27% ↙

$$\text{Men} \rightarrow \frac{3}{8} \rightarrow \text{to a percentage } \frac{3}{8} \times 100 = 37.5\%$$

Work out what percentage of the people at the match are children.

The rest of the people at the match are children.

27% of the people at the match are women.8/<sub>3</sub> of the people at a football match are men.

14

③  $4 \times £33.95 = £135.80$

(4)

£135.80

② How many patterns do you need

$$\begin{array}{c} \text{Path width} = 6 \text{ m} \\ \text{Path length} = 1.5 \text{ m} \\ \text{Total path area} = 1.5 \times 6 = 9 \text{ m}^2 \end{array}$$

$$£23 + £10.95 = £33.95$$

$$= £10.95$$

$$3 \text{ large stones} \rightarrow £3.65 \times 3$$

$$= £23$$

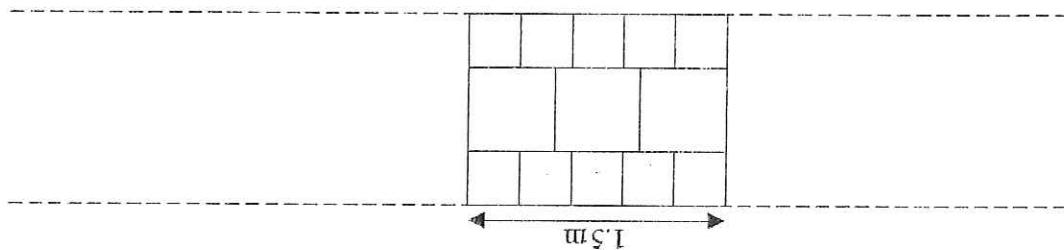
$$10 \text{ small stones} \rightarrow £2.30 \times 10$$

① How much does 1 pattern cost?

(a) How much will Jake have to pay for the paving stones he needs?

Jake needs to buy enough paving stones to make a path that is 6 metres long.

A small paving stone costs £2.30.  
A large paving stone costs £3.65.



Jake is going to make a path from small paving stones and large paving stones.  
The diagram shows Jake's design for the path.  
The rest of the path is made using the same pattern of paving stones.

Total for Question 15 is 6 marks)

(2)

$$\textcircled{a} \text{ Harry's cost} = \overline{\underline{\text{£135.80}}} = \overline{\underline{\text{£67.90}}}$$

$$4 \times \text{£21.90} = \text{£87.60}$$

\textcircled{b} 4 paving stones

$$= \text{£21.90}$$

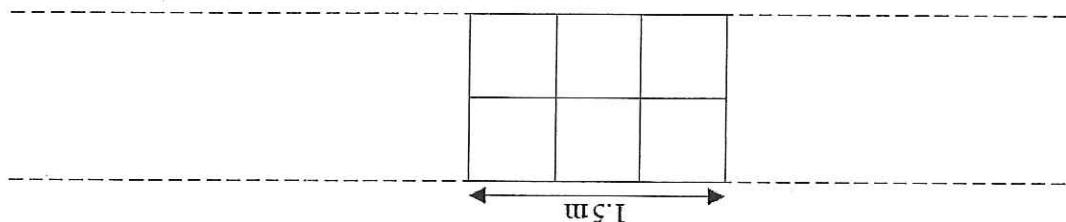
\textcircled{c} large stones  $\Rightarrow 6 \times \text{£3.65}$

\textcircled{d} 4 paving

You must show how you get your answer.

(b) Is Harry correct?

Harry says that the cost of his path will be less than half of the cost of the path that Jake designed.



Harry designs a different path that is also 6 metres long using the large paving stones.

(Total for Question 18 is 2 marks)

Any number greater than  $\frac{6}{7}$

Explain why the statement is true.

18 Write an integer in the box to make the statement true.

(Total for Question 17 is 1 mark)

$$x = 20$$

$$\begin{aligned} 5x &= 100 \\ x &= \frac{100}{5} \\ x &= 20 \end{aligned}$$

Always CHECK!  $\frac{100}{20} = 5$

17 Solve  $5 = \frac{100}{x}$

(Total for Question 16 is 3 marks)

No, because 13% is £27.95 and she needs £30

$$\frac{13}{100} \times 215 = £27.95$$

October  $\rightarrow$  13% of 215

Profit from September  $\rightarrow$  £180 - £565 = £115

You must show all your working.  
Is Sharon correct?

In November Sharon wants to pay a bill of £30. Sharon thinks that the 13% extra profit she made in October will be enough to pay this bill.

The total profit she made in October was 13% greater than the total profit she made in September. In October Sharon bought and sold some more books.

She sold all the books for a total of £780. In September Sharon paid £565 for some books.

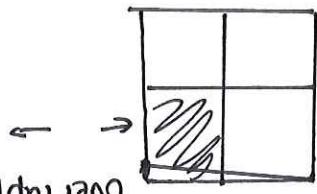
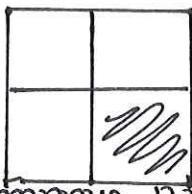
16

(Total for Question 20 is 3 marks)

L  
1

$\frac{1}{4}$  part out of L is shaded

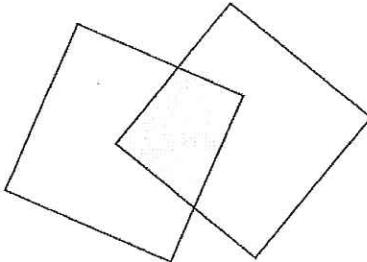
Overlaped shading part



If you draw both squares

Work out what fraction of the area of the whole shape is shaded.

The area of the shaded region is 25% of the area of each square.



20 The diagram shows a shape made by overlapping two identical squares.

(Total for Question 19 is 3 marks)

f. 459

$$\textcircled{1} \quad 675 \times 0.68 = 459$$

$$= 0.68$$

$$100\% - 32\% = 68\%$$

① Find multiplier

$$\textcircled{2} \quad E675 - 216 = 459$$

OR

Work out the price of the television in the sale.

In a sale the price is reduced by 32%.

or

$$\begin{array}{r} 216 \\ \hline 13.5 \\ \times 100 \\ \hline 67.5 \end{array}$$

$$10\% = 67.5$$

$$10\% = 67.5$$

$$10\% = 67.5$$

$$10\% = 67.5$$

19 A television has a normal price of £675.

(Total for Question 21 is 4 marks)

$$..... = 210$$

$$= 210^\circ$$

$$\text{Angle for girls} = \frac{210}{360} \times 360$$

$$\text{Total} = 210$$

$$\text{Total} = 240$$

$$\text{Girls} = 118$$

$$\text{Girls} = 118$$

$$\text{Boys} = 122 - 118 = 2$$

$$\text{Boys} = 122$$

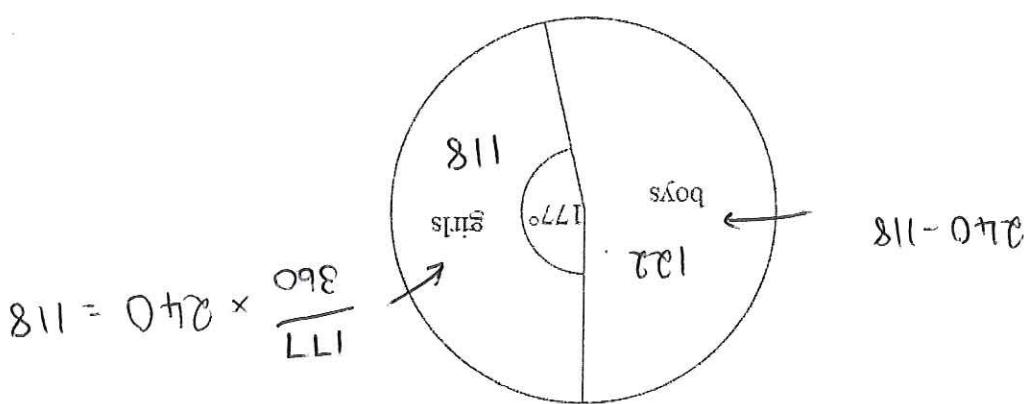
$$\text{Year } 8$$

$$\text{Year } 7$$

Work out the angle of the sector in Andy's pie chart that represents girls.

Andy draws a pie chart to show the proportion of boys and the proportion of girls in Year 8

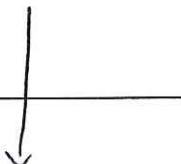
The are 8 more girls in Year 8 than in Year 7.  
There are 32 fewer boys in Year 8 than in Year 7.



The pie chart shows the proportion of boys and the proportion of girls in Year 7.

21 There are 240 students in Year 7 at a school.

You must put the inequality sign back in



(Total for Question 22 is 4 marks)

(2)

$$\textcircled{3} \quad n < 24/5 \text{ OR } n > 4.8$$

$$n < 24/5$$

$$n < 24/5$$

$$n < 24/5$$

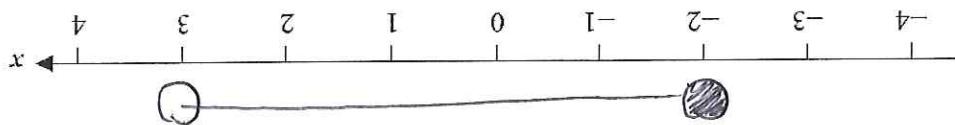
$$\textcircled{2} \quad 5n + 3 < 24$$

$$\textcircled{1} \quad 5n + 3 = 27$$

$$(b) \quad \text{Solve } 5n + 3 > 27$$

(2)

(a) On this number line, show the inequality  $-2 \leq x < 3$



22 Here is a number line.

(Total for Question 23 is 4 marks)

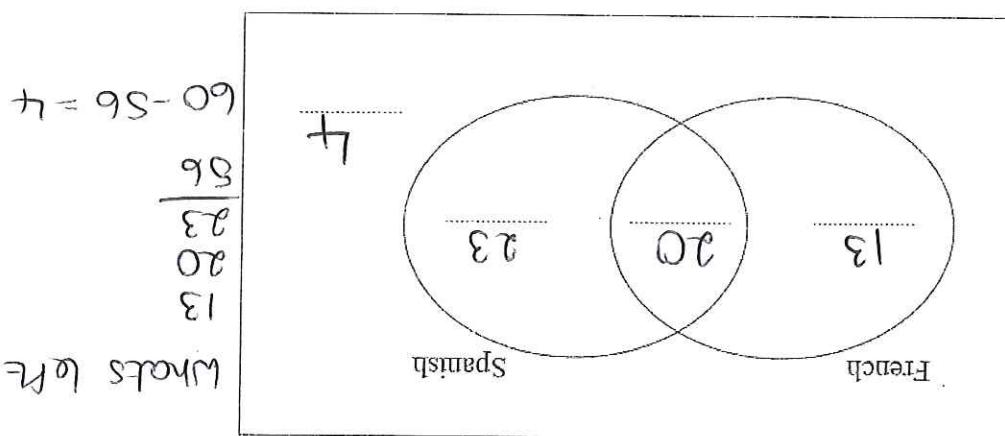
(1)

$$\begin{array}{r} 60 \\ \hline 4 \end{array}$$

(b) Write down the probability that this student studies neither French nor Spanish.

One of the students at the college is to be selected at random.

(3)



(a) Complete the Venn diagram for this information.

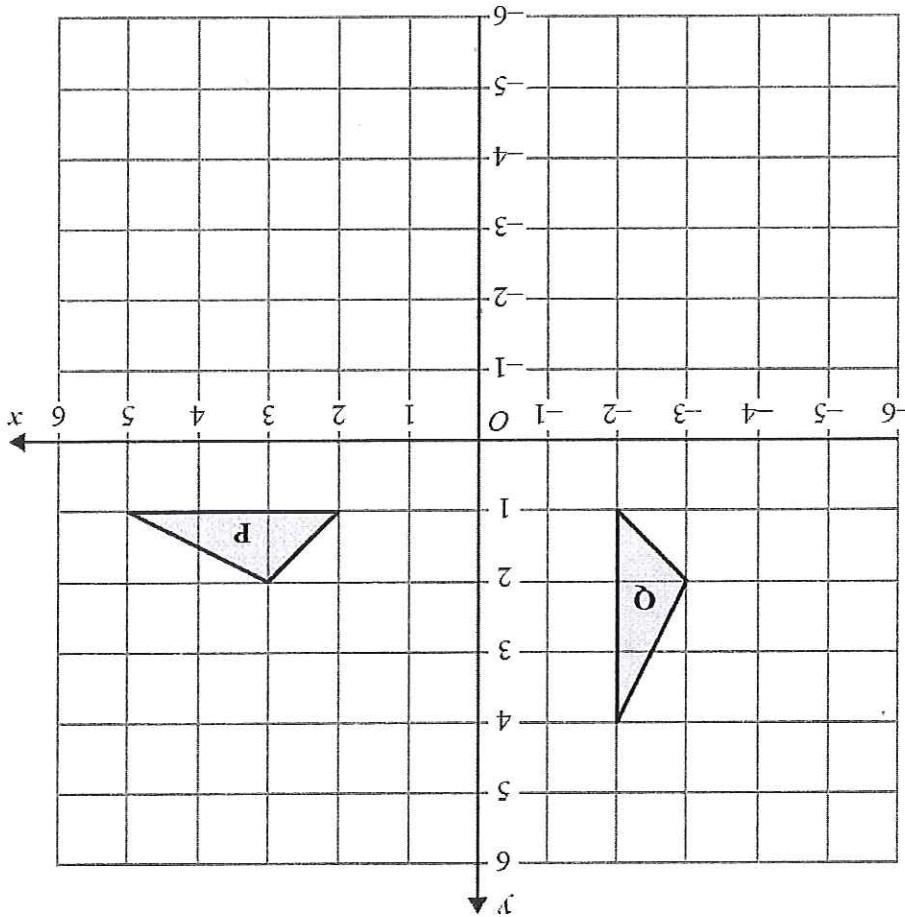
A total of 43 students study Spanish.  $43 - 20 = 23$   
13 students study French but not Spanish.  
20 students study both French and Spanish.

23 There are 60 students at a college.

(Total for Question 24 is 2 marks)

..... rotation  $(0, -1)$   
..... rotation  $90^\circ$  anti-clockwise from centre of .....

Describe fully the single transformation that maps triangle P onto triangle Q.



(1)

Positive

(b) What type of correlation does the scatter graph show?

(1)

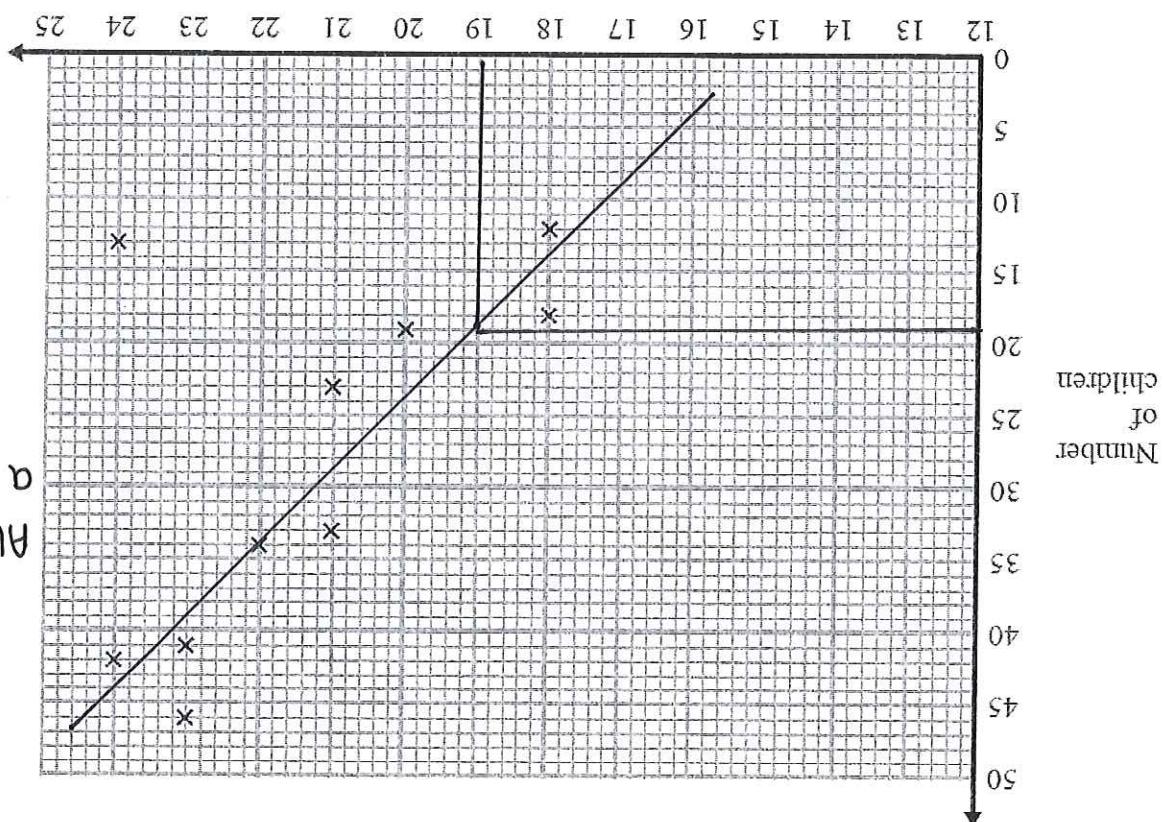
Running, school day

Low, A headache in hot weather could be due to

(a) Give a possible reason for this.

Jean's information for one of these days is an outlier on the scatter graph.

Maximum daily temperature ( $^{\circ}\text{C}$ )



Always draw  
a line of best fit

She draws this scatter graph for her information.  
She also records the number of children going to a paddling pool for each of these days.  
Jean records the maximum daily temperature each day for 10 days.

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(c)

Total for Question 25 is 4 marks

(1)

Number of children would be a negative number on the

Data is out of range

(d) Give a reason why.

to the paddling pool on a day when the maximum daily temperature was 13 °C.

It would not be sensible to use the scatter graph to predict the number of children going

(1)

.....  
15 - 25

bedroom and including

use use of best fit!

the 11th day.

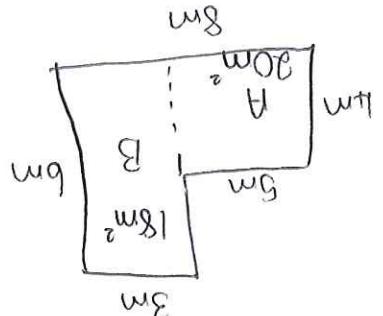
(e) Write down an estimate for the number of children going to the paddling pool on

On the 11th day, the maximum daily temperature was 19 °C.

(Total for Question 26 is 5 marks)

$$13m^2$$

$$\text{Area} = 18m^2 + 20m^2 = 38m^2$$



$$38 - 25 = 13m^2$$

② Area of compound shape without curves from compound shape

④ Subtract missing

$$x = 5$$

$$2x = 10$$

$$18 + 2x = 28$$

$$18 + x + 2 + 3 + b + 3 + x = 28$$

Formulae

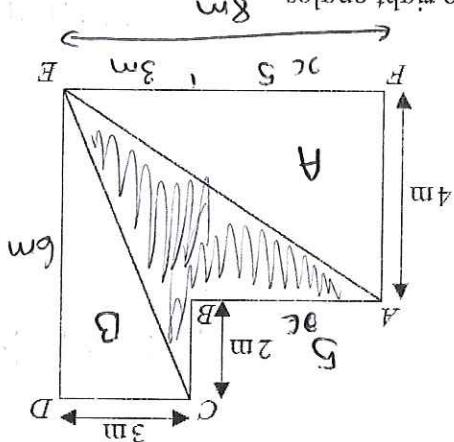
③ Area of missing

① Find what's missing

Work out the area of ABCE shown shaded on the diagram.

The perimeter of the shape is 28 m.

All the corners of the shape are right angles.



26 The diagram shows a shape ABCDEF.

$$3 + 10 = 13 \checkmark$$

Check in (2)  $3 - 5(-2) = 13$

$$\begin{aligned} y &= -2 \\ x &= 3 \end{aligned}$$

$$\begin{aligned} x &= 3 \\ 4x &= 12 \\ 4x - 2 &= 10 \end{aligned}$$

Sub in (1)  $4x + (-2) = 10$

Total for Question 27 is 3 marks)

$$\begin{array}{rcl} \dots & & y = -2 \\ \dots & & x = 3 \end{array}$$

$$\begin{array}{rcl} y &=& -2 \\ 2y &=& -4 \end{array}$$

To get same  
co-efficients

$$\begin{array}{rcl} 2y &=& -4 \\ 3(4x + y) &=& 10 \end{array}$$

Change out  
of the  
equations

$$\begin{array}{rcl} 2y &=& -4 \\ 4x + y &=& 10 \end{array}$$

$$x - 5y = 13$$

$$4x + y = 10$$

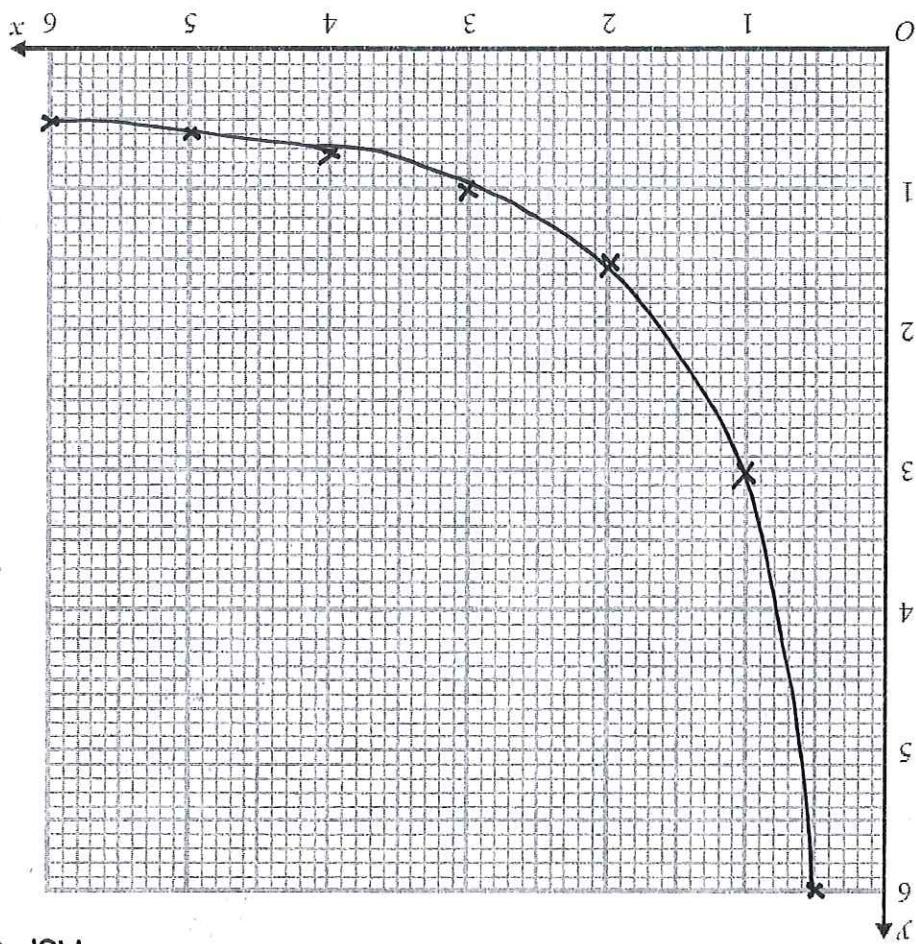
Solve the simultaneous equations

27

DSA  $\rightarrow$  Different sign add  
SSS  $\leftrightarrow$  Same sign subtract

(Total for Question 28 is 4 marks)

(2)



Plot co-ordinates

(2)

(b) On the grid, draw the graph of  $y = \frac{3}{x}$  for values of  $x$  from 0.5 to 6.

$\frac{3}{6}$	$\frac{3}{5}$	$\frac{3}{4}$	$\frac{3}{2}$	$\frac{1}{2}$	$\frac{3}{1}$	$0.5$	$1$	$0.75$	$1.5$	$3$	$6$	$y$
$x$	$0.5$	$1$	$2$	$3$	$4$	$5$	$6$	$x$	$1.5$	$3$	$4$	$6$

28 (a) Complete the table of values for  $y = \frac{3}{x}$

**TOTAL FOR PAPER: 80 MARKS**

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(Total for Question 29 is 2 marks)

.....  
f.....  
371.42

$$= 371.42$$

$$\textcircled{a} \quad 350 \times 1.02^3 \rightarrow \text{Number of years}$$

$$\text{Multipler} \rightarrow 1.02$$

$$100\% + 2\% = 102\%$$

**(i) Find multiplier**

How much money will Samir have in the account at the end of 3 years?

He gets 2% per annum compound interest.

Samir invests £350 in a savings account.

