Write your name here

Surname	Other names

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

Centre Number | Candidate Number

Mathematics model answers

Paper 1 (Non-Calculator)

Foundation Tier

Specimen Papers Set 2	Paper Reference
Time: 1 hour 30 minutes	**1MA1/1F**

You must have: Ruler graduated in centimetres and millimetres, protractor, pair of compasses, pen, HB pencil, eraser.

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.*
- **Calculators may not be used.**
- Diagrams are **NOT** accurately drawn, unless otherwise indicated.
- You must **show all your working out**.

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

Turn over ▶

S50155A

S 5 0 1 5 5 A 0 1 1 6

PEARSON

Answer ALL questions.

Write your answers in the spaces provided.

You must write down all the stages in your working.

1 Find 10% of £320

100% = £320

÷10 ↓ ↓ ÷10

10% = £32

£ 32

(Total for Question 1 is 1 mark)

2 Write 0.8 as a percentage.

0·8 × 100 = 80

80 %

(Total for Question 2 is 1 mark)

3 (a) Work out 84 ÷ 3

$3\overline{)84} = 28$ ∴ 84 ÷ 3 = 28

28

(1)

(b) Work out 0.17 × 6000

$0{\cdot}17 = \frac{17}{100}$ $\frac{17}{100} \times \frac{6000}{1}$ = 17 × 60

17 × 60 = 420 + 600 = 1020

1020

(1)

(c) Work out $(-2)^3$

−2 × −2 × −2 = 4 × −2 = −8

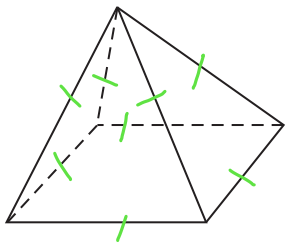
negative × negative = positive

−8

(1)

(Total for Question 3 is 3 marks)

4 Here is a square-based pyramid.



(i) How many faces does the pyramid have?

1 square face
4 triangular faces } 5 faces total

5

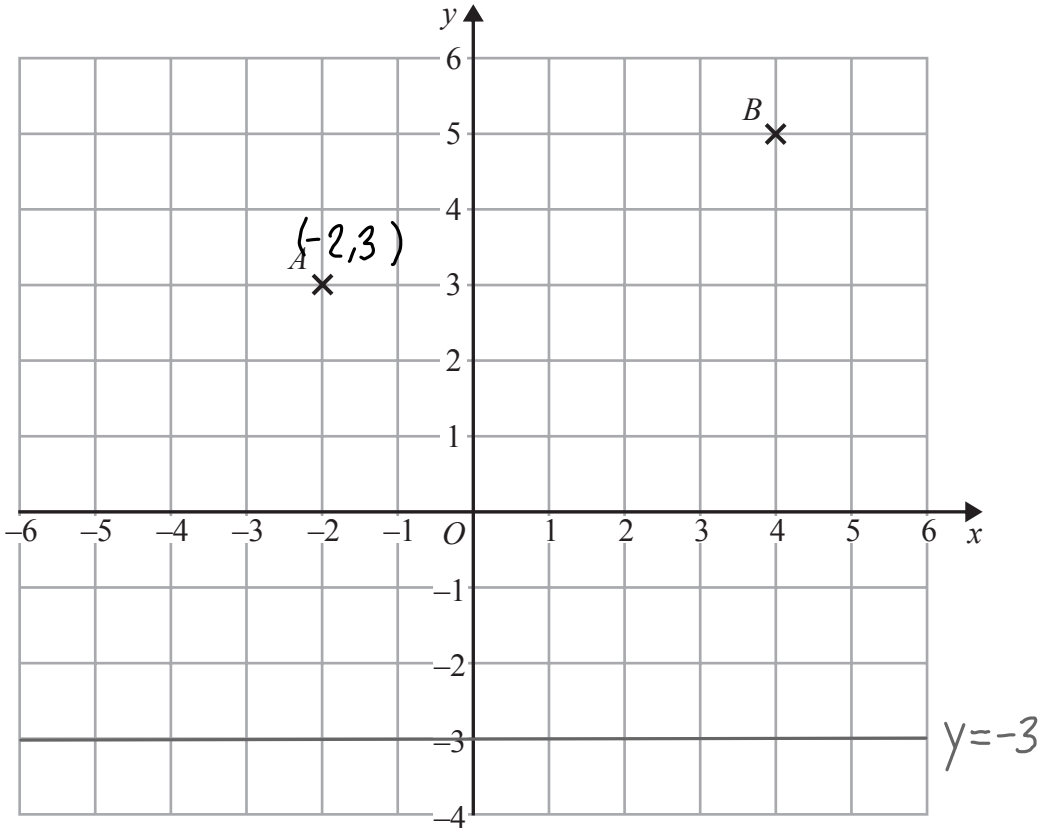
(ii) How many edges does the pyramid have?

see diagram → 8 sides

8

(Total for Question 4 is 2 marks)

5



(a) Write down the coordinates of point B.

coordinate (x, y)

$(4, 5)$

(4 , 5)

(1)

(b) Find the coordinates of the midpoint of AB.

midpoint : $\left(\frac{x_1+x_2}{2}, \frac{y_1+y_2}{2}\right)$

$\left(\frac{-2+4}{2}, \frac{3+5}{2}\right) = \left(\frac{2}{2}, \frac{8}{2}\right) = (1, 4)$

(1 , 4)

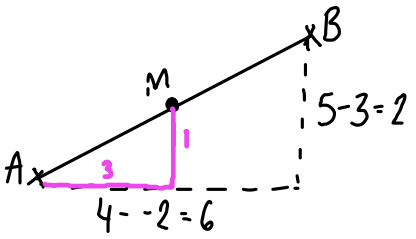
(1)

(c) On the grid, draw the line with equation $y = -3$

(1)

(Total for Question 5 is 3 marks)

alternatively



A $(-2, 3)$ → M $(1, 4)$

+3 +1

6 Here are the instructions for making a drink.

Add 100 m*l* of juice to 2 litres of water

Dev uses 5 litres of water to make the drink.

How much drink has he made?

2L of water for 100ml of juice
÷2 ÷2
1L of water for 50ml of juice
x5 x5
5L of water for 250ml of juice

Total amount of drink: 5L + 250ml
= 5L + 0·25L = 5·25L
1L = 1000ml ∴

5·25

(Total for Question 6 is 3 marks)

7 In a box there are three types of chocolates.

There are 6 plain chocolates,
8 milk chocolates
and 10 white chocolates.

Ben takes at random a chocolate from the box.

(a) Write down the probability that Ben takes a plain chocolate.

total no. chocolates = 6+8+10 = 24

probability takes plain chocolate = $\frac{6}{24} = \frac{1}{4}$ (÷6)

$\frac{1}{4}$

(2)

Deon takes 2 chocolates from the box.

(b) Write down all the possible combinations of types of chocolates that Deon can take.

P: plain M: milk W: white

PP PM PW MM MW WW

these are the only combinations, as the order of how the chocolates are picked is ignored
e.g PM is the same as MP

(2)

(Total for Question 7 is 4 marks)

8 8 identical pens cost £12
Work out the cost of 10 of these pens.

Cost of each pen = £12 ÷ 8 = £1.50

8 | 12·00 = 01·50

Cost of 10 pens = £1.50 × 10 = £15

£ 15

(Total for Question 8 is 2 marks)

9 Here are five fractions.

$\frac{2}{8}$ $\frac{10}{40}$ $\frac{12}{48}$ $\frac{5}{24}$ $\frac{20}{80}$

One of these fractions is **not** equivalent to $\frac{1}{4}$

(a) Write down this fraction.

$\frac{2}{8} \div 2 = \frac{1}{4}$ $\frac{10}{40} \div 10 = \frac{1}{4}$ $\frac{12}{48} \div 12 = \frac{1}{4}$ $\frac{20}{80} \div 20 = \frac{1}{4}$

$\frac{5}{24}$ = not equivalent to 1/4

$\frac{5}{24}$

(1)

(b) Work out $\frac{2}{7} + \frac{1}{14}$

$\frac{2}{7} \times 2 = \frac{4}{14}$

So, $\frac{2}{7} + \frac{1}{14} = \frac{4}{14} + \frac{1}{14} = \frac{5}{14}$

$\frac{5}{14}$

(2)

(c) Work out $\frac{4}{5} \div \frac{3}{10}$

Give your answer in its simplest form.

$\frac{4}{5} \div \frac{3}{10} = \frac{4}{5} \times \frac{10}{3} = \frac{40}{15} \div 5 = \frac{8}{3}$

[keep first fraction, flip second to multiply]

$\frac{8}{3}$

(2)

(Total for Question 9 is 5 marks)

10 (a) Solve $3x + 7 = 1$

$3x + 7 = 1$

$-7 \quad -7$

$3x = -6$

$\div 3 \quad \div 3$

$x = -2$

$x =$ -2

(2)

(b) $f = 6$
$g = 5$

Work out the value of $3f - 2g$

$3f - 2g = 3(6) - 2(5)$

$= 18 - 10 = 8$

8

(2)

(Total for Question 10 is 4 marks)

11 Write down three different multiples of 4 that add up to 40

multiples of 4:

4, 8, 12, 16, 20, 24, 28

$4 + 16 + 20 = 40$

4, 16, 20

(Total for Question 11 is 2 marks)

DO NOT WRITE IN THIS AREA

DO NOT WRITE IN THIS AREA

DO NOT WRITE IN THIS AREA

12 Helen has 80 books to sell.

Each book is Fiction or Non-fiction.
The ratio of the number of Fiction books to the number of Non-fiction books is 3:1

Each book has a normal price of £10
Helen reduces the price of all the Non-fiction books.

Non-fiction
All books ½ price

fiction : non-fiction
3 : 1

4 parts, ¾ fiction
¼ non-fiction

Helen sells all 80 books.

Work out the total amount of money Helen will receive.

Non-fiction

¼ x 80 = 20 books

half price, so ½ x 10 = £5 per book

£5 x 20 = £100

fiction

¾ x 80 = 60 books

full price, so £10 per book

£10 x 60 = £600

fiction + non-fiction = £600 + £100
= £700

£ 700

(Total for Question 12 is 4 marks)

13 Ryan and Carl each get paid a basic pay of £60 per day.

One day, Ryan also gets a bonus of 25% of his basic pay.
Carl also gets £20 in tips from customers.

Work out the difference between the total amounts of money that Ryan and Carl each get.

Ryan

(25% = ¼)

bonus → 25% of £60 = £15

total = 60 + 15 = £75

Carl

total = 60 + 20 = £80

difference → 80 − 75 = 5

£5

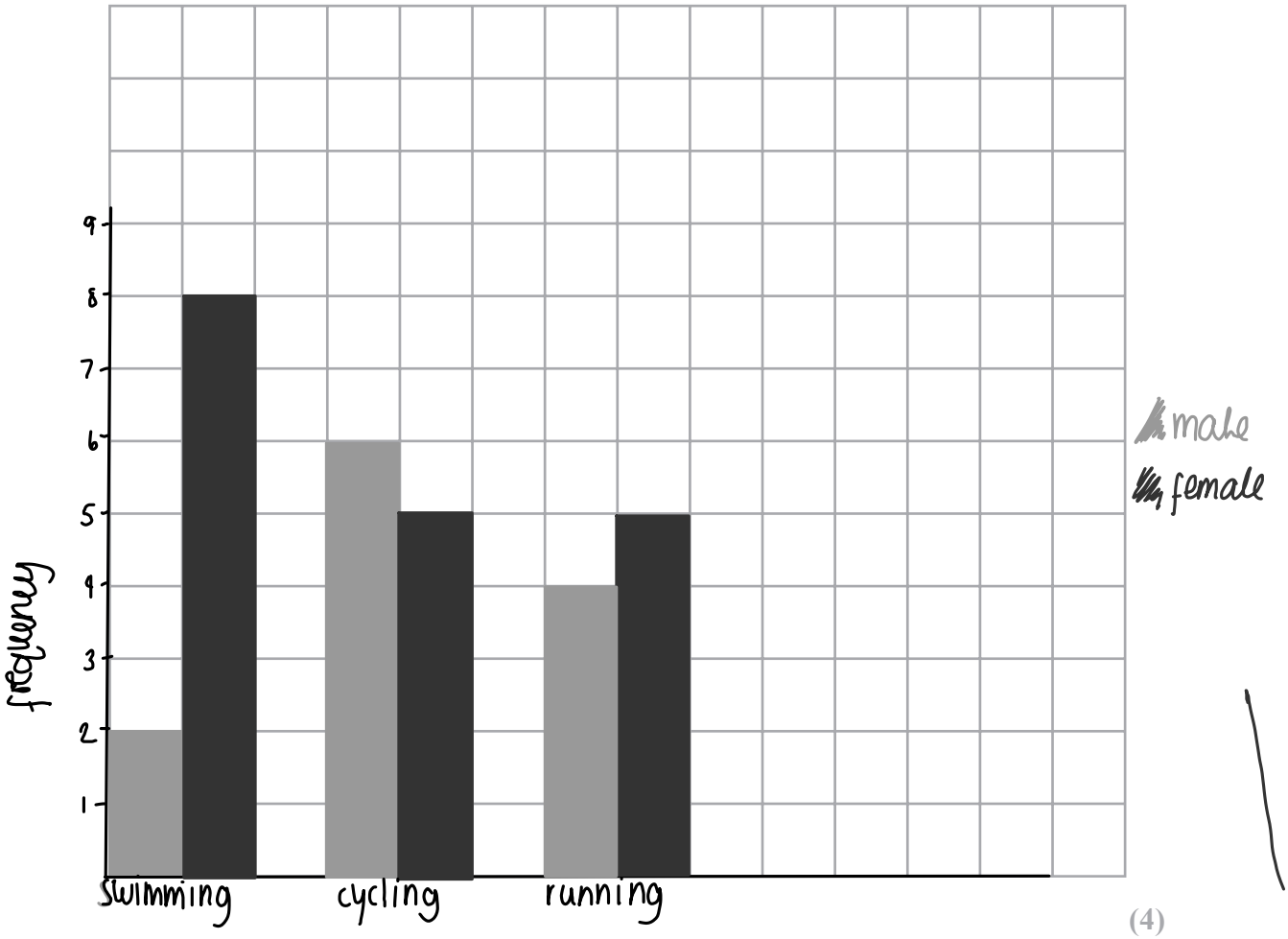
(Total for Question 13 is 3 marks)

14 Some people were asked if they liked swimming or cycling or running.

The table shows the results for the males and the results for the females.

	Swimming	Cycling	Running
Male	2	6	4
Female	8	5	5

(a) On the grid, draw a bar chart to show this information.



(4)

(b) Work out the percentage of the 30 people that are female.

total no females = 8+5+5 = 18

% that are female: $\frac{18}{30} \overset{\div 3}{=} \frac{6}{10} \overset{\times 10}{=} \frac{60}{100} = 60\%$

60 %

(2)

(Total for Question 14 is 6 marks)

15 The table shows information about the ages of all the people at a party.

Age (years)	Frequency
11 – 20	6
21 – 30	16
31 – 40	10
41 – 50	8

(a) Work out the total number of these people who were aged 40 or less.

40 or less: 6 + 16 + 10 = 32

32

(1)

Andy says that the range of ages is 39 years because 50 – 11 = 39

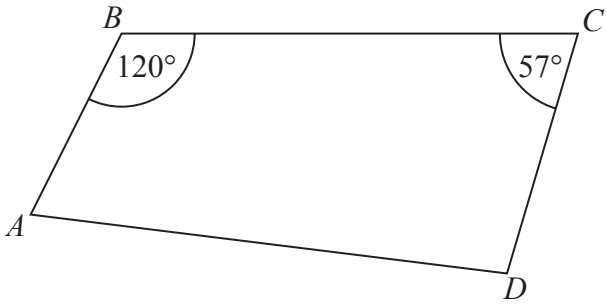
(b) The range may not be 39 years.
Explain why.

The data is in groups, so, for example, in the group 11-20 years, there might be no 11 year olds. So, the range could be different to 39.

(1)

(Total for Question 15 is 2 marks)

16 The diagram shows a quadrilateral $ABCD$.



Is AB parallel to DC?
You must give your reasoning.

$120 + 57 = 177°$

If the lines were parallel, the sum of co-interior angles would be 180°.

$177° \neq 180°$, so, not parallel.

(Total for Question 16 is 3 marks)

17 Irena sells ice creams.
One day she sells 80 ice creams.
The next day she sells 108 ice creams.

Work out the percentage increase in the number of ice creams she sells.

$$\text{percentage increase} = \frac{\text{difference in number sold}}{\text{number sold on first day}} \times 100$$

$$\frac{108 - 80}{80} \times 100 = \frac{28}{80} \times \frac{100}{1} = \frac{28}{8} \times \frac{10}{1}$$

$$= \frac{280}{8}$$

$$= 35\%$$

$$8 \overline{)280} \quad 35$$

35 %

(Total for Question 17 is 3 marks)

18 Dimitar has 20 sweets.
Pip also has 20 sweets.

Dimitar gives Pip x sweets.

Dimitar then eats 5 of his sweets.
Pip then eats half of her sweets.

Write expressions for the number of sweets Dimitar and Pip now have.

D: $20-x$ } Dimitar gives x sweets to Pip
P: $20+x$

D: $20-x-5 = 15-x$ → eats 5, so minus 5
P: $\frac{20+x}{2}$ → eats half, so divide by 2

Dimitar $15-x$

Pip $\frac{20+x}{2}$

(Total for Question 18 is 3 marks)

19 (a) Factorise $y^2 + 27y$

$= y(y+27)$ ← take out common factor of y

$y(y+27)$

(1)

(b) Simplify $(t^3)^2$

$= t^6$

multiply powers when in brackets (3×2)

t^6

(1)

(c) Simplify $\frac{w^9}{w^4}$

$= w^{9-4} = w^5$

indices rule: $\frac{x^a}{x^b} = x^{a-b}$

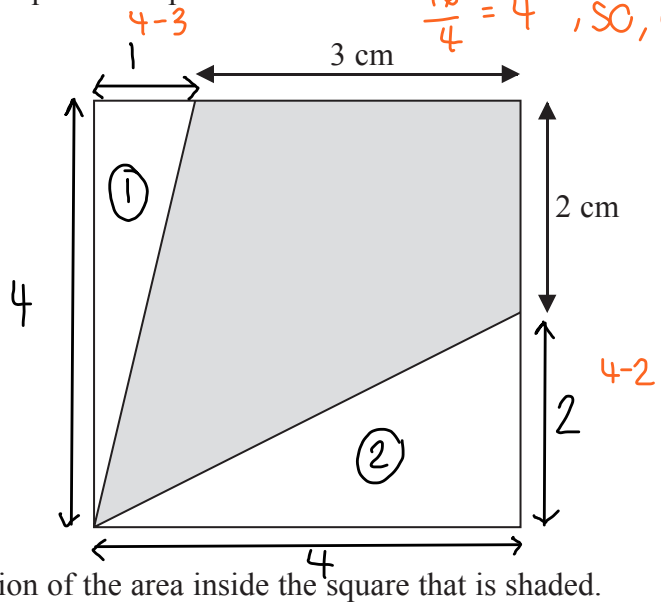
w^5

(1)

(Total for Question 19 is 3 marks)

20 The diagram shows a square with perimeter 16 cm.

$\frac{16}{4} = 4$, so, each side is 4cm.



Work out the proportion of the area inside the square that is shaded.

Total area $4 \times 4 = 16\text{cm}^2$

Area of triangle ① $\frac{4 \times 1}{2} = 2\text{cm}^2$

Area of triangle ② $\frac{4 \times 2}{2} = 4\text{cm}^2$

Shaded area = total area − ① − ②

$= 16 - 2 - 4 = 10\text{cm}^2$

proportion shaded: $\frac{\text{shaded area}}{\text{total area}} = \frac{10}{16} = \frac{5}{8}$ (÷2, ÷2)

$\frac{5}{8}$

(Total for Question 20 is 5 marks)

21 David has designed a game.
He uses a fair 6-sided dice and a fair 5-sided spinner.
The dice is numbered 1 to 6
The spinner is numbered 1 to 5

Each player rolls the dice once and spins the spinner once.
A player can win £5 or win £2

Win £5	**Win £2**
roll a 5 **and** spin a 5	roll a 1 **or** spin a 1 **or** both

David expects 30 people will play his game.
Each person will pay David £1 to play the game.

(a) Work out how much profit David can expect to make.

Total money in → 30 × £1 = £30

Win £5 P(rolling a 5) = $\frac{1}{6}$ → 6 numbers on dice

P(spinning a 6) = $\frac{1}{5}$ → 5 numbers on spinner

therefore probability of winning £5:

$\frac{1}{6} \times \frac{1}{5} = \frac{1}{30}$

so, expect 1 person to win £5, out of the 30

Win £2

Dice Spinner

1/6 → 1 (1/5) → 1 * both: $\frac{1}{6} \times \frac{1}{5} = \frac{1}{30}$

1/6 → 1 (4/5) → not 1 * $\frac{1}{6} \times \frac{4}{5} = \frac{4}{30}$ roll 1

5/6 → not 1 (1/5) → 1 * $\frac{5}{6} \times \frac{1}{5} = \frac{5}{30}$ spin 1

5/6 → not 1 (4/5) → not 1

probability of winning £2:

$\frac{1}{30} + \frac{4}{30} + \frac{5}{30} = \frac{10}{30}$ = expect 10 to win £2

total loss = £5 + £2 (10) = £25

money made - lost

30 − 25 = 5

£ 5

(4)

(b) Give a reason why David's actual profit may be different to the profit he expects to make.

the expected profit is calculated using probability, but it is down to chance

(1)

(Total for Question 21 is 5 marks)

22 Triangle ABC has perimeter 20 cm.

$AB = 7$ cm.
$BC = 4$ cm.

By calculation, deduce whether triangle ABC is a right-angled triangle.

length CA = 20 − 7 − 4 = 9 cm

so CA is the longest side → if a right-angled triangle, CA is the hypotenuse

pythagoras' theorem: $a^2 + b^2 = c^2$ with c being hypotenuse

$a^2 + b^2 = 4^2 + 7^2 = 16 + 49 = 65$

$c^2 = 9^2 = 81$

$65 \neq 81$, so ΔABC is not right angled.

(Total for Question 22 is 4 marks)

23 One sheet of A3 card has area $\frac{1}{8}$ m^2.

The card has a mass of 160 g per m^2.

Work out the total mass of 25 sheets of A3 card.

$1\text{ m}^2 = 160\text{ g}$ (÷8)

$\frac{1}{8}\text{ m}^2 = 20\text{ g}$ (÷8)

, so, one sheet = 20g

25 sheets: 20g × 25 = 500 g

500 g

(Total for Question 23 is 4 marks)

24 Here are the first five terms of a sequence.

2 (+6) 8 (+10) 18 (+14) 32 (+18) 50

(a) Find the next term of this sequence.

difference increases by +4 each time

50 + 18 + 4 = 72

72

(1)

The nth term of a different sequence is $3n^2 - 10$

(b) Work out the 5th term of this sequence.

$n = 5$

$\rightarrow U_5 = 3(5^2) - 10$

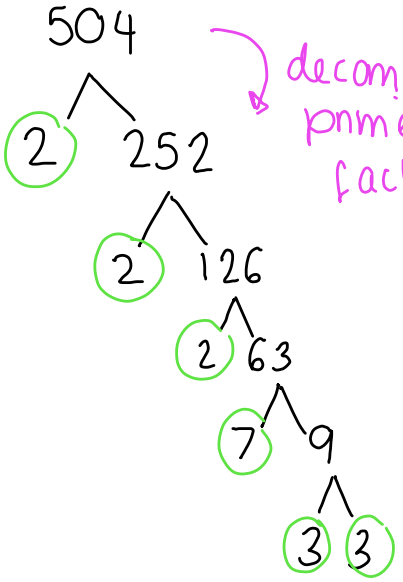
$= 3(25) - 10 = 65$

65

(1)

(Total for Question 24 is 2 marks)

25 Write 504 as a product of powers of its prime factors.



decompose into prime factors

$504 = 2 \times 2 \times 2 \times 7 \times 3 \times 3$

$= 2^3 \times 3^2 \times 7$

$2^3 \times 3^2 \times 7$

(Total for Question 25 is 3 marks)

TOTAL FOR PAPER IS 80 MARKS