Write your name here

Surname	Other names

Pearson Edexcel International GCSE

Centre Number | Candidate Number

Mathematics A

Paper 2FR

Foundation Tier

Monday 12 January 2015 – Afternoon
Time: 2 hours

Paper Reference
4MA0/2FR

You must have:
Ruler graduated in centimetres and millimetres, protractor, compasses, pen, HB pencil, eraser, calculator. 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.
- Without sufficient working, correct answers may be awarded no marks.
- Answer the questions in the spaces provided
  – there may be more space than you need.
- **Calculators may be used.**
- You must **NOT** write anything on the formulae page.
  Anything you write on the formulae page will gain NO credit.

Information

- The total mark for this paper is 100.
- 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.
- Check your answers if you have time at the end.

Turn over ▶

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5/5/5/1/

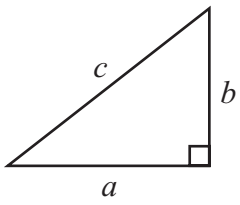
P 4 4 6 1 8 A 0 1 2 8

PEARSON

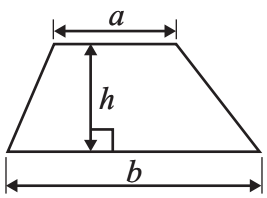
International GCSE MATHEMATICS

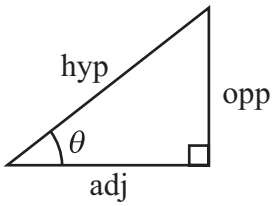
FORMULAE SHEET – FOUNDATION TIER

Pythagoras' Theorem
$a^2 + b^2 = c^2$



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





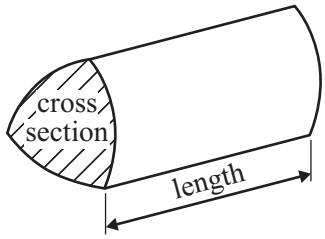
adj = hyp × cos θ
opp = hyp × sin θ
opp = adj × tan θ

or $\sin\theta = \frac{\text{opp}}{\text{hyp}}$

$\cos\theta = \frac{\text{adj}}{\text{hyp}}$

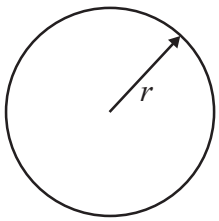
$\tan\theta = \frac{\text{opp}}{\text{adj}}$

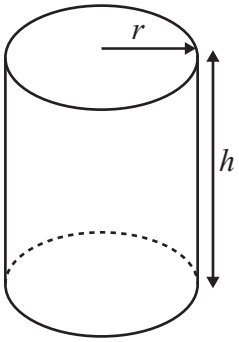
Volume of prism = area of cross section × length



Circumference of circle = $2\pi r$

Area of circle = πr^2





Volume of cylinder = $\pi r^2 h$

Curved surface area of cylinder = $2\pi rh$

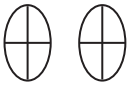
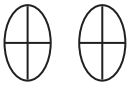
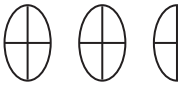
P 4 4 6 1 8 A 0 2 2 8

Answer ALL TWENTY FIVE questions.

Write your answers in the spaces provided.

You must write down all stages in your working.

1 The pictogram gives information about the number of chocolate eggs sold from a shop on Monday, on Tuesday and on Wednesday.

Monday	
Tuesday	
Wednesday	
Thursday	

represents 8 chocolate eggs

(a) How many chocolate eggs were sold on Monday?

.....

(1)

(b) How many chocolate eggs were sold on Wednesday?

.....

(1)

10 more chocolate eggs were sold on Thursday than on Wednesday.

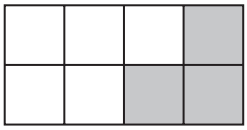
(c) Show this information on the pictogram.

(2)

(Total for Question 1 is 4 marks)

Do NOT write in this space.

2 Here is a shape made of squares.



(a) Write down the fraction of the shape that is shaded.

.....

(1)

$\frac{2}{5}$ of the people in a room are female.

(b) What fraction of the people in the room are male?

.....

(1)

(c) Write $\frac{2}{5}$ as a decimal.

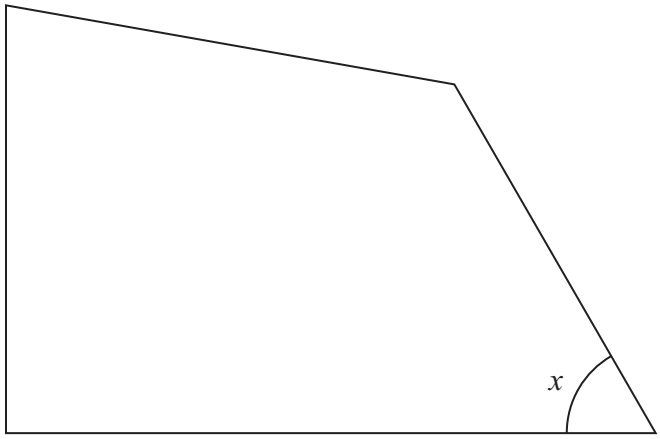
.....

(1)

(Total for Question 2 is 3 marks)

Do NOT write in this space.

3 Here is a shape.



(a) (i) What type of angle is the angle marked x?

.....

(ii) Write down the size of the angle marked x.

.....°

(2)

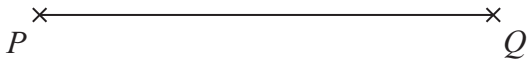
(b) On the shape, mark the right angle.
Label your angle R.

(1)

(Total for Question 3 is 3 marks)

Do NOT write in this space.

4 Draw a circle with a radius of 3 cm.
Use the line PQ as a diameter of the circle.



(Total for Question 4 is 2 marks)

5 Charles makes jam to put in jars.
He uses 340 grams of jam to fill each jar.

Charles makes 3 kg of jam.

Work out the greatest number of jars he can fill.

.....

(Total for Question 5 is 3 marks)

6 Jean gets home at 7 o'clock in the evening.

(a) Write 7 o'clock in the evening using the 24-hour clock.

.....

(1)

Jean is going to watch her favourite TV programme.

The programme starts at 8 40 pm.
The programme lasts for 1 hour 45 minutes.

(b) Work out the time at which the programme ends.

..... pm

(2)

The next programme lasts for 40 minutes.

(c) Write 40 minutes as a fraction of 1 hour.
Give your answer in its simplest form.

.....

(2)

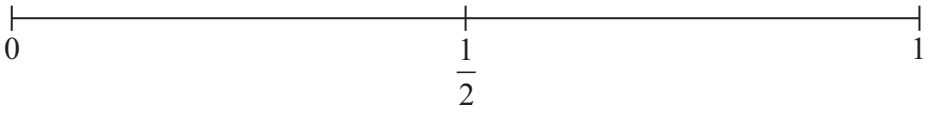
(Total for Question 6 is 5 marks)

Do NOT write in this space.

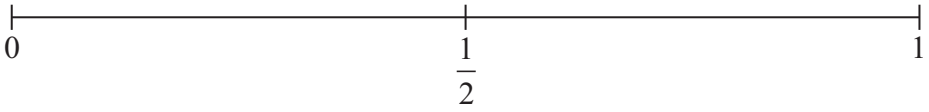
7 There are three 5 cent coins and three 10 cent coins in a bag.

Amrita takes at random a coin from the bag.

(a) (i) On the probability scale, mark with a cross (×) the probability that Amrita takes a 5 cent coin.



(ii) On the probability scale, mark with a cross (×) the probability that Amrita takes a coin with a value of less than 5 cents.



(2)

Here is a list of words that are used to describe the likelihood of an event.

impossible	unlikely	evens	likely	certain

There are three 5 cent coins, three 10 cent coins and three 20 cent coins in a purse.

Jim takes at random a coin from the purse.

(b) Write down a word from the list to describe the likelihood that the coin has a value of more than 5 cents.

.....

(1)

(Total for Question 7 is 3 marks)

Do NOT write in this space.

8 The price of a ticket for a train journey from Bristol to London is £84

Kurt gets $\frac{1}{3}$ off the price of the ticket.

How much does Kurt pay for the ticket?

£ .....

(Total for Question 8 is 3 marks)

9 This rule can be used to work out the total cost in dollars ($) of hiring a car.

Total cost in dollars = 40 × number of days + 50

Alex hired a car for 6 days.

(a) Use the rule to work out the total cost.

$ .....

(2)

Suresh hired a car.
The total cost was $410

(b) Use the rule to work out the number of days he hired the car.

.....

(2)

(Total for Question 9 is 4 marks)

10 (a) Simplify $2m + 5m$

.....

(1)

(b) Simplify $6x - x$

.....

(1)

(c) Simplify $6 \times 2y$

.....

(1)

$t = 4k + 9$

$k = 2$

(d) Work out the value of t.

$t =$ .....

(1)

$p = 2n^2$

$n = 3$

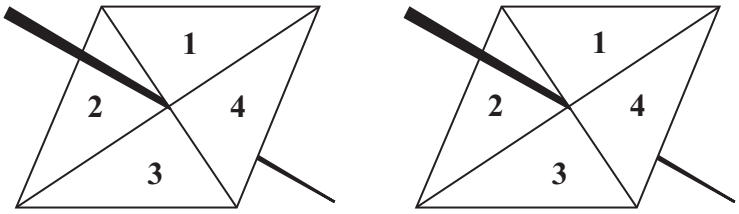
(e) Work out the value of p.

$p =$ .....

(1)

(Total for Question 10 is 5 marks)

11 Here are two fair spinners.



Spinner **A** Spinner **B**

Shola spins each spinner once.

The score is the sum of the number spinner **A** lands on and the number spinner **B** lands on.

(a) Complete the table to show the possible scores.

Spinner **B** / Spinner **A**	**1**	**2**	**3**	**4**
1				
2				6
3		5		
4			7	

(2)

(b) Find the probability that the score will be 3 or less.

.....

(2)

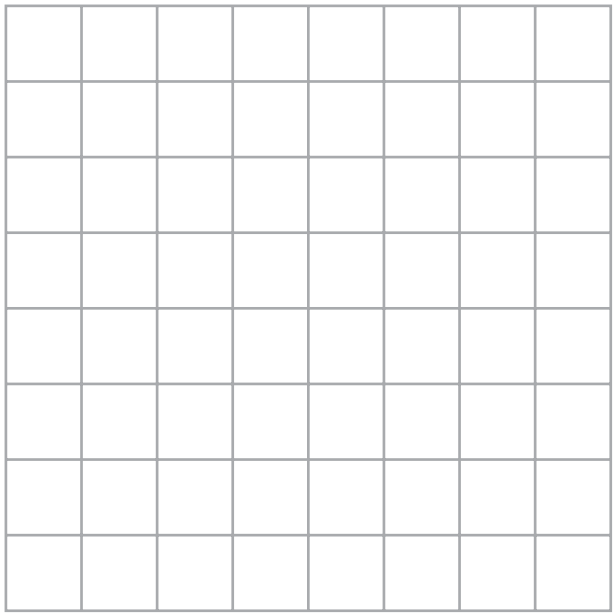
(c) Find the probability that the number spinner **A** lands on will be greater than the number spinner **B** lands on.

.....

(2)

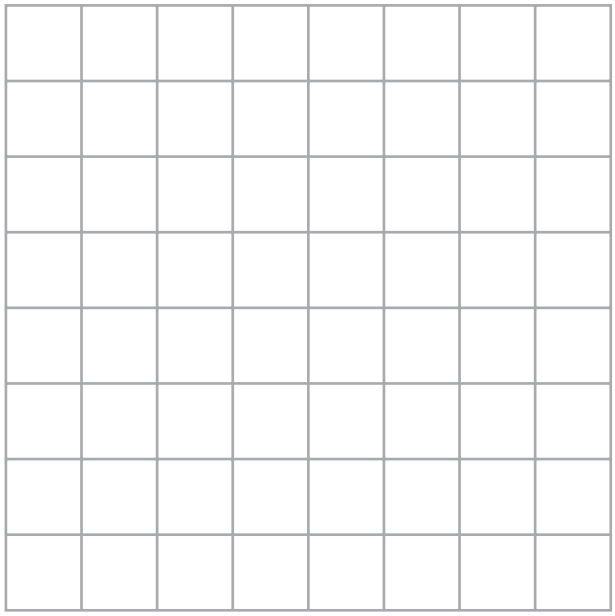
(Total for Question 11 is 6 marks)

12 (a) On the centimetre grid, draw a rectangle with an area of 8 cm^2



(1)

(b) On the centimetre grid, draw an isosceles triangle with an area of 8 cm^2



(2)

(Total for Question 12 is 3 marks)

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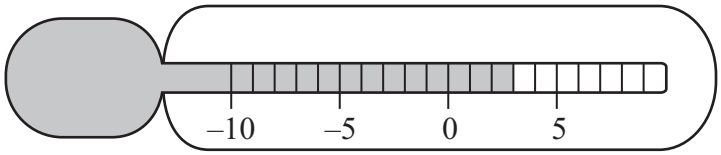
13 Here is a thermometer in a refrigerator.



(a) What temperature is shown on the thermometer?

..... °C

(1)

The temperature in a freezer is 17 °C lower than the temperature in the refrigerator.

(b) Work out the temperature in the freezer.

..... °C

(1)

Room temperature is 20 °C.

(c) Work out the difference between room temperature and the temperature in the freezer.

..... °C

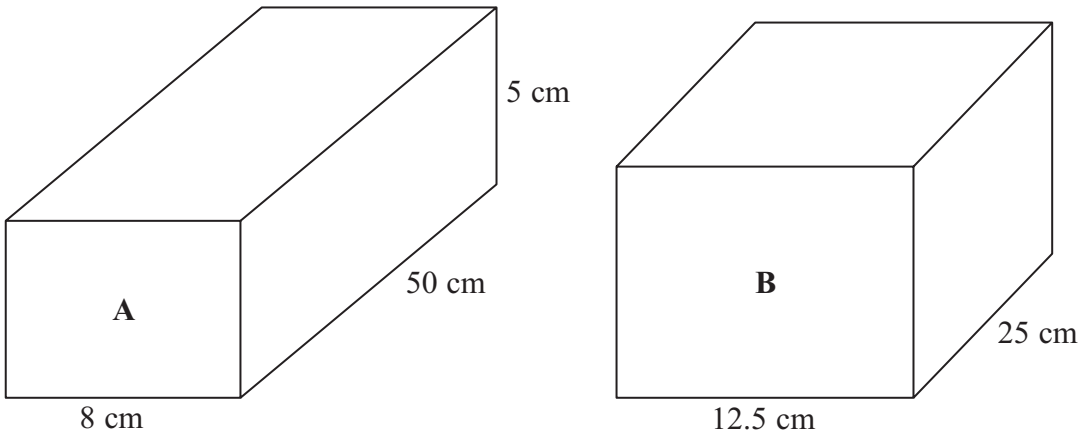
(1)

(Total for Question 13 is 3 marks)

Do NOT write in this space.

14 Here are two cuboids, **A** and **B**.

Diagram **NOT** accurately drawn



Cuboid **A** has a width of 8 cm, a length of 50 cm and a height of 5 cm.

(a) Calculate the volume of cuboid **A**.

..... cm^3

(2)

Cuboid **B** has a width of 12.5 cm and a length of 25 cm.
Cuboid **B** has the same volume as cuboid **A**.

(b) Calculate the height of cuboid **B**.

..... cm

(3)

(Total for Question 14 is 5 marks)

Do NOT write in this space.

15 Some of the land in the Netherlands is used to grow bulbs.
The table shows the percentages of this land used to grow the different types of bulbs.

Type of bulb	Hyacinth	Tulip	Daffodil	Lily	Other
Percentage	8%	50%	12%	x%	7%

(a) Work out the value of x.

$x =$ .....
(1)

The area of land used to grow bulbs for hyacinths is 1200 hectares.

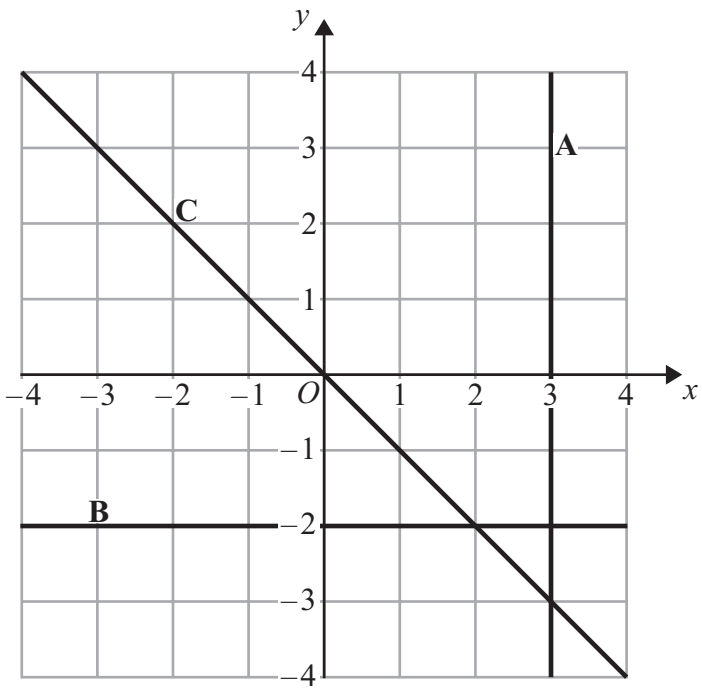
(b) Work out the area of land used to grow bulbs for daffodils.

..... hectares
(2)

(Total for Question 15 is 3 marks)

Do NOT write in this space.

16 Here are three straight lines **A**, **B** and **C** drawn on a grid.



Write down an equation for each of these three straight lines.

A .....

B .....

C .....

(Total for Question 16 is 3 marks)

Do NOT write in this space.

17 Eric travels from the UK to India every year.

In 2010, the exchange rate was £1 = 67.1 rupees.
In 2012, the exchange rate was £1 = 82.5 rupees.

In 2010 Eric changed £600 into rupees.

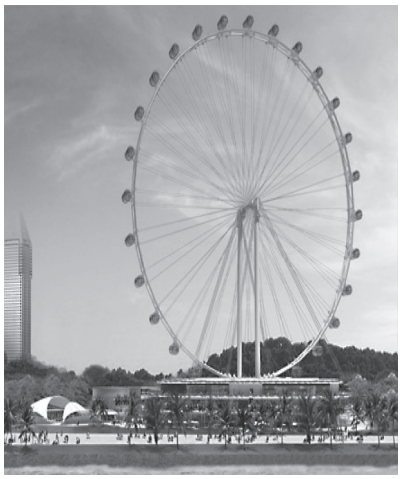
How many pounds (£) did Eric have to change to rupees in 2012 to get the same number of rupees as he did in 2010?

£ .....

(Total for Question 17 is 3 marks)

Do NOT write in this space.

18 The wheel of the Singapore Flyer is a circle with a diameter of 150 metres.



(a) Calculate the circumference of the wheel.
Give your answer correct to the nearest metre.

..... metres
(2)

The wheel takes 30 minutes to rotate once.

(b) Work out the average speed of a point on the circumference of the wheel as it rotates once.
Give your answer in metres per second correct to 3 significant figures.

..... metres per second
(3)

The diagram shows a giant wheel above horizontal ground.

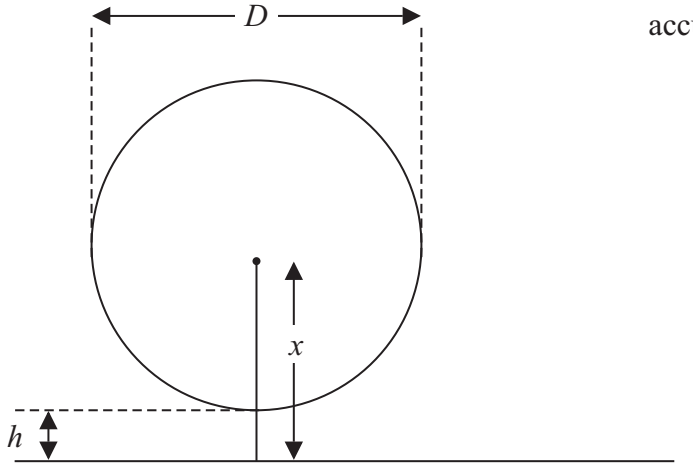


Diagram **NOT** accurately drawn

The wheel is a circle of diameter D metres.
The lowest point of the wheel is h metres above the ground.
The centre of the wheel is x metres above the ground.

(c) Express h in terms of D and x

.....

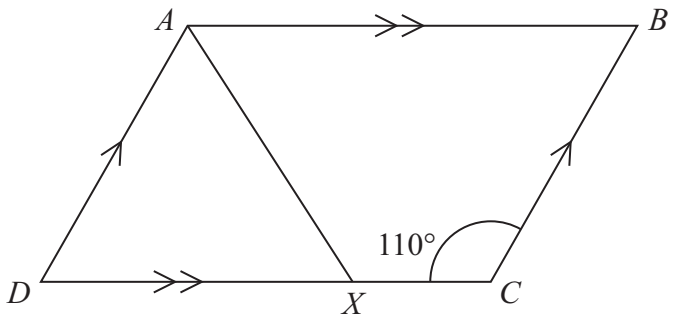
(2)

(Total for Question 18 is 7 marks)

Do NOT write in this space.

19

Diagram **NOT** accurately drawn



ABCD is a parallelogram.
Angle *DCB* = 110°
X is the point on *DC* such that *AX* bisects the angle *DAB*.

Calculate the size of angle *AXC*.

..... °

(Total for Question 19 is 4 marks)

20 Solve $x + 2y = 3$

$x - y = 6$

Show clear algebraic working.

$x =$ .....

$y =$ .....

(Total for Question 20 is 3 marks)

21 Here are some rows of a number pattern.

Row number	Column 1	Column 2	Column 3
1	$1 \times 3 + 1$	4	2^2
2	$2 \times 4 + 1$	9	3^2
3	$3 \times 5 + 1$	16	4^2
. . .	. . .	. . .	. . .
8	.....	.....	.....
n			

(a) Complete Row number 8

(2)

(b) Write down the Row number of the row that has 400 in Column 2

.....

(1)

(c) For Row number n,

(i) write down an expression, in terms of n, that should go in Column 1

.....

(ii) write down an expression, in terms of n, that should go in Column 3

.....

(2)

(Total for Question 21 is 5 marks)

22 The table gives information about the number of vehicles passing a point on a road in each of 70 intervals of equal length.

Number of vehicles	Frequency
1 to 5	8
6 to 10	10
11 to 15	18
16 to 20	20
21 to 25	10
26 to 30	4

Calculate an estimate for the mean.

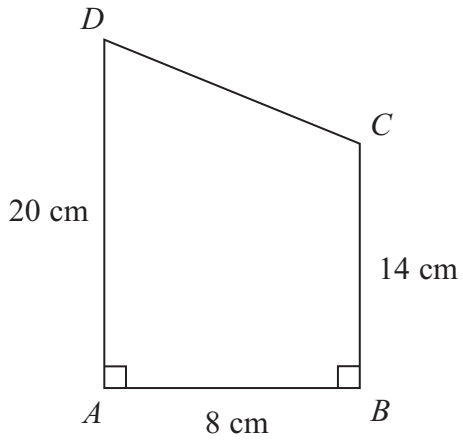
.....

(Total for Question 22 is 4 marks)

Do NOT write in this space.

23 Here is a trapezium *ABCD*.

Diagram **NOT** accurately drawn



Angle *DAB* = angle *ABC* = 90°

AD = 20 cm
AB = 8 cm
BC = 14 cm

(a) Calculate the area of the trapezium *ABCD*.

..... cm^2

(2)

(b) Calculate the length of *CD*.

..... cm

(4)

(Total for Question 23 is 6 marks)

24 $\mathscr{E} = \{1, 2, 3, 4, 5, 6, 7, 8, 9, 10\}$

$A = \{\text{even numbers}\}$

$B = \{\text{multiples of } 3\}$

(a) List the members of set B.

.....

(1)

(b) Find $A \cup B$

.....

(1)

(c) Find $A \cap B$

.....

(1)

x is a member of $\mathscr{E}$

$x \in B$

$x \notin A$

(d) What are the possible values of x?

.....

(2)

(Total for Question 24 is 5 marks)

Do NOT write in this space.

25 (a) Write 224 as a product of powers of its prime factors.
Show your working clearly.

.....

(3)

(b) Write down 3 **different** factors of 224 with a sum between 99 and 110

.....

(2)

(Total for Question 25 is 5 marks)

TOTAL FOR PAPER IS 100 MARKS

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