Write your name here

Surname Model Solutions

Other names

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

Centre Number

Candidate Number

Mathematics

Paper 1 (Non-Calculator)

Foundation Tier

Specimen Papers Set 1

Time: 1 hour 30 minutes

Paper Reference

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

S49815A

S 4 9 8 1 5 A 0 1 2 0

PEARSON

Answer ALL questions.

Write your answers in the spaces provided.

You must write down all the stages in your working.

1 Change 530 centimetres into metres.

cm → m
÷100

530 ÷100 = 5.3

5.3 metres

(Total for Question 1 is 1 mark)

2 How many minutes are there in $3\frac{1}{4}$ hours?

There are 60min in 1hour
÷4 15min = ¼hour ÷4
x3 180min = 3hour x3
180+15 = 195

195 minutes

(Total for Question 2 is 1 mark)

3 Write 4.4354 correct to 2 decimal places.

5 = 5 - round up

4.44

(Total for Question 3 is 1 mark)

4 Write 0.9 as a percentage.

decimal to %
x100

0.90 x100 = 90

90 %

(Total for Question 4 is 1 mark)

DO NOT WRITE IN THIS AREA

5 Work out $(-3)^3$

$= -3 \times -3 \times -3$

$9 \times -3 = -27$

neg x neg = positive

-27

(Total for Question 5 is 1 mark)

6 Here are four cards.
There is a number on each card.

4	5	2	1

(a) Write down the largest 4-digit even number that can be made using each card only once.

must end on 2 or 4
4 > 2, end on 2

5412

(2)

(b) Write down all the 2-digit numbers that can be made using these cards.

12 21 41 51
15 24 42 52
14 25 45 54

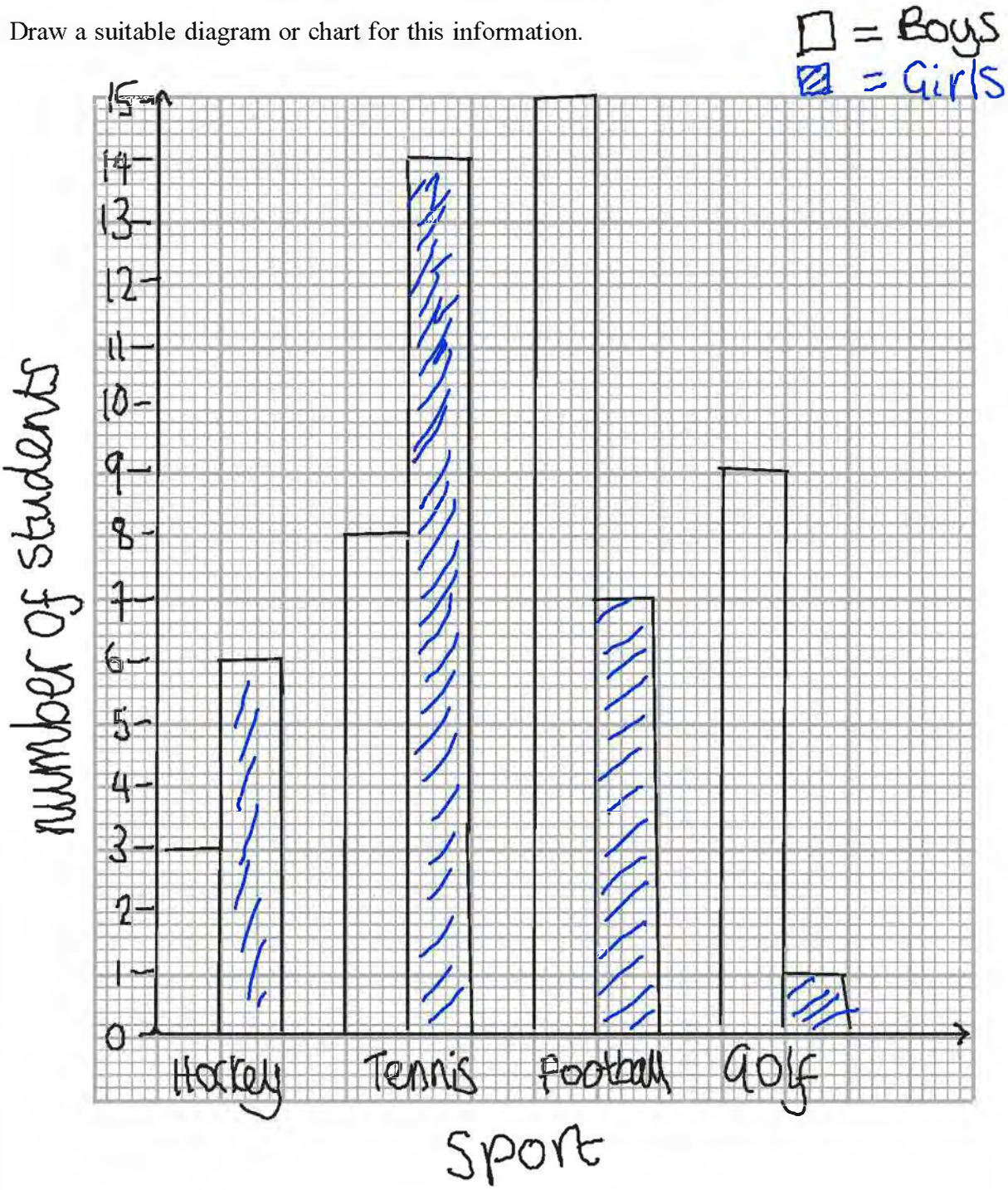
(2)

(Total for Question 6 is 4 marks)

7 The table shows information about the sports some students like best.

	Hockey	Tennis	Football	Golf
Boys	3	8	15	9
Girls	6	14	7	1

Draw a suitable diagram or chart for this information.



(Total for Question 7 is 4 marks)

DO NOT WRITE IN THIS AREA

8 Bernard says,

"When you halve a whole number that ends in 8, you always get a number that ends in 4"

(a) Write down an example to show that Bernard is wrong.

18 ÷ 2 = 9 9 does not end in 4

(1)

Alice says,

"Because 7 and 17 are both prime numbers, all whole numbers that end in 7 are prime numbers."

(b) Is Alice correct?
You must give a reason with your answer.

27 ÷ 3 = 9

No, for example 27 is a whole number, ending in 7 which is not a prime number

(1)

(Total for Question 8 is 2 marks)

9 Work out 247 × 63

```
  247
x  63
-----
  741
14820 +
-----
15561
```

15,561

(Total for Question 9 is 3 marks)

10 An American airline has a maximum size for bags on its planes.
The diagram shows the maximum dimensions.

Chris has a bag.

It has
height 50 cm
width 40 cm
depth 20 cm

1 inch = 2.54 cm

Can Chris take this bag on the plane?
You must show your working.

1 inch ≈ 2.5 cm
14 inch ≈ 21 cm
9 inch ≈ 13.5 cm
22 inch ≈ 55 cm

×14 ×9 ×22

40 cm
20 cm
50 cm

40 > 21 cm ← 14 inches

Therefore the case is too large

(Total for Question 10 is 3 marks)

DO NOT WRITE IN THIS AREA

11 Complete the two-way table.

	blue eyes	brown eyes	green eyes	total
boys	5	12-5-4 3	4	12
girls	11-5 = 6	7	9-4= 5	18
total	30-10-9 11	3+7= 10	9	30

30 -12=18

(Total for Question 11 is 3 marks)

12 There are 28 red pens and 84 black pens in a bag.

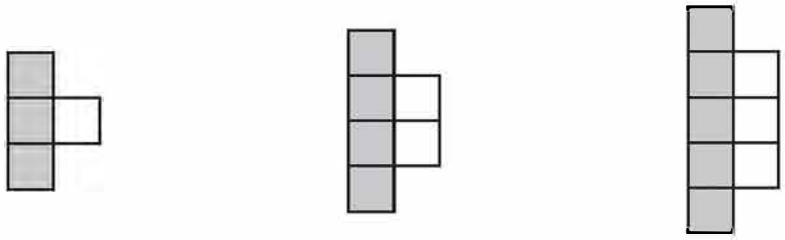
Write down the ratio of the number of red pens to the number of black pens.
Give your ratio in its simplest form.

28 : 84
↓÷7
4 : 12
↓÷4
1 : 3

1 : 3

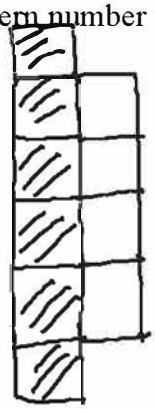
(Total for Question 12 is 2 marks)

13 Here is a sequence of patterns made with grey square tiles and white square tiles.



pattern number 1 | pattern number 2 | pattern number 3

(a) In the space below, draw pattern number 4



(1)

(b) Find the total number of tiles in pattern number 20

20 white squares

20+2 = 22 grey

22+20 = 42

42

(2)

(c) Write an expression, in terms of n, for the number of grey tiles in pattern number n.

3, 4, 5

+1 +1

3,4,5
−1,2,3
2,2,2

n + 2

(2)

(Total for Question 13 is 5 marks)

DO NOT WRITE IN THIS AREA

14 A unit of gas costs 4.2 pence.

On average Ria uses 50.1 units of gas a week.
She pays for the gas she uses in 13 weeks.

(a) Work out an estimate for the amount Ria pays.

$4.2 \times 50.1 \times 13$

$\approx 4 \times 50 \times 10$

$\approx 2000p$

2000p

(3)

(b) Is your estimate to part (a) an underestimate or an overestimate?
Give a reason for your answer.

Underestimate, each value has been rounded down.

(1)

(Total for Question 14 is 4 marks)

15 This is a scale plan of a rectangular floor.

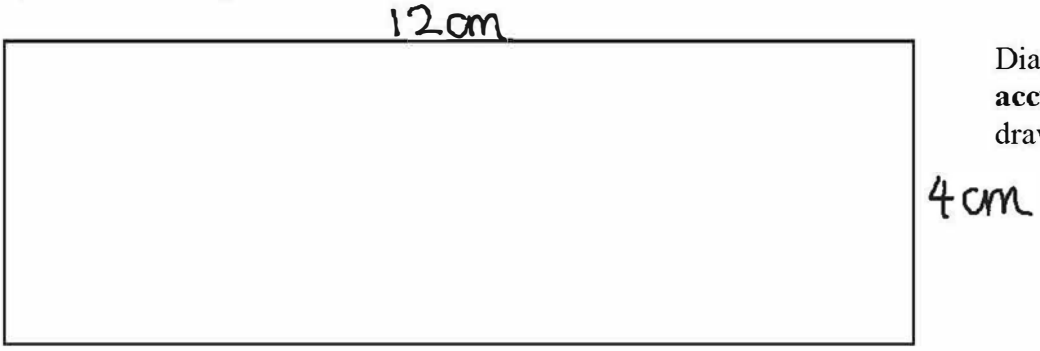


Diagram **accurately** drawn

Scale: 1 cm represents 2 m

Mrs Bridges is going to cover the floor with boards.
Each board is rectangular in shape.

Each board is 1.2 m long and 1 m wide.

Mrs Bridges has 150 boards.
Does she have enough boards?
You must show how you get your answer.

1 cm = 2m
×12 ×12
12cm = 24m
×4 ×4
4cm = 8m

Area = 24 × 8 = 192 m²

Area of board = 1 × 1.2
= 1.2 m²

No of boards = 192 ÷ 1.2
= 160

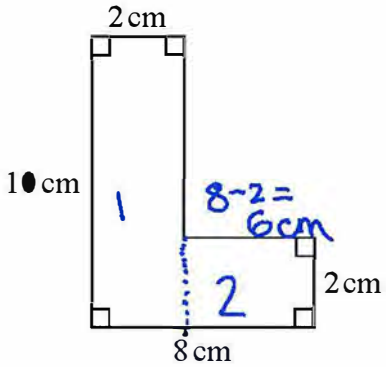
160 boards

150 < 160, there is not enough boards

(Total for Question 15 is 3 marks)

DO NOT WRITE IN THIS AREA

16



Work out the area of the shape.

Area of 1 = 10 x 2 = 20cm²

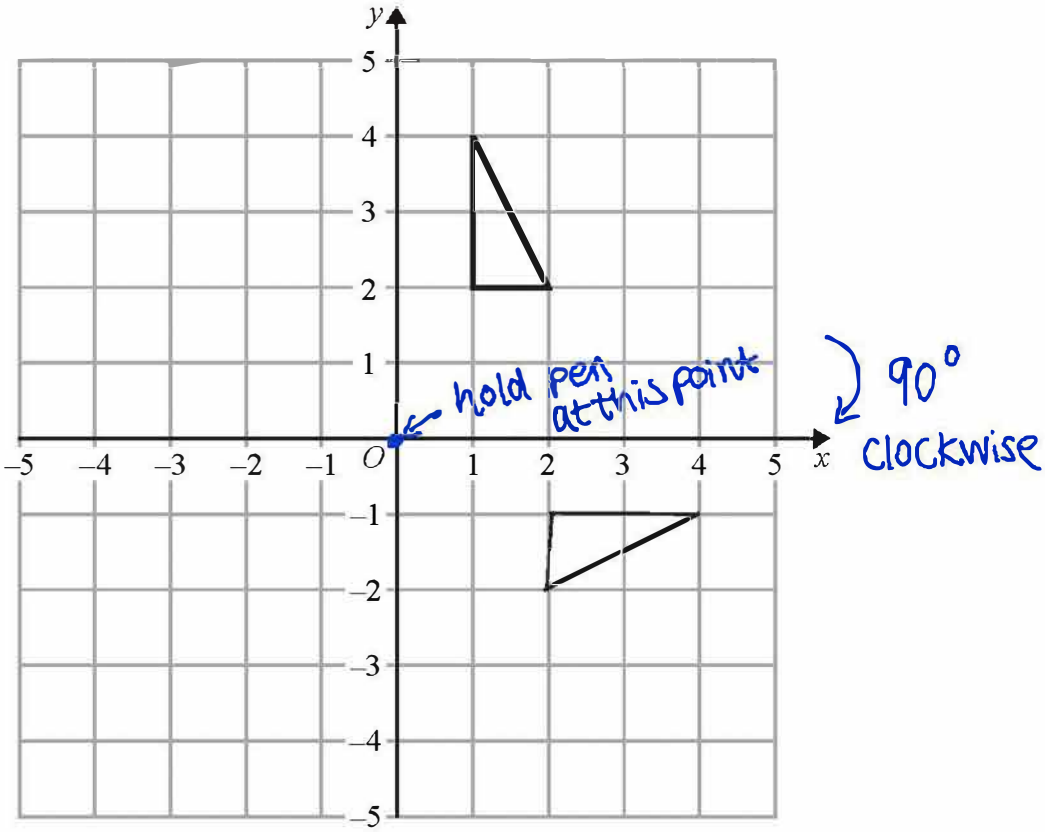
Area of 2 = 6 x 2 = 12 cm²

Total = 20 + 12 = 32 cm²

32 cm²

(Total for Question 16 is 2 marks)

17



On the grid, rotate the triangle 90° clockwise about (0, 0).

(Total for Question 17 is 2 marks)

18 There are 500 passengers on a train.

$\frac{7}{20}$ of the passengers are men.

40% of the passengers are women.

The rest of the passengers are children.

Work out the number of children on the train.

Number of men : $\frac{7}{20} \times 500 = \frac{350}{2} = 175$ men

Number of women: 40% of 500

$\frac{4}{10} \times 500 = 200$ women

Number of children = 500 - 200 - 175

= 300 - 175 = 125

125

(Total for Question 18 is 3 marks)

DO NOT WRITE IN THIS AREA

19 A shop sells milk in 1 pint bottles and in 2 pint bottles.

Each 1 pint bottle of milk costs 52p.
Each 2 pint bottle of milk costs 93p.

Martin has **no** milk.

He assumes that he uses, on average, $\frac{3}{4}$ of a pint of milk each day.

Martin wants to buy enough milk to last for 7 days.

(a) Work out the smallest amount of money Martin needs to spend on milk.
You must show all your working.

$\frac{3}{4} \times 7 = \frac{21}{4} = 5.25$ pints
$= 6$ pints needed

$2 \times 3 = 6$ pints

$3 \times 93 = 279p = £2.79$

£ 2.79

(3)

Martin actually uses more than $\frac{3}{4}$ of a pint of milk each day.

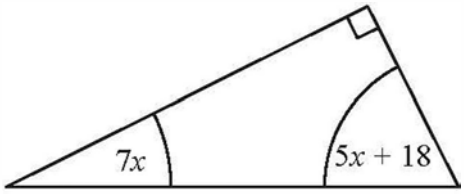
(b) Explain how this might affect the amount of money he needs to spend on milk.

He might have to pay more, but if the total amount is still less than 6 pints, he would still have £2.79

(1)

(Total for Question 19 is 4 marks)

20 The diagram shows a right-angled triangle.



All the angles are in degrees.

Work out the size of the smallest angle of the triangle.

$90 + 7x + 5x + 18 = 180$

$-90 \quad -18$

$12x = 72$

$\div 6$

$x = 6°$

angles in triangle add to 180

$180 - 90 = 90$

$\begin{array}{r} 90 \\ -18 \\ \hline 72 \end{array}$

$5x + 18 = \overset{5\times6}{30} + 18 = 48°$

$7x = 42°$

42 °

(Total for Question 20 is 3 marks)

21 A box exerts a force of 140 newtons on a table.
The pressure on the table is 35 newtons/m².

Calculate the area of the box that is in contact with the table.

$$p = \frac{F}{A}$$

p = pressure
F = force
A = area

$P = \frac{F}{A}$

$\times A$

$\div P$

$A = \frac{F}{P}$

$A = \frac{140}{35} = 4$

unit!

$4m^2$

(Total for Question 21 is 3 marks)

DO NOT WRITE IN THIS AREA

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

The table shows the probabilities of picking at random a red counter and picking at random a yellow counter.

Colour	red	blue	green	yellow
Probability	0.24	0.22	0.22	0.32

The probability of picking a blue counter is the same as the probability of picking a green counter.

blue = green
$x = x$

Complete the table.

$1 - 0.24 = 0.76$
$0.76 - 0.32 = 0.44$

$x + x + 0.24 + 0.32 = 1$

probability adds to 1

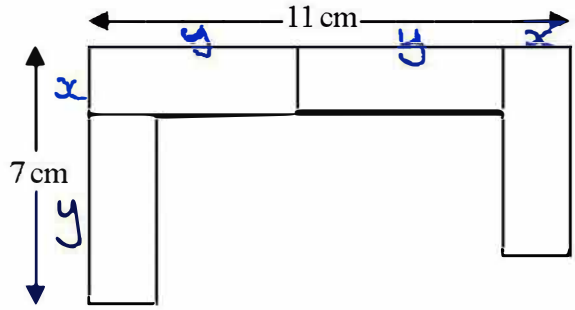
$2x = 0.44$

$\div 2$

$x = 0.22$

(Total for Question 22 is 2 marks)

23 A pattern is made using identical rectangular tiles.



Find the total area of the pattern.

$x + 2y = 11$
$x + y = 7$

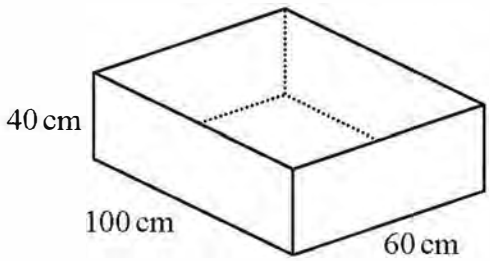
$y = 4$ cm $\quad x = 7 - 4$
$= 3$ cm

Area of one rect $= 3 \times 4 = 12\text{cm}^2$
Area 4 rect $= 12 \times 4 = 48\text{cm}^2$

48 cm²

(Total for Question 23 is 4 marks)

24 The diagram shows a sand pit.
The sand pit is in the shape of a cuboid.



Sally wants to fill the sand pit with sand.
A bag of sand costs £2.50
There are 8 litres of sand in each bag.

Sally says,

"The sand will cost less than £70"

Show that Sally is wrong.

$40 \times 100 \times 60 = 240{,}000\ cm^2$

8 litres = $8000\ cm^2$

$240{,}\cancel{000} \div 8\cancel{000} = 30$ bags needed

30 bags cost: 30×2.5
$= 60 + 15 = £75$

$£75 > 70$

Sally is wrong

(Total for Question 24 is 5 marks)

DO NOT WRITE IN THIS AREA

25 Four friends each throw a biased coin a number of times.
The table shows the number of heads and the number of tails each friend got.

	Ben	Helen	Paul	Sharif
heads	34	66	80	120
tails	8	12	40	40

The coin is to be thrown one more time.

(a) Which of the four friends' results will give the best estimate for the probability that the coin will land heads?
Justify your answer.

Sharif because he carried out the most trials.

(1)

Paul says,

"With this coin you are twice as likely to get heads as to get tails."

(b) Is Paul correct?
Justify your answer.

Sharif : $\frac{\text{heads}}{\text{tails}} = \frac{120}{40} = 3$

This shows you are 3 times as likely not 2, so Paul is incorrect.

(2)

The coin is to be thrown twice.

(c) Use all the results in the table to work out an estimate for the probability that the coin will land heads both times.

Total heads $= 34 + 66 + 80 + 120$
$= 300$

Total tails $= 8 + 12 + 40 + 40$
$= 100$

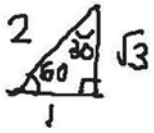
$P(\text{Heads}) = \frac{300}{300+100} = \frac{3}{4}$

$P(H + H) = \frac{3}{4} \times \frac{3}{4} = \frac{9}{16}$

(2)

(Total for Question 25 is 5 marks)

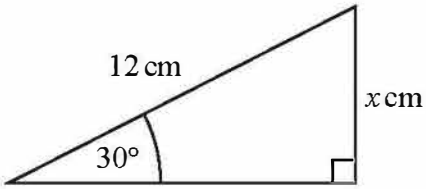
26 (a) Write down the exact value of cos 30°



$\frac{\sqrt{3}}{2}$

(1)

(b)



Given that sin 30° = 0.5,
work out the value of x.

$\sin x = \frac{opp}{hyp}$

$\sin 30 = \frac{x}{12}$

$12 \times 0.5 = x = 6$

6 cm

(2)

(Total for Question 26 is 3 marks)

27 Expand and simplify $(x + 3)(x - 1)$

$x^2 - x + 3x - 3$

$= x^2 + 2x - 3$

$x^2 + 2x - 3$

(Total for Question 27 is 2 marks)

DO NOT WRITE IN THIS AREA

28 Factorise $x^2 - 16$ ← Difference of 2 squares

$\sqrt{16} = \pm 4$

$(x-4)(x+4)$

(Total for Question 28 is 1 mark)

29 Solve the simultaneous equations

1 $4x + y = 25$ ×3
2 $x - 3y = 16$

③ $12x + 3y = 75$
$x - 3y = 16$ +

$13x = 91$
$\div 13$
$x = 7$

equ ② $7 - 3y = 16$
$-7 \quad -7$
$-3y = 9$
$\div -3$
$y = -3$

$x =$ 7 , $y =$ -3

(Total for Question 29 is 3 marks)

TOTAL FOR PAPER IS 80 MARKS