| Surname | | Other Names | |
|---|---|---|---|
| Centre Number | | | Candidate Number | | | | | | | | | |
| Candidate Signature | | | | | | | | | | | | |

| For Examiner's Use |
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General Certificate of Secondary Education
November 2008

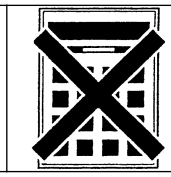
**MATHEMATICS (SPECIFICATION A)** **4301/1F**
**Foundation Tier**
**Paper 1 Non-calculator**

**F**

Thursday 6 November 2008 9.00 am to 10.30 am

**For this paper you must have:**
- mathematical instruments.

You must **not** use a calculator.



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. Answers written in margins or on blank pages will not be marked.
- Do all rough work in this book.

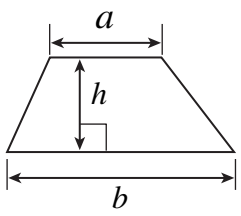
**Information**
- The maximum mark for this paper is 100.
- The marks for questions are shown in brackets.
- You may ask for more answer paper, graph paper and tracing paper. This must be tagged securely to this answer booklet.

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

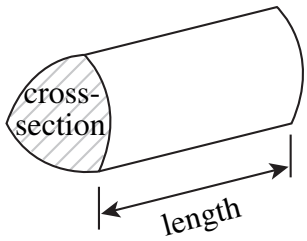
| For Examiner's Use | |
|---|---|
| Pages | Mark |
| 3 | |
| 4–5 | |
| 6–7 | |
| 8–9 | |
| 10–11 | |
| 12–13 | |
| 14–15 | |
| 16–17 | |
| 18–19 | |
| TOTAL | |
| Examiner's Initials | |

## Formulae Sheet: Foundation Tier

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

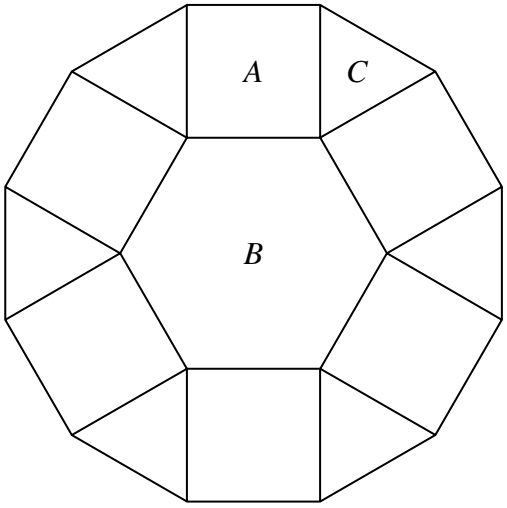



**Volume of prism** = area of cross-section × length



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

**1** This pattern is made using three regular shapes, *A*, *B* and *C*.




**1** (a) Write down the names of shape *A* and shape *B*.

Answer Shape *A* .....

Shape *B* .....

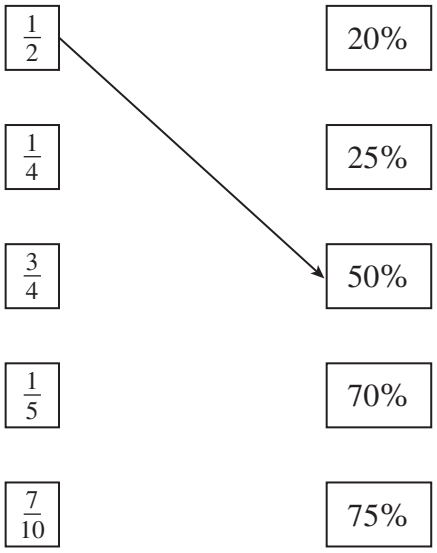
*(2 marks)*

**1** (b) What special type of triangle is shape *C*?

Answer Shape *C* .....

*(1 mark)*

**2** Draw arrows to match each fraction with its equivalent percentage.
The first one has been done for you.




*(3 marks)*

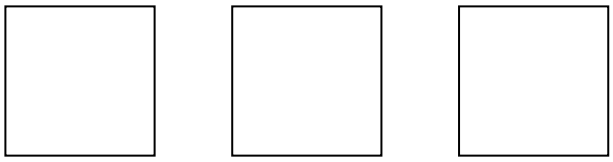
6

**Turn over ▶**

**3** Here are some number cards.

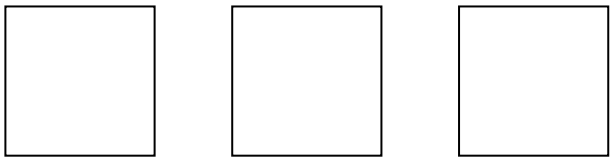

Using three different cards, write down

**3** (a) the largest three digit number,



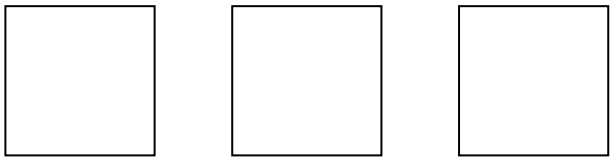
*(1 mark)*

**3** (b) the smallest even three digit number,



*(2 marks)*

**3** (c) a three digit number that is a multiple of 3.



*(1 mark)*

**4** Here is a pattern of dots to show the triangle numbers.

1st triangle number | 2nd triangle number | 3rd triangle number | 4th triangle number | 5th triangle number

**4** (a) Continue the pattern to show the 4th and 5th triangle numbers.

*(2 marks)*

**4** (b) Complete the sequence of triangle numbers: 1, 3, 6, …… , ……

*(1 mark)*

**4** (c) (i) Write down the 6th triangle number.

Answer ..... *(1 mark)*

**4** (c) (ii) Explain how you found the 6th triangle number without drawing the pattern.

.....

.....

Answer ..... *(1 mark)*

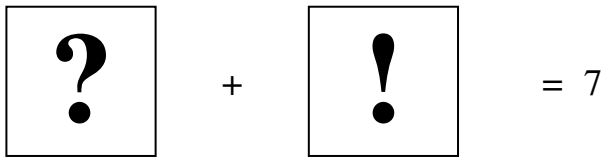
**Turn over for the next question**

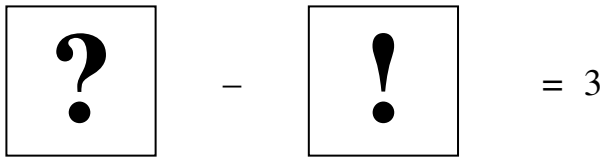
**9**

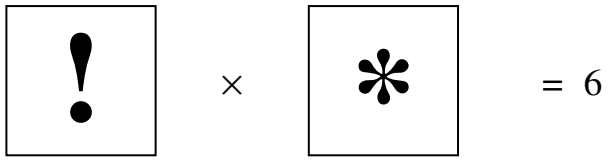
**5** Glyn has three cards with symbols on them.

Each symbol stands for a different whole number.

Glyn knows that



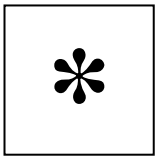




What number does each symbol stand for?

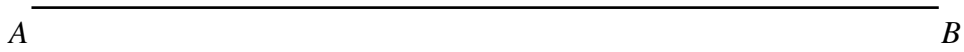
.....

.....

Answer  = ..... ,  = ..... ,  = .....

*(3 marks)*

**6** (a) Measure and write down the length of the line *AB*.




Answer ..... cm *(1 mark)*

**6** (b) Mark a point that is half way along the line *AB*.
Label the point *X*.

*(1 mark)*

**6** (c) Draw a line from *A* at right angles to the line *AB*.

*(1 mark)*

**7** Complete the following

**7** (a) 73 + ……. = 100

.....

*(1 mark)*

**7** (b) 100 – ……. = 65

.....

*(1 mark)*

**7** (c) 100 × ……. = 240

.....

*(1 mark)*

**7** (d) $\sqrt{100}$ = …….

*(1 mark)*

**7** (e) ……. ÷ 0.5 = 100

.....

*(1 mark)*

**11**

**Turn over ▶**

**8** The pictogram shows the amount of money that five students raised for charity.

Alex 

Beth 

Jake 

Matthew 

Key:  represents £10

Roshna 

**8** (a) Who raised the most money?

Answer ..... *(1 mark)*

**8** (b) How much money did Roshna raise?

Answer £ ..... *(1 mark)*

**8** (c) How much money did the five students raise altogether?

.....

.....

Answer £ ..... *(2 marks)*

**8** (d) Sanjay raised £42 for the same charity.

Explain why it may be difficult to show his amount on the pictogram.

.....

.....

*(1 mark)*

**9** The table shows the temperature at different times in Oslo on 1st January 2008.

| Time | Temperature |
|---|---|
| Midnight | – 5° C |
| 4 am | – 8° C |
| 8 am | – 2° C |
| Midday | 7° C |
| 4 pm | 3° C |
| 8 pm | 1° C |

**9** (a) Write down

**9** (a) (i) the highest temperature,

Answer ..... °C *(1 mark)*

**9** (a) (ii) the lowest temperature.

Answer ..... °C *(1 mark)*

**9** (b) Work out the difference in the temperature between 4 am and 8 am.

.....

Answer ..... °C *(1 mark)*

**10** The table shows how to work out powers of 4

| | | |
|---|---|---|
| $4^2 = 4 \times 4$ | = | 16 |
| $4^3 = 4 \times 4 \times 4$ | = | 64 |
| $4^4 = 4 \times 4 \times 4 \times 4$ | = | 256 |
| | | |

**10** (a) Write down the next line in the table.

.....

.....

*(2 marks)*

**10** (b) What will be the units digit in $4^9$?

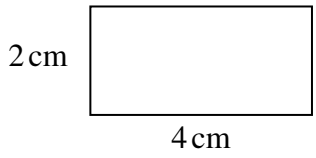
.....

.....

*(1 mark)*

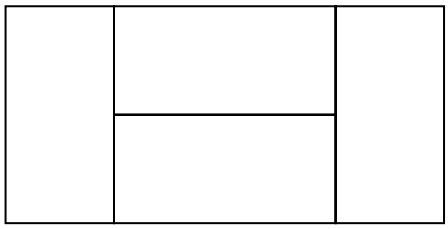
**11**

**11** The diagram shows the measurements of a rectangle.




Not drawn accurately

Four of the rectangles are arranged to form a larger rectangle.



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**11** (a) Work out the perimeter of the larger rectangle.

.....

.....

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

**11** (b) Work out the area of the larger rectangle.

.....

.....

Answer ..... $cm^2$ *(2 marks)*

**12** Jacob has 3 red counters and 7 blue counters.
Tony has 10 red counters.
Emily has only blue counters.

**12** (a) Jacob puts his counters into a bag.

What is the probability of choosing a red counter from the bag?

Answer ..... *(1 mark)*

**12** (b) Tony adds his counters to the bag.

What is the probability of choosing a red counter now?

.....

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

**12** (c) Emily adds her counters to the bag.
The probability of choosing a red counter now is $\frac{1}{2}$

How many blue counters did Emily have?

.....

.....

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

**Turn over for the next question**

**9**

**13** (a) Write down the next term for each of the following sequences.

Give the rule for each sequence.

**13** (a) (i) 7, 13, 19, 25, ……

Rule .....

*(2 marks)*

**13** (a) (ii) 11, 8, 5, 2, ……

Rule .....

*(2 marks)*

**13** (b) Find the *n*th term of this sequence.

6, 10, 14, 18, ……

.....

.....

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

**14** John owns a camera shop.
He buys 25 cameras for £60 each.
He sells the cameras for a total of £2000

How much profit does he make?
You **must** show all your working.

.....

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Answer £ ..... *(4 marks)*

**15** Solve the following equations.

**15** (a) $x + 3 = 10$

Answer $x =$ ..... *(1 mark)*

**15** (b) $2x = 10$

Answer $x =$ ..... *(1 mark)*

**15** (c) $3x - 8 = 10$

.....

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

**15** (d) $5(x + 4) = 10$

.....

.....

Answer $x =$ ..... *(3 marks)*

**15** (e) $11 + \frac{x}{3} = 15$

.....

.....

.....

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

**16** Claire buys 40 bulbs.
25% are crocus bulbs, $\frac{1}{5}$ are tulip bulbs and the rest are daffodil bulbs.

How many daffodil bulbs does she buy?

.....

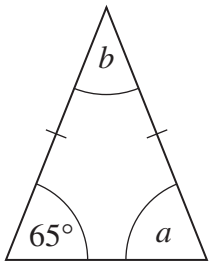
.....

.....

Answer ..... *(3 marks)*

**22**

**17** Two sides of this triangle are equal in length.




Not drawn accurately

**17** (a) What special name is given to this type of triangle?

Answer ..... *(1 mark)*

**17** (b) (i) Write down the value of *a*.

Answer *a* = ..... degrees *(1 mark)*

**17** (b) (ii) Work out the value of *b*.

.....

.....

Answer *b* = ..... degrees *(2 marks)*

**18** In a sale DVDs are sold at one price and CDs at a different price.
Ryan buys two DVDs and one CD at a total cost of £34
Jade buys two DVDs and two CDs at a total cost of £44

What is the cost of one DVD?

.....

.....

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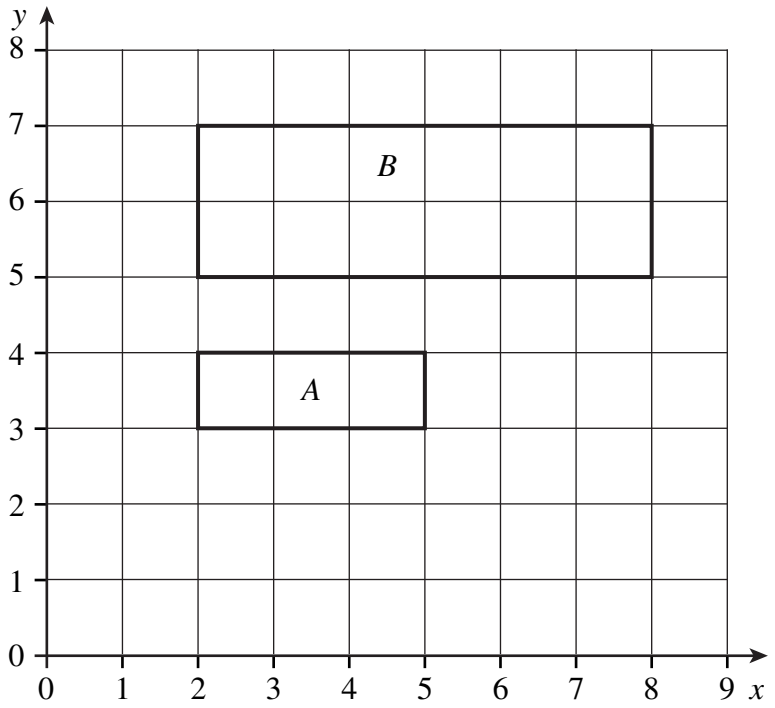
.....

.....

Answer £ ..... *(3 marks)*

**19** Rectangle *B* is an enlargement of rectangle *A*.




**19** (a) Write down the scale factor of the enlargement.

Answer ..... *(1 mark)*

**19** (b) Write down the coordinates of the centre of the enlargement.

Answer ( ..... , ..... ) *(1 mark)*

**20** Andy's salary is £24 000 per year.
He is paid the same amount each month.
He is given a pay rise of 10%.

Calculate his new **monthly** salary.
You **must** show all your working.

.....

.....

.....

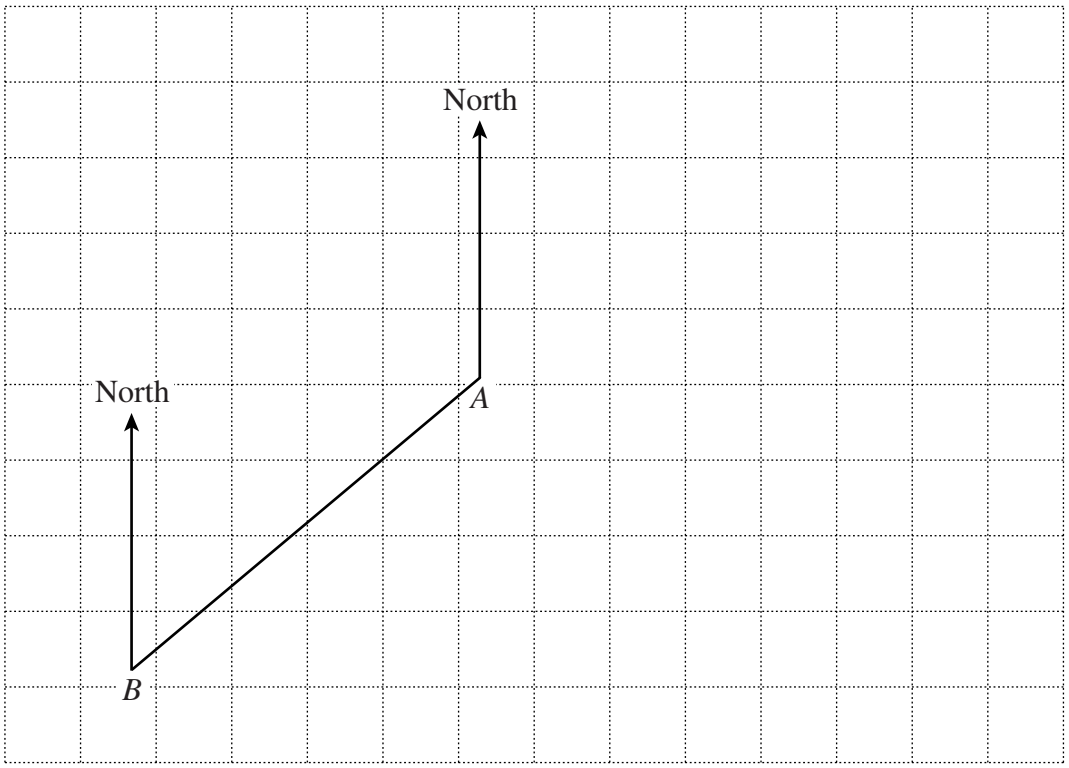
.....

Answer £ ..... *(4 marks)*

**13**

**21** A helicopter flies from *A* to *B*.
The diagram shows the position of *A* and *B*.
The diagram is drawn to scale.

Scale: 1 cm represents 50 km




**21** (a) (i) Use the diagram to find the actual distance from *A* to *B*.

.....

Answer ..... km *(1 mark)*

**21** (a) (ii) Measure and write down the three figure bearing of *B* from *A*.

Answer ..... ° *(1 mark)*

**21** (b) The helicopter then flies to *C*.
The bearing of *C* from *A* is 110°
The bearing of *C* from *B* is 080°

Mark the position of *C* on the diagram.

*(3 marks)*

**22** The table shows the ages of 40 people in a village.

| **Age, $x$ (years)** | **Frequency** |
|---|---|
| $0 < x \leqslant 20$ | 4 |
| $20 < x \leqslant 40$ | 12 |
| $40 < x \leqslant 60$ | 16 |
| $60 < x \leqslant 80$ | 6 |
| $80 < x \leqslant 100$ | 2 |

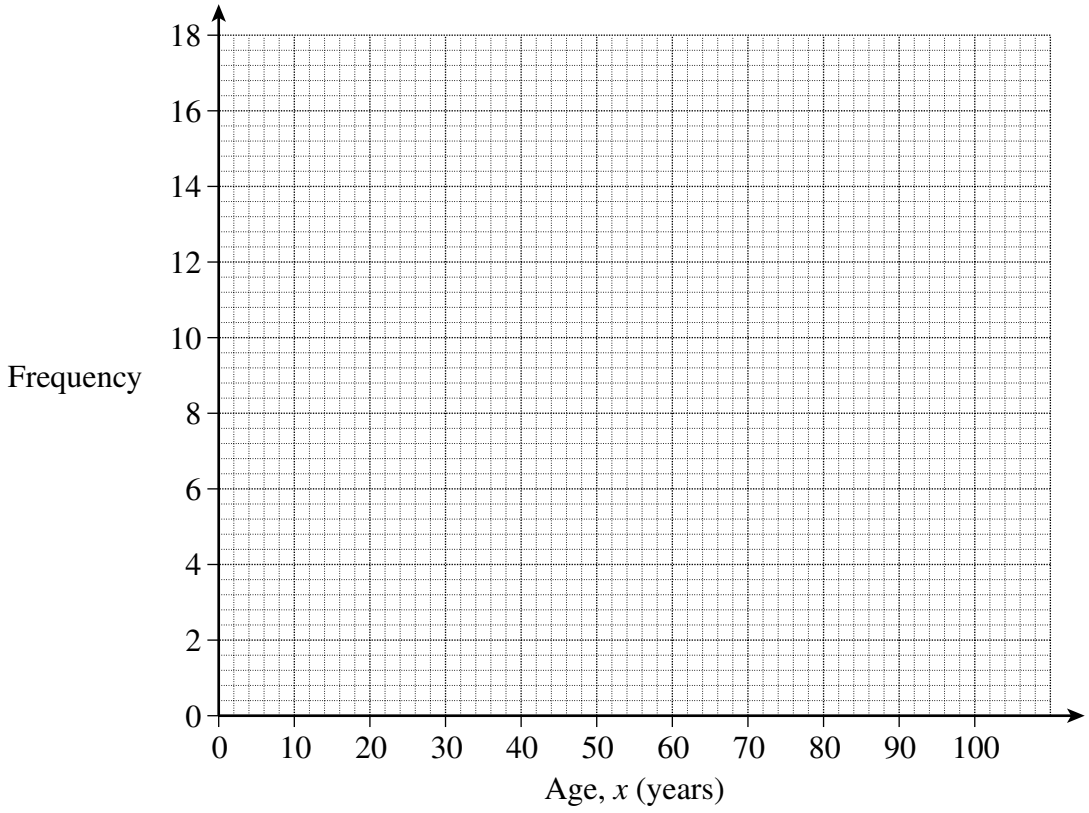
**22** (a) How many people are more than 60 years old?

Answer ..... *(1 mark)*

**22** (b) Write down the modal class for the ages of the people.

Answer ..... $< x \leqslant$ ..... *(1 mark)*

**22** (c) Draw a frequency polygon to represent the data.

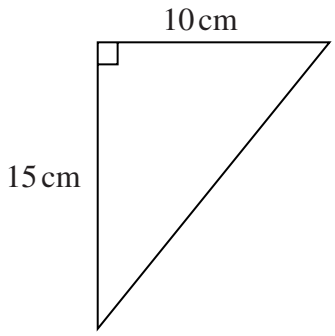



*(2 marks)*

**9**

**Turn over ▶**

**23** (a) Find the area of this triangle.




Not drawn accurately

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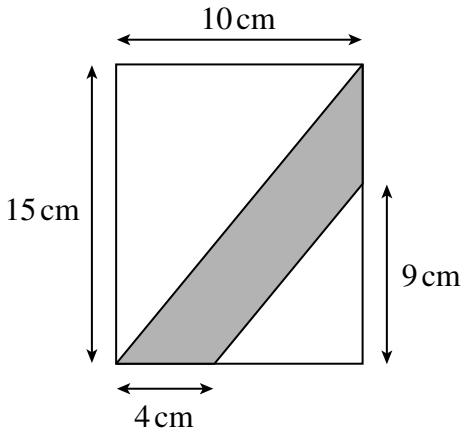
Answer ..... $cm^2$ *(2 marks)*

**23** (b) The shaded shape below is cut from a piece of rectangular card measuring 10 cm by 15 cm.




Not drawn accurately

Calculate the area of the shaded shape.
State the units of your answer.
You **must** show your working.

.....

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Answer ..... *(4 marks)*

**24** (a) Find the Highest Common Factor (HCF) of 8 and 12

.....

.....

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

**24** (b) Find the Least Common Multiple (LCM) of 8 and 12

.....

.....

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

**END OF QUESTIONS**

**10**

**There are no questions printed on this page**

**DO NOT WRITE ON THIS PAGE**
**ANSWER IN THE SPACES PROVIDED**