

Please check the examination details below before entering your candidate information

Candidate surname

Other names

Centre Number

Candidate Number

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Pearson Edexcel Level 1/Level 2 GCSE (9–1)

Time 1 hour 30 minutes

Paper
reference

1MA1/1F

Mathematics

PAPER 1 (Non-Calculator)

Foundation Tier

You must have: Ruler graduated in centimetres and millimetres, protractor, pair of compasses, pen, HB pencil, eraser, Formulae Sheet (enclosed). Tracing paper may be used.

Total Marks

Instructions

- Use **black** ink or ball-point pen.
- **Fill in the boxes** at the top of this page with your name, centre number and candidate number.
- Answer **all** questions.
- Answer the questions in the spaces provided – *there may be more space than you need.*
- You must **show all your working**.
- Diagrams are **NOT** accurately drawn, unless otherwise indicated.
- **Calculators may not be used.**



Information

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

Advice

- Read each question carefully before you start to answer it.
- Try to answer every question.
- Check your answers if you have time at the end.

Turn over ►

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B:1/1/1/1/




Pearson

Answer ALL questions.

Write your answers in the spaces provided.

You must write down all the stages in your working.

1 Write 0.3 as a fraction.

$$\frac{3}{10}$$

(Total for Question 1 is 1 mark)

2 Work out 3^2

$$3 \times 3$$

$$9$$

(Total for Question 2 is 1 mark)

3 Work out $20 \div (3 + 2)$

$$20 \div 5$$

$$4$$

(Total for Question 3 is 1 mark)

4 Write down a factor of 60 that is between 8 and 14

$$\begin{array}{l} 1 \times 60 \\ 2 \times 30 \\ 3 \times 20 \\ 4 \times 15 \end{array} \quad \begin{array}{l} 5 \times 12 \\ 6 \times 10 \end{array}$$

$$10$$

(Total for Question 4 is 1 mark)

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5 Simplify $3 w 5 t$

$$15 \times t \times w$$

$$15tw$$

$$15tw$$

(Total for Question 5 is 1 mark)

6 Fay is planning a trip to a theme park for 1 adult and 2 children.

These are the costs for the trip.

Total cost of petrol £23

Tickets to theme park £33 each adult
£24.50 each child $\times 2$ $2 \times 24.5 = 49$

Meals £15 each adult
£10 each child $\times 2$ $2 \times 10 = 20$

Fay has £200 to spend.

She pays all the costs.

How much money does she have left?

$$\begin{array}{r}
 23 \\
 33 \\
 49 \\
 15 \\
 + 20 \\
 \hline
 140
 \end{array}$$

$$200 - 140 = 60$$

$$£ 60$$

(Total for Question 6 is 4 marks)



7 Here is a list of 8 letters.

B C A A A A B A

(a) Write down the mode.

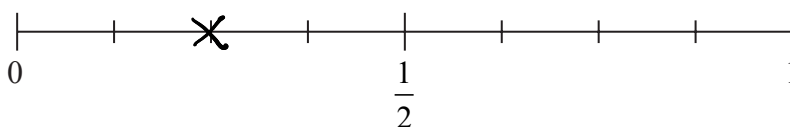
most common

A

(1)

One of the 8 letters is going to be picked at random.

(b) (i) On the probability scale, mark with a cross () the probability that this letter will be B.



$\frac{2}{8}$

(1)

(ii) Find the probability that this letter will be C.

$\frac{1}{8}$

(1)

(Total for Question 7 is 3 marks)

8 (a) Solve $m - 3 = 4$

$m = 7$

(1)

(b) Solve $3n + n = 24$

$$4n = 24$$

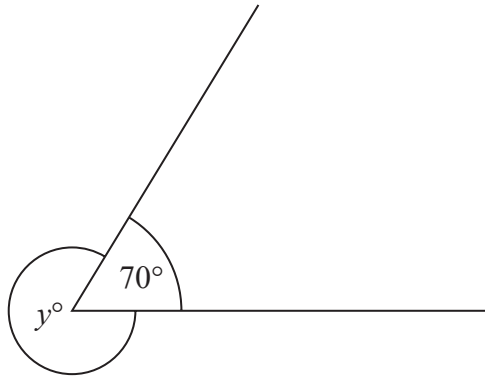
$n = 6$

(2)

(Total for Question 8 is 3 marks)



9



(a) Find the value of y .

$$360 - 70 = 290$$

$$y = \underline{290} \quad (1)$$

(b) Give a reason for your answer.

Angles around a point add to 360°

(1)

(Total for Question 9 is 2 marks)

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- 10 A shop sells jars of coffee.
Each jar of coffee costs £4

Michael has £23

- (a) Work out the greatest number of jars of coffee Michael can buy.

$$4 \times 5 = 20 \quad (\text{he can buy 5})$$
$$4 \times 6 = 24 \quad (\text{he can't buy 6})$$

5
.....
(2)

In a sale on Wednesday, jars of coffee are sold at half price.

Michael thinks that he can now buy exactly twice the number of jars of coffee for £23

- (b) Is Michael correct?

You must give a reason for your answer.

$$\text{£}2 \text{ per jar}$$
$$2 \times 11 = 22$$

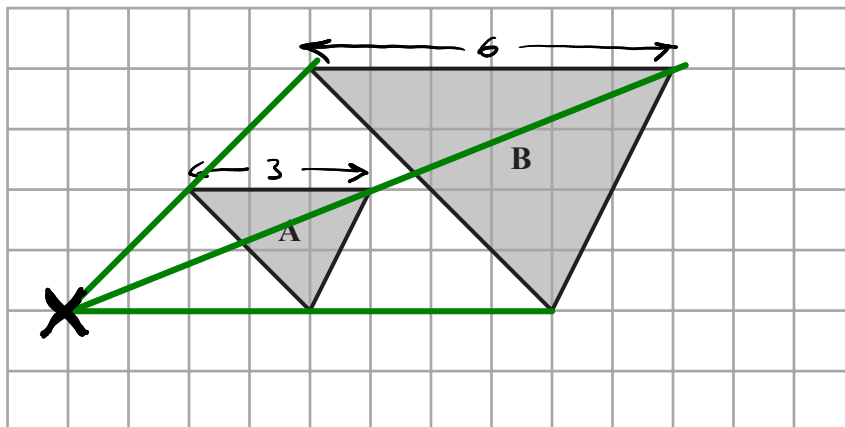
He can now buy 11 jars for £22
No he is not correct.

.....
(1)

(Total for Question 10 is 3 marks)



11 Here are two triangles on a grid.



Triangle **B** is an enlargement of triangle **A**.

(a) (i) Write down the scale factor of the enlargement.

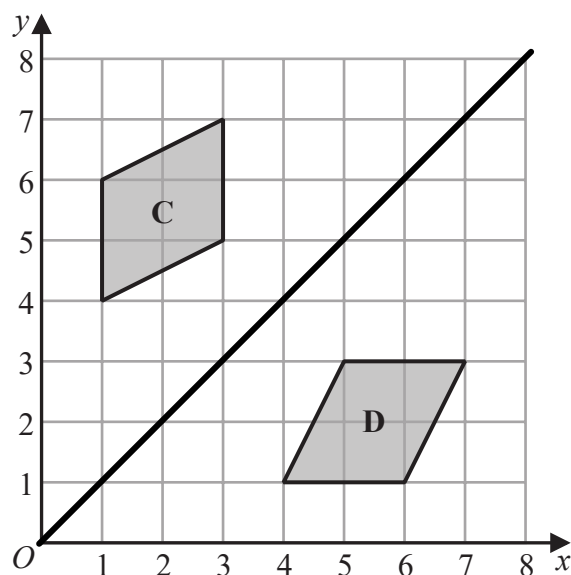
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(1)

(ii) On the grid, mark with a cross () the centre of enlargement.

(1)

Here are two parallelograms on a coordinate grid.



Parallelogram **D** is a reflection of parallelogram **C**.

(b) (i) On the grid, draw the mirror line.

(1)

(ii) Write down an equation of this mirror line.

$y = x$

(1)

(Total for Question 11 is 4 marks)



12 Elena spent 120 minutes at a sports centre.

She played badminton for 50 minutes.

She used the swimming pool for $\frac{1}{6}$ of the 120 minutes.

She used the gym for 20% of the 120 minutes.

She then spent the rest of the 120 minutes in the cafe.

(a) Work out the total time, in minutes, that Elena spent in the cafe.

$$\frac{1}{6} \text{ of } 120 = \frac{120}{6} = 20 \text{ (swimming)}$$

$$10\% \text{ of } 120 = 12$$

$$20\% \text{ of } 120 = 2 \times 12 = 24 \text{ (gym)}$$

$$\begin{array}{r} 50 \\ 20 \\ + 24 \\ \hline 94 \end{array}$$

$$120 - 94 = 26$$

26 minutes
(4)

Elena got to the sports centre at 1.30 pm.

She had asked her friend to meet her in the cafe at 3 pm.

(b) Did Elena get to the cafe by 3 pm?

Give a reason for your answer.

$$1.30 \text{ pm} + 94 \text{ mins} \quad 90 \text{ mins} = 1 \text{ hr } 30 \text{ mins}$$

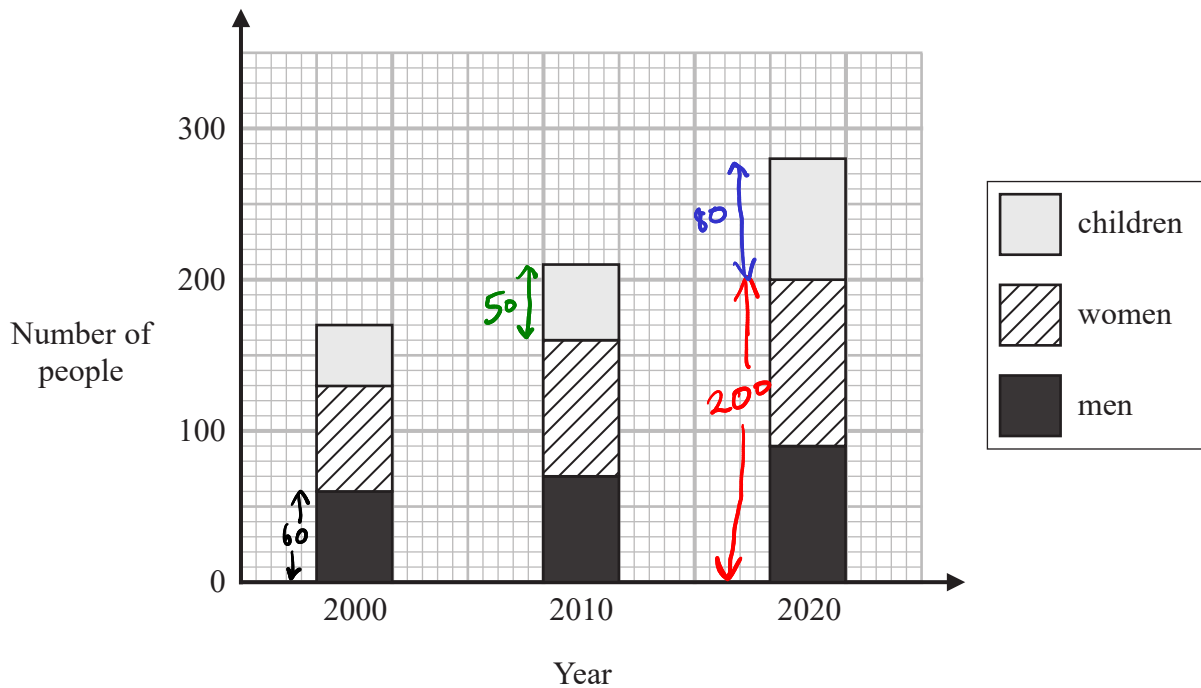
3.04 pm No she did not.

(1)

(Total for Question 12 is 5 marks)



13 The composite bar chart shows information about the number of people living in a village.



(a) Write down the number of men living in the village in the year 2000

60

(1)

(b) Find the number of children living in the village in the year 2010

$$210 - 160 = 50$$

50

(1)

For the people living in the village in the year 2020

(c) find the ratio of the number of children to the **total** number of men and women.

80 children

200 men and women

80 : 200

80 : 200

(2)

(no simplification needed)

(Total for Question 13 is 4 marks)



14 Jenny drives from London to Swindon at an average speed of 54 miles per hour.

She drives for $1\frac{1}{2}$ hours.

(a) Work out the distance from London to Swindon.

$$\begin{aligned} \text{distance} &= \text{speed} \times \text{time} \\ &= 54 \times 1.5 \\ &= 54 + 27 \\ &= 81 \end{aligned}$$

..... 81 miles
(2)

Aleksy is using a map.

The map has a scale of 1:25 000

On the map a road has a length of 6 cm.

(b) Work out the length, in kilometres, of the real road.

$$6 \times 25\,000$$

$$150\,000 \text{ cm}$$

$$1500 \text{ m}$$

$$1.5 \text{ km}$$

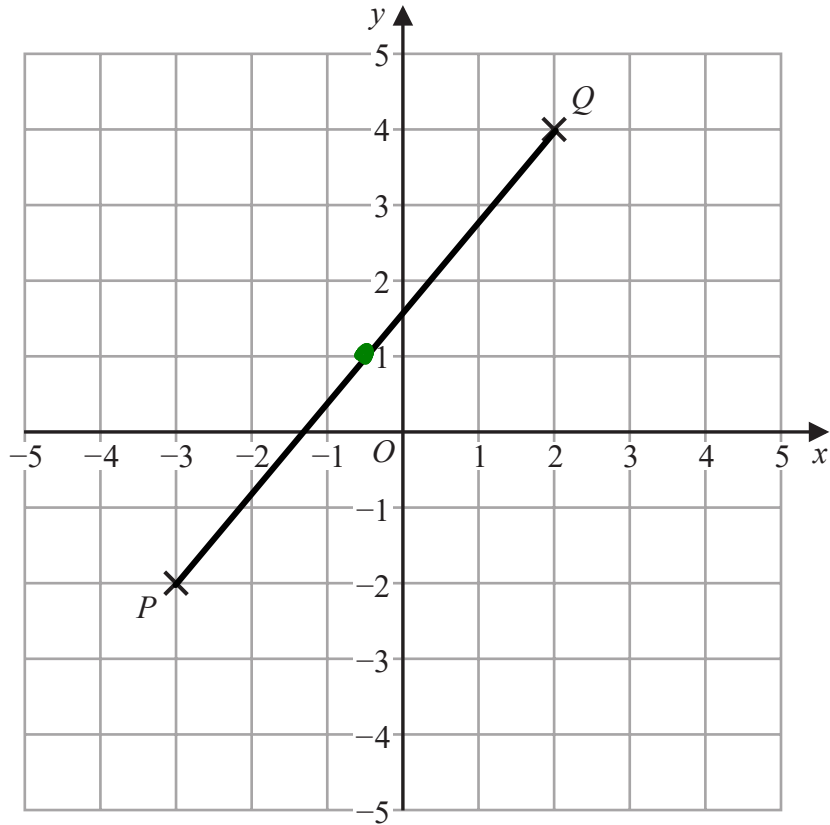
$$(150000 \div 100)$$

$$(1500 \div 1000)$$

..... 1.5 kilometres
(3)

(Total for Question 14 is 5 marks)





Find the coordinates of the midpoint of PQ .

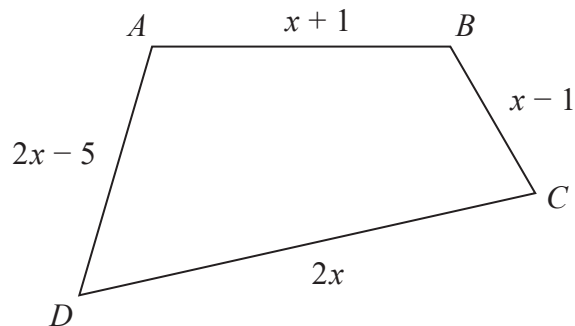
(-0.5 , 1)

(Total for Question 15 is 2 marks)

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16 Here is a quadrilateral $ABCD$.



All the measurements are in centimetres.

The perimeter of $ABCD$ is 52 centimetres.

Work out the length of DC .

$$2x - 5 + x + 1 + x - 1 + 2x = 52$$

$$6x - 5 = 52$$

$$6x = 57$$

$$x = \frac{57}{6} = \frac{19}{2}$$

$$\begin{aligned} DC &= \frac{19}{2} \times 2 \\ &= 19 \end{aligned}$$

..... 19 centimetres

(Total for Question 16 is 4 marks)

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17 There are only blue counters, green counters, red counters and yellow counters in a bag.

The table shows the number of blue counters in the bag.

Colour	blue	green	red	yellow
Number of counters	30	45		

There is a total of 100 counters in the bag.

Ashin takes at random a counter from the bag.

$$100 - 30 = 70$$

(a) Find the probability that the counter is **not** blue.

$$\frac{70}{100}$$

(2)

The ratio of the number of blue counters to the number of green counters is 2:3

(b) Work out the number of green counters in the bag.

$$\begin{array}{l} \times 15 \downarrow \quad 2 : 3 \quad \downarrow \times 15 \\ \quad \quad \quad 30 : 45 \end{array}$$

$$45$$

(2)

Bradley says,

“The number of red counters in the bag is the same as the number of yellow counters in the bag.”

(c) Can Bradley be correct?

Give a reason for your answer.

$$100 - 30 - 45 = \underline{25}$$

No. There are 25 red and yellow counters.

There cannot be 12.5 of each. (They must be whole numbers)

(1)

(Total for Question 17 is 5 marks)

- 18 There are 240 cans of drink on a shelf.
Each can contains cola or lemonade or orange.

the number of cans of cola : the number of cans of lemonade : the number of cans of orange = 5:3:2

10 parts

$\frac{1}{2}$ of the cans of lemonade and $\frac{1}{12}$ of the cans of orange are removed from the shelf.

Work out the number of cans of cola as a percentage of the total number of cans of drink remaining on the shelf.

$$\frac{240}{10} = 24$$

$$\text{Cola: } 5 \times 24 = 120$$

$$\text{Lemonade: } 3 \times 24 = 72$$

$$\text{Orange: } 2 \times 24 = 48$$

$$\frac{1}{2} \times 72 = 36 \quad (36 \text{ left})$$

$$\frac{1}{12} \times 48 = \frac{48}{12} = 4 \quad (44 \text{ left})$$

Cans remaining

$$C : L : O \\ 120 : 36 : 44 \quad (200 \text{ cans})$$

$$\text{Cola: } \frac{120}{200} = \frac{60}{100} = 60\%$$

60 %

(Total for Question 18 is 5 marks)

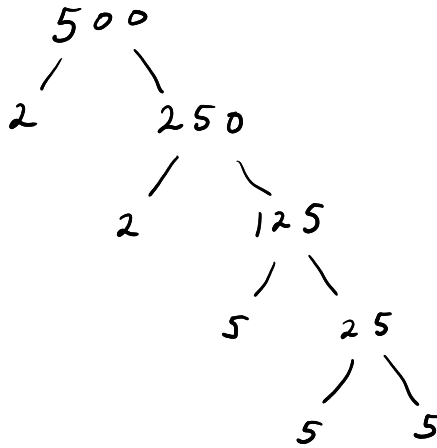
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19 Write 500 as a product of powers of its prime factors.



$$2 \times 2 \times 5 \times 5 \times 5 \quad \text{or} \quad 2^2 \times 5^3$$

$$2^2 \times 5^3$$

(Total for Question 19 is 3 marks)

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20 (a) Work out $1\frac{3}{5} + 2\frac{1}{4}$

Give your answer as a mixed number.

$$\frac{4 \times 8}{4 \times 5} + \frac{9 \times 5}{4 \times 5}$$

$$\frac{32}{20} + \frac{45}{20} = \frac{77}{20} = 3\frac{17}{20}$$

$$3\frac{17}{20}$$

(2)

(b) Show that $2\frac{2}{3} \div 6 = \frac{4}{9}$

$$\frac{8}{3} \div \frac{6}{1}$$

$$\frac{8}{3} \times \frac{1}{6} = \frac{8}{18} = \frac{4}{9}$$

(2)

(Total for Question 20 is 4 marks)

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21 Simplify $(2^{-5} \cdot 2^8)^2$

Give your answer as a power of 2

$$\begin{array}{l} (2^3)^2 \\ 2^6 \end{array}$$

$$2^6$$

(Total for Question 21 is 2 marks)

22 Work out $0.004 \cdot 0.32$

$$\begin{array}{r} 32 \\ \times 4 \\ \hline 8 \\ 120 \\ \hline 128 \end{array}$$

$$4 \times 10^{-3} \times 32 \times 10^{-2}$$

$$128 \times 10^{-5}$$

$$1.28 \times 10^2 \times 10^{-5}$$

$$1.28 \times 10^{-3} \quad (\text{or } 0.00128)$$

$$1.28 \times 10^{-3}$$

(Total for Question 22 is 2 marks)



23 A car factory is going to make four different car models **A**, **B**, **C** and **D**.

80 people are asked which of the four models they would be most likely to buy.

The table shows information about the results.

Car model	Number of people
A	23
B	15
C	30
D	12

The factory is going to make 40 000 cars next year.

Work out how many model **B** cars the factory should make next year.

$$\frac{15}{80} = \frac{7.5}{40} = \frac{75}{400} = \frac{7500}{40000}$$

7500

(Total for Question 23 is 2 marks)



24 Rizwan writes down three numbers a , b and c

$$a:b = 1:3$$

$$b:c = 6:5$$

(a) (i) Find $a:b:c$

Make b the same

$$\begin{array}{l} a:b \\ 1:3 \\ \times 2 \\ \hline 2:6 \end{array} \quad \begin{array}{l} b:c \\ 6:5 \\ \hline 6:5 \end{array}$$

$$\frac{2:6:5}{(2)}$$

(ii) Express a as a fraction of the total of the three numbers a , b and c

$$2 + 6 + 5 = 13$$

$$\frac{2}{13}$$

(2)

Emma writes down three numbers m , n and p

$$n = 2m$$

$$p = 5n$$

$$\begin{array}{l} \text{if } m=1 \quad n=2 \\ \text{if } n=1 \quad p=5 \end{array}$$

(b) Find $m:p$

$$\begin{array}{l} n:m \\ 2:1 \end{array}$$

$$\begin{array}{l} p:n \\ 5:1 \\ \times 2 \end{array}$$

Make n the same

$$2:1$$

$$10:2$$

$$m:n:p$$

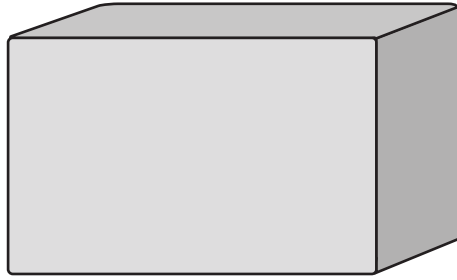
$$1:2:10$$

$$\begin{array}{l} m:p \\ 1:10 \end{array}$$

$$\frac{1:10}{(2)}$$

(Total for Question 24 is 6 marks)





$$\text{pressure} = \frac{\text{force}}{\text{area}}$$

A storage tank exerts a force of 10 000 newtons on the ground.

The base of the tank in contact with the ground is a 4 m by 2 m rectangle.

Work out the pressure on the ground due to the tank.

$$4 \times 2 = 8 \text{ m}^2$$

$$\begin{aligned} \text{pressure} &= \frac{10000}{8} \\ &= \frac{5000}{4} = \frac{2500}{2} \\ &= 1250 \end{aligned}$$

..... 1250 newtons/m²

(Total for Question 25 is 2 marks)



26 (a) Solve $\frac{5x}{2} + 3 > 18$

$$\frac{5x}{2} > 15$$

$$5x > 30$$

$$x > 6$$

$$x > 6$$

(3)

(b) Factorise $x^2 + 10x + 9$

$$(x + 1)(x + 9)$$

$$(x + 1)(x + 9)$$

(2)

(Total for Question 26 is 5 marks)

TOTAL FOR PAPER IS 80 MARKS



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