

Write your name here	
Surname	Other names
Pearson Edexcel	Centre Number
Level 1/Level 2 GCSE (9-1)	Candidate Number
Mathematics Paper 1 (Non-Calculator) Aiming for 7 Spring 2022 Practice Paper Time: 1 hour 30 minutes Higher Tier Paper Reference 1MA1/1H You must have: Ruler graduated in centimetres and millimetres, protractor, pair of compasses, pen, HB pencil, eraser. 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. There are 24 questions.
- Questions have been arranged in an ascending order of mean difficulty, as found by all students in the November examinations
- Questions marked with an asterisk (*) also appear on the Higher Tier paper.
- 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.
- Keep an eye on the time.
- Try to answer every question.
- Check your answers if you have time at the end.

Answer ALL TWENTY FOUR questions.

Write your answers in the spaces provided.

You must write down all the stages in your working.

- 1** Write these numbers in order of size.
Start with the smallest number.

$$6.72 \times 10^5 \quad 67.2 \times 10^{-4} \quad 672 \times 10^4 \quad 0.000\,672$$

.....
(Total for Question 1 is 2 marks)

- 2** Sean pays £10 for 24 chocolate bars.
He sells all 24 chocolate bars for 50p each.
Work out Sean's percentage profit.

..... %
(Total for Question 2 is 3 marks)

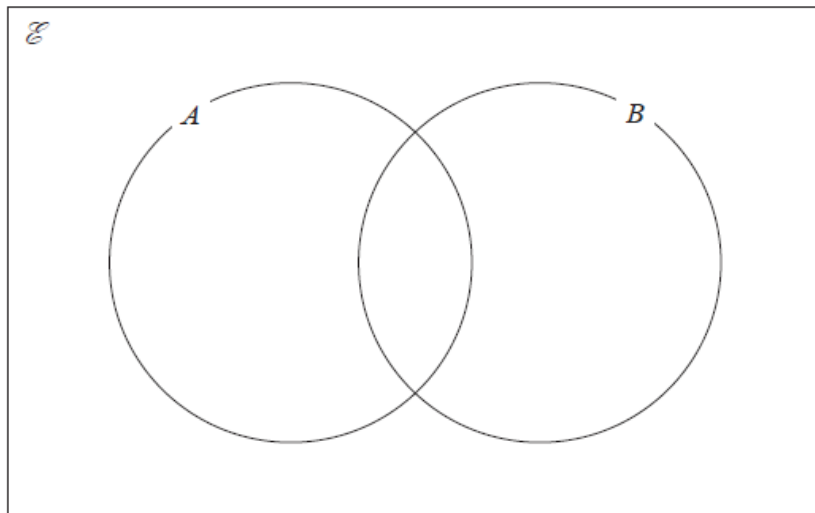
- 3 At the end of 2017
the value of Tamara's house was £220 000
the value of Rahim's house was £160 000

At the end of 2019
the value of Tamara's house had decreased by 20%
the value of Rahim's house had increased by 30%

At the end of 2019, whose house had the greater value?
You must show how you get your answer.

(Total for Question 3 is 4 marks)

- 4 $\mathcal{E} = \{\text{even numbers less than 19}\}$
 $A = \{6, 12, 18\}$
 $B = \{2, 6, 14, 18\}$
Complete the Venn diagram for this information.

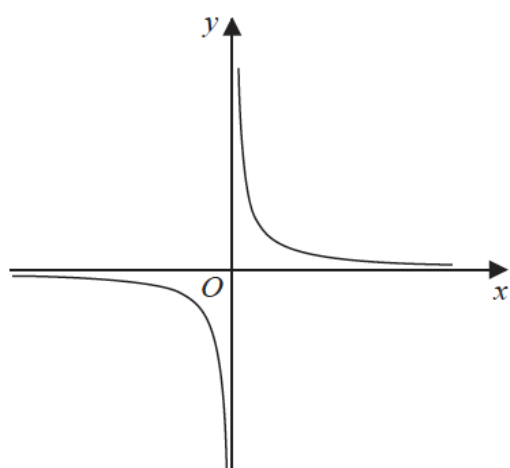


(Total for Question 4 is 3 marks)

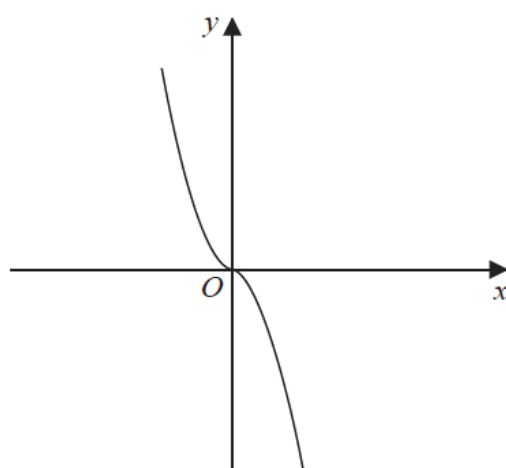
- 5 Work out $4\frac{1}{5} - 2\frac{2}{3}$
Give your answer as a mixed number.

.....
(Total for Question 5 is 3 marks)

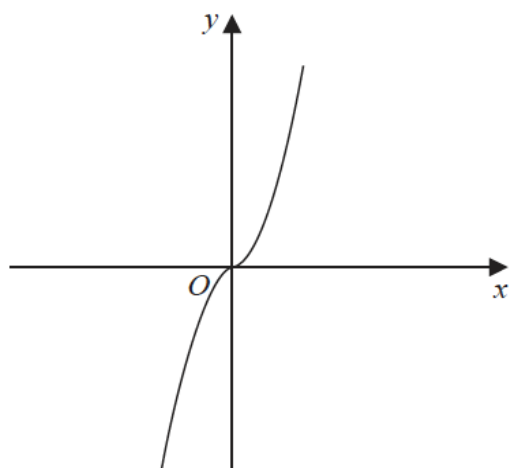
6 The diagram shows four graphs.



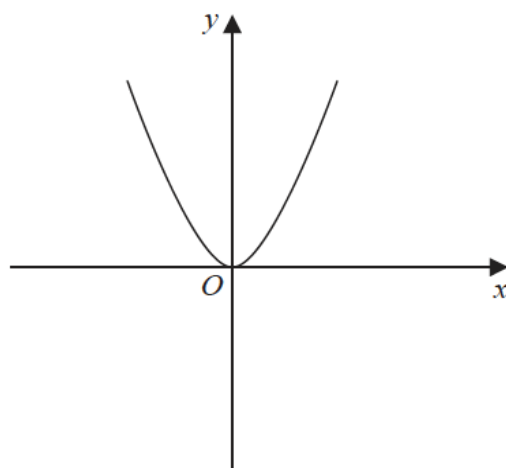
Graph A



Graph B



Graph C



Graph D

Each of the equations in the table is the equation of one of the graphs.

Complete the table.

Equation	Letter of graph
$y = -x^3$	
$y = x^3$	
$y = x^2$	
$y = \frac{1}{x}$	

(Total for Question 6 is 2 marks)

7 Show that

$$2\frac{1}{3} \times 3\frac{3}{4} = 8\frac{3}{4}$$

(Total for Question 7 is 3 marks)

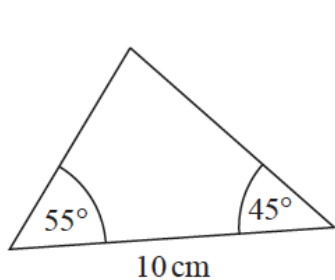
8 The first five terms of an arithmetic sequence are

1 4 7 10 13

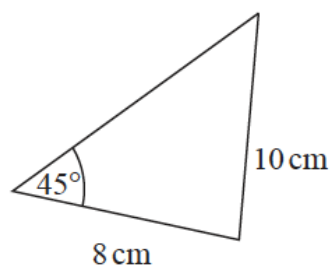
Write down an expression, in terms of n , for the n th term of this sequence.

.....
(Total for Question 8 is 2 marks)

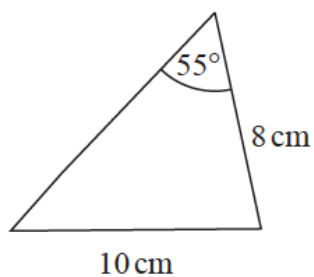
- 9 The diagram shows four triangles.



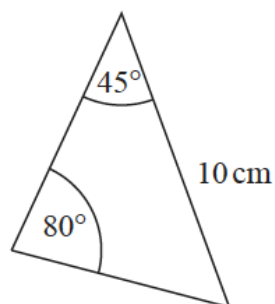
Triangle A



Triangle B



Triangle C



Triangle D

Two of these triangles are congruent.

Write down the letters of these two triangles.

..... and.....

(Total for Question 9 is 1 mark)

10 (a) Work out 3.67×4.2

.....
(3)

(b) Work out $59.84 \div 1.6$

.....
(3)

(Total for Question 10 is 6 marks)

11 (a) Write down the value of 7^0

.....
(1)

(b) Find the value of $3 \times 3^6 \times 3^{-6}$

.....
(1)

(c) Find the value of 2^{-4}

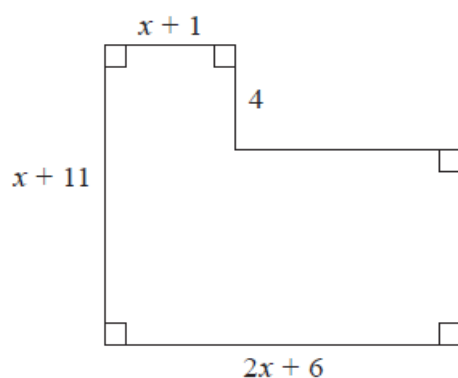
.....
(1)

(d) Find the value of $27^{\frac{1}{3}}$

.....
(1)

(Total for Question 11 is 4 marks)

- 12 Here is a shape with all its measurements in centimetres.



The area of the shape is $A \text{ cm}^2$

Show that $A = 2x^2 + 24x + 46$

(Total for Question 12 is 3 marks)

13 Rosie, Matilda and Ibrahim collect stickers.

$$\begin{array}{ccccc} \text{number of stickers} & & & \text{number of stickers} & & \text{number of stickers} \\ \text{Rosie has} & : & \text{Matilda has} & : & \text{Ibrahim has} & = 4 : 7 : 15 \end{array}$$

Ibrahim has 24 more stickers than Matilda.

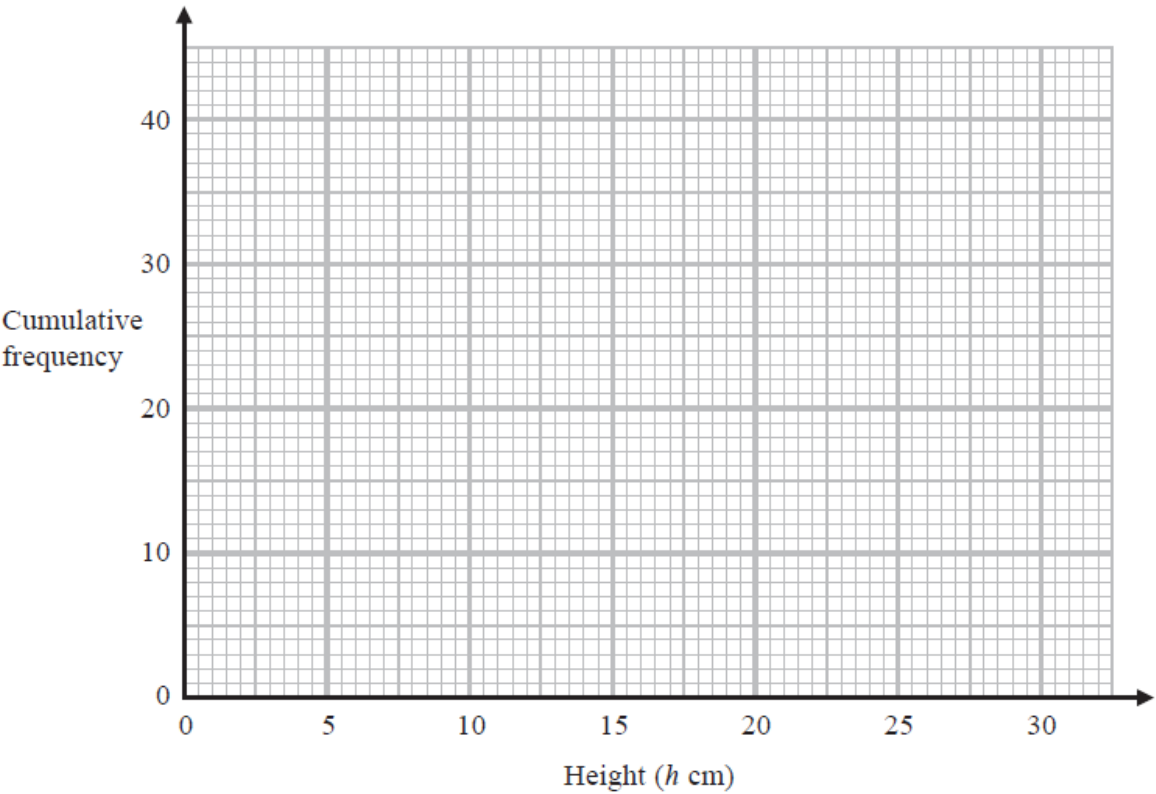
Ibrahim has more stickers than Rosie.
How many more?

.....
(Total for Question 13 is 3 marks)

14 The cumulative frequency table gives information about the heights, in cm, of 40 plants.

Height (h cm)	Cumulative Frequency
$0 < h \leq 5$	4
$0 < h \leq 10$	11
$0 < h \leq 15$	24
$0 < h \leq 20$	34
$0 < h \leq 25$	38
$0 < h \leq 30$	40

(a) On the grid, draw a cumulative frequency graph for this information.



(2)

(b) Use the graph to find an estimate for the median height of the plants.

..... cm
(1)

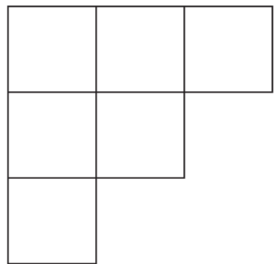
(Total for Question 14 is 3 marks)

15 Given that $\frac{a}{b} = \frac{2}{5}$ and $\frac{b}{c} = \frac{3}{4}$

find $a : b : c$

.....
(Total for Question 15 is 3 marks)

16 The diagram shows a shape made from 6 identical squares.



The total area of the shape is 5406 cm^2

- (a) Find an estimate for the length of one side of each square.
Give your answer correct to the nearest whole number.

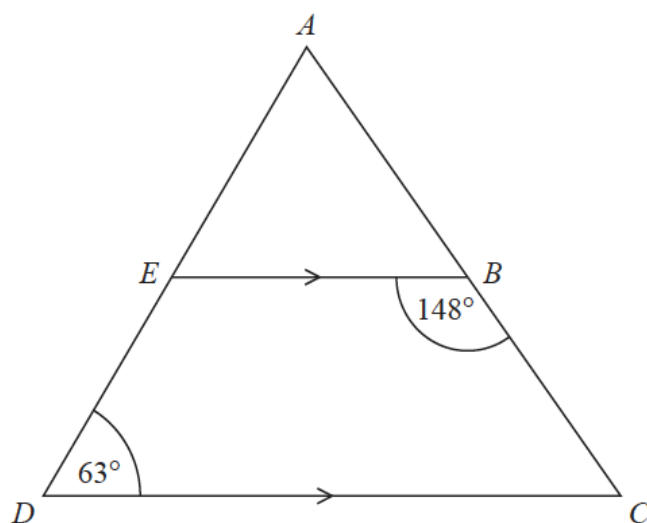
..... cm
(3)

- (b) Is your answer to part (a) an underestimate or an overestimate?
You must give a reason for your answer.

.....
.....
.....
(1)

(Total for Question 16 is 4 marks)

17 ADC is a triangle.



AED and ABC are straight lines.

EB is parallel to DC .

Angle $EBC = 148^\circ$

Angle $ADC = 63^\circ$

Work out the size of angle EAB .

You must give a reason for each stage of your working.

(Total for Question 17 is 5 marks)

- 18 The table gives information about the weekly wages of 80 people.

Wage (£ w)	Frequency
$200 < w \leq 250$	5
$250 < w \leq 300$	10
$300 < w \leq 350$	20
$350 < w \leq 400$	20
$400 < w \leq 450$	15
$450 < w \leq 500$	10

- (a) Complete the cumulative frequency table.

Wage (£ w)	Cumulative frequency
$200 < w \leq 250$	
$200 < w \leq 300$	
$200 < w \leq 350$	
$200 < w \leq 400$	
$200 < w \leq 450$	
$200 < w \leq 500$	

(1)

- (b) On the grid opposite, draw a cumulative frequency graph for your completed table.

(2)

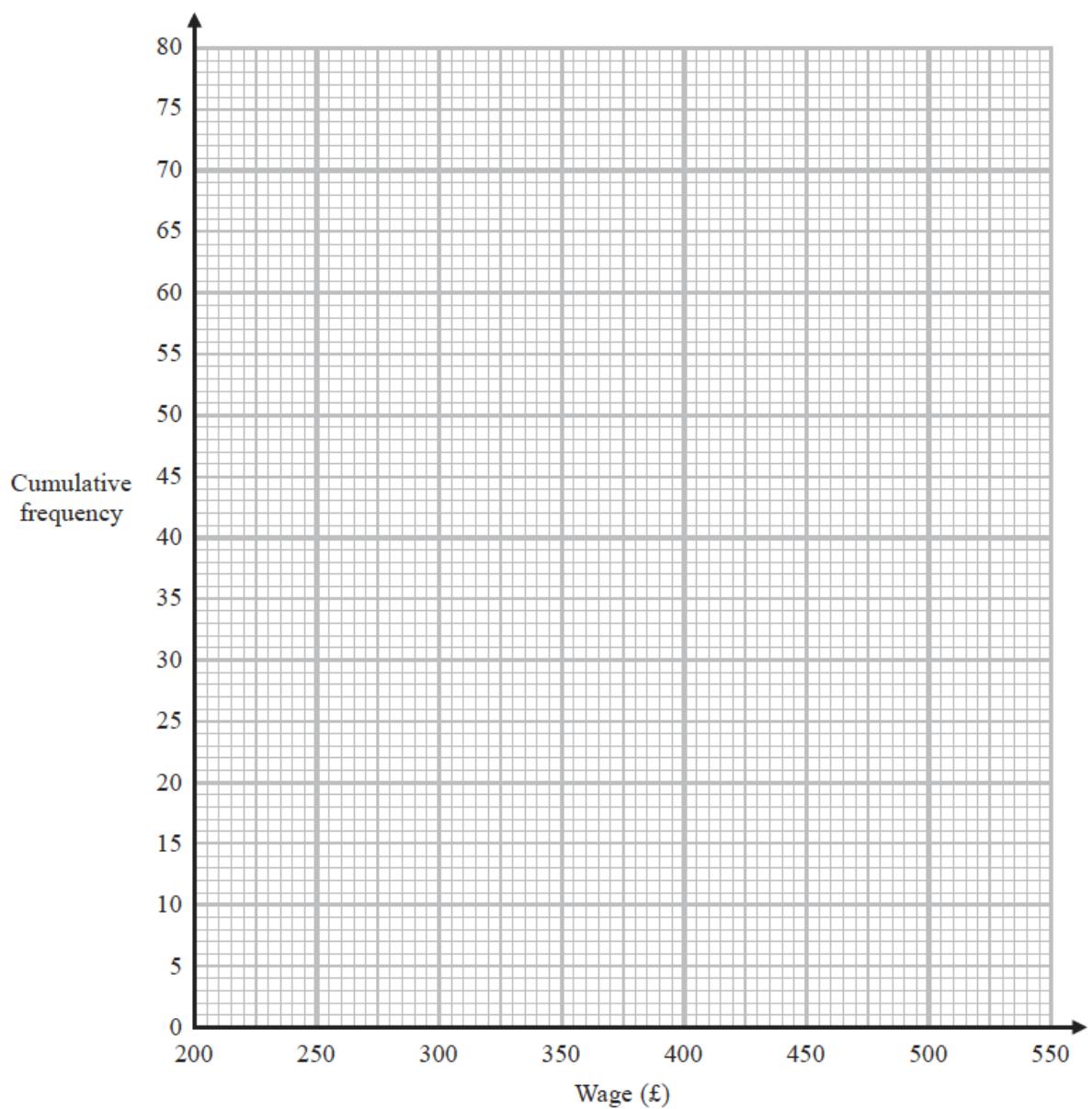
Juan says

“60% of this group of people have a weekly wage of £360 or less.”

- (c) Is Juan correct?

You must show how you get your answer.

(3)



(Total for Question 18 is 6 marks)

19 Liquid **A** and liquid **B** are mixed to make liquid **C**.

Liquid **A** has a density of 70 kg/m^3

Liquid **A** has a mass of 1400 kg

Liquid **B** has a density of 280 kg/m^3

Liquid **B** has a volume of 30 m^3

Work out the density of liquid **C**.

..... kg/m^3

(Total for Question 19 is 3 marks)

20 The table shows information about the heights, in cm, of a group of Year 9 girls.

least height	150 cm
median	165 cm
greatest height	170 cm

This stem and leaf diagram shows information about the heights, in cm, of a group of 15 Year 9 boys.

15	8 9 9
16	4 5 7 7 8
17	0 3 4 4 7
18	0 2

Key: 15 | 8 represents 158 cm

Compare the distribution of the heights of the girls with the distribution of the heights of the boys.

.....

.....

.....

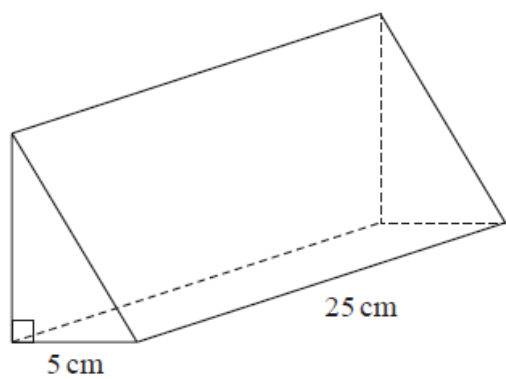
.....

.....

.....

(Total for Question 20 is 3 marks)

21 The diagram shows a prism.



The cross section of the prism is a right-angled triangle.
The base of the triangle has length 5 cm

The prism has length 25 cm
The prism has volume 750 cm³

Work out the height of the prism.
..... cm

(Total for Question 21 is 3 marks)

- 22** Show that $\frac{4x+3}{2x} + \frac{3}{5}$ can be written in the form $\frac{ax+b}{cx}$ where a , b and c are integers.

(Total for Question 22 is 3 marks)

23 f and g are functions such that

$$f(x) = \frac{12}{\sqrt{x}} \quad \text{and} \quad g(x) = 3(2x + 1)$$

(a) Find $g(5)$

.....
(1)

(b) Find $gf(9)$

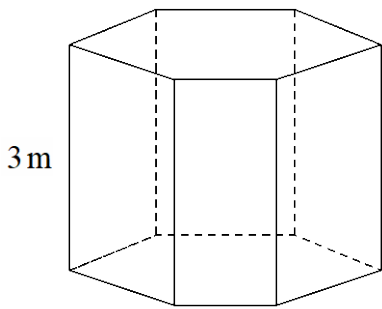
.....
(2)

(c) Find $g^{-1}(6)$

.....
(2)

(Total for Question 23 is 5 marks)

24 The diagram shows a prism placed on a horizontal floor.



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

The prism has height 3 m
 The volume of the prism is 18 m³
 The pressure on the floor due to the prism is 75 newtons/m²
 Work out the force exerted by the prism on the floor.

..... newtons
(Total for Question 24 is 3 marks)

TOTAL FOR PAPER IS 80 MARKS

BLANK PAGE