ANSWERS

Write your name here

Surname	Other names

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

Centre Number | | | | | |

Candidate Number | | | | |

Mathematics

Paper 3 (Calculator)

Foundation Tier

Mock Set 2 – Spring 2017
Time: 1 hour 30 minutes

Paper Reference
1MA1/3F

You must have: Ruler graduated in centimetres and millimetres, protractor, pair of 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.
- Answer the questions in the spaces provided
  – *there may be more space than you need.*
- **Calculators may be used.**
- If your calculator does not have a π button, take the value of π to be 3.142 unless the question instructs otherwise.
- 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.

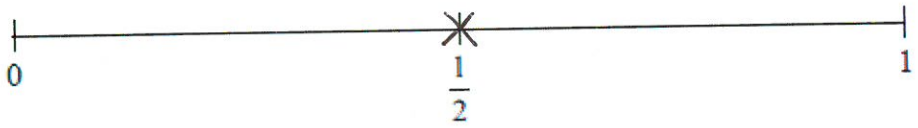
Answer ALL questions.

Write your answers in the spaces provided.

You must write down all the stages in your working.

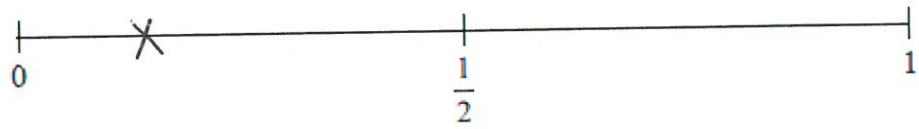
1. A fair ordinary dice is thrown.

(a) On the probability scale below, mark with a cross (X), the probability that the dice will land on an even number.



(1)

(b) On the probability scale below, mark with a cross (X), the probability that the dice will land on a 5



(1)

(Total for Question 1 is 2 marks)

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2. Write a number on the dotted line to make the statement correct.

2.75 litres = ... 2750 ..... millilitres

(Total for Question 2 is 1 mark)

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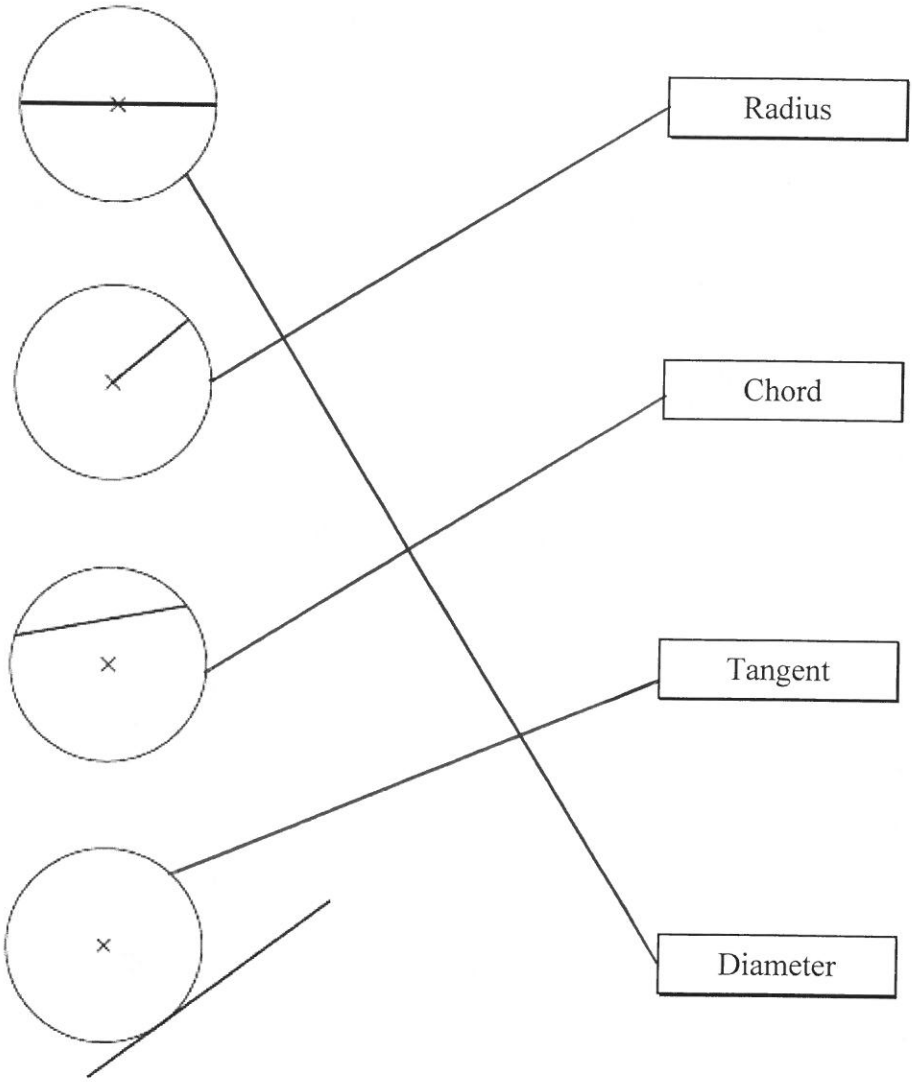
3. Here are four circles and four straight lines.
Each circle has its centre marked with a cross (X).

Draw an arrow from each straight line to its mathematical name.

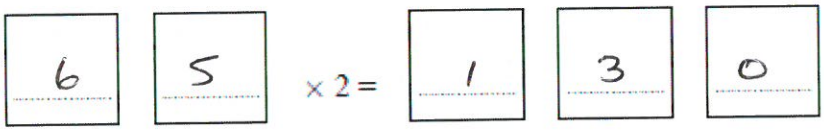


(Total for Question 3 is 2 marks)

4. Here are five digits.

0 1 3 5 6

Use each digit once to complete this calculation.



(Total for Question 4 is 2 marks)

(or 53×2 = 106)

5. (a) Solve $2(x + 1) = 8$

$2x + 2 = 8$

$2x = 6$

$x = 3$

$x =$ 3

(2)

(b) Solve $3y + 7 = 19$

$3y = 12$

$y = 4$

$y =$ 4

(2)

(c) Factorise $6n - 4$

$2(3n - 2)$

(1)

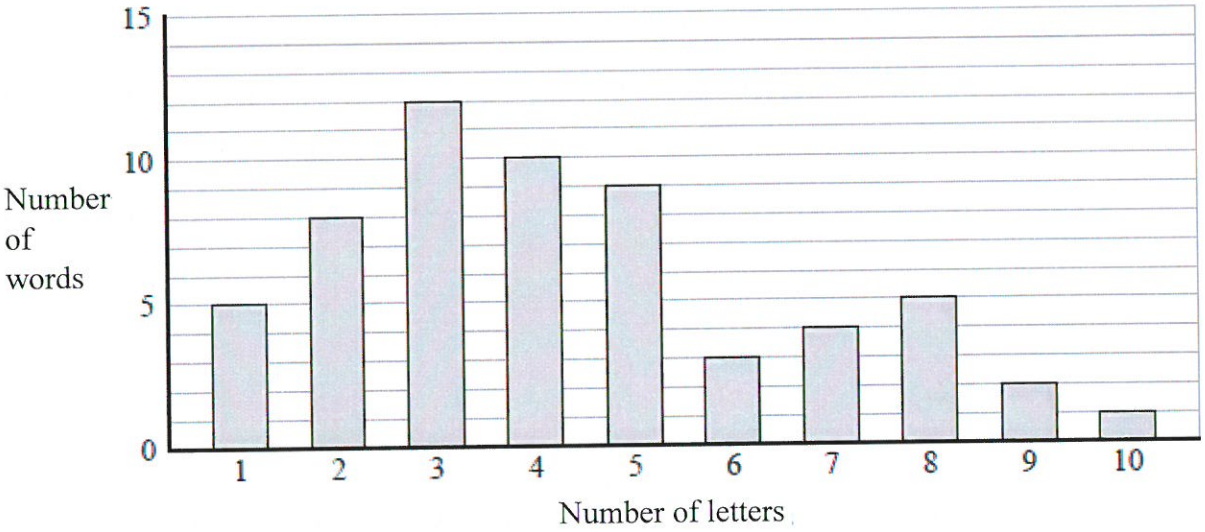
(d) Simplify $3cd + 2cd - cd$

$4cd$

(1)

(Total for Question 5 is 6 marks)

6. The bar chart shows some information about the number of letters in each word in a paragraph.



(a) What is the modal number of letters in a word?

3

.....

(1)

(b) Work out the range for the numbers of letters in a word.

$10 - 1 = 9$

9

.....

(2)

(c) Work out the fraction of the words that have at least six letters.

$5 + 8 + 12 + 10 + 9 + \overbrace{3 + 4 + 5 + 2 + 1}^{15}$

$= 59$

$\frac{15}{59}$

.....

(3)

(Total for Question 6 is 6 marks)

7. Keri draws a triangle.
She says,

"Two of the angles of my triangle are obtuse."

Kerri cannot be correct.
Explain why.

OBTUSE ANGLE IS GREATER THAN 90° ∴ 2 OBTUSE ANGLES ARE GREATER THAN 180° BUT ANGLES IN A TRIANGLE ADD UP TO 180°

(Total for Question 7 is 2 marks)

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8. T is an integer such that $7 < T < 15$

(a) Write down the greatest number T can be.

14

(1)

f and g are both integers.

$f + g = 500$

f is 160 greater than g $\quad f = g + 160$

(b) Calculate the value of f and the value of g.

$f + g = 500$

$f - g = 160$

$\therefore 2f = 660$

$\therefore f = 330$

$\therefore g = 500 - 330$

$= 170$

$f =$ 330

$g =$ 170

(3)

(Total for Question 8 is 4 marks)

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9. 288 chocolates are put into three boxes.

The chocolates are put into a small box, a medium box and a large box in the ratio 1 : 3 : 8

Work out the number of chocolates in each box.

S M L

1 : 3 : 8 → 12

×24 → 24 72 192 288 ← ×24

small box 24

medium box 72

large box ~~288~~ 192

(Total for Question 9 is 3 marks)

10. Ravi buys some hats to sell at a school fete.
He buys 40 hats for a total of £120

Ravi sells $\frac{3}{4}$ of these hats at £4.50 each.
He reduces the selling price of the remaining hats to £4 each.
He sells half of the remaining hats at this selling price.

Work out the profit that Ravi makes.

$40 \times \frac{3}{4} = 30$ $\quad 30 \times £4.50 = £135$

$40 - 30 = 10$ $\quad \frac{1}{2} \times 10 = 5$ $\quad 5 \times £4 = £20$

} £155

PROFIT = $155 - 120 = £35$

£ 35

(Total for Question 10 is 5 marks)

11. Here are the speeds, in kilometres per hour, of 15 cyclists.

16	22	34	18	24
22	33	28	19	41
23	25	31	40	23

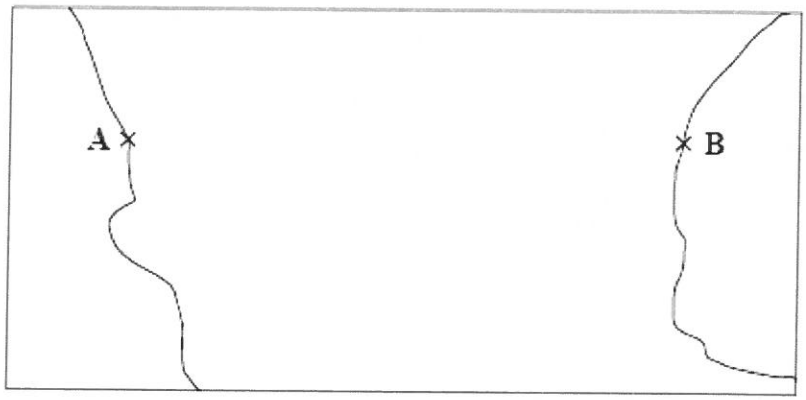
Show this information in a stem and leaf diagram.

1	6 8 9
2	2 2 3 3 4 5 8
3	1 3 4
4	0 1

KEY 1|6 = 16

(Total for Question 11 is 3 marks)

12. This accurate scale drawing shows two ports, **A** and **B**.



Scale: 1 cm represents 10 miles.

A boat takes 5 hours to sail directly from **A** to **B**.

Calculate the boat's average speed.
You must show all your working.

AB = 7.4cm = 74 MILES

SPEED = $\frac{74}{5}$ = 14.8 MPH

14.8 ..... mph

(14.6 – 15.0) **(Total for Question 12 is 3 marks)**

13. Olivia wants to buy some stickers.
She only has a £10 note.

Each packet of stickers costs £1.29
Olivia buys as many packets of stickers as possible.

(a) Work out how much change Olivia should get from the £10 note.

$\frac{10}{1.29} = 7.75...$

∴ SHE CAN BUY 7 PACKETS
$7 \times £1.29 = £9.03$
∴ CHANGE $= 10 - 9.03 = £0.97$

£0.97

(3)

Jessica also wants to buy some stickers.
There are 6 stickers in each packet.
Jessica works out that she can buy exactly 28 stickers.

(b) Is Jessica correct?
Justify your answer.

NO - 4 PACKETS HAVE $4 \times 6 = 24$ STICKERS
5 PACKETS HAVE $5 \times 6 = 30$ STICKERS

(1)

(Total for Question 13 is 4 marks)

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14. Ali invests £400 for 5 years in a savings account.
The account pays simple interest at a rate of 3.5% per year.

Work out the total amount of interest Ali gets.

$400 \times 0.035 \times 5 = 70$

£ 70

(Total for Question 14 is 3 marks)

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15. Norma makes bags.
She makes 17 bags an hour.
Norma works for 6 hours each day, 5 days a week.

Each bag is checked.
If the bag is perfect, it is put in a box.
When there are 12 bags in a box it is full.

One week 90% of the bags Norma made were perfect.

Work out the number of boxes completely filled with bags made by Norma.

NUMBER OF BAGS IN A WEEK = $17 \times 6 \times 5 = 510$

NUMBER OF PERFECT BAGS = $0.9 \times 510 = 459$

NUMBER OF BOXES = $\frac{459}{12} = 38.25$

38

(Total for Question 15 is 5 marks)

16. Solve the simultaneous equations

$$2x + 3y = 10$$
$$4x - y = -1 \quad \times 3$$

$12x - 3y = -3$

$\therefore \quad 14x = 7$

$\therefore \quad x = \frac{7}{14} = \frac{1}{2}$

$4 \times \frac{1}{2} - y = -1$

$\therefore \quad 2 - y = -1$

$\therefore \quad y = 3$

$x =$ $\frac{1}{2}$

$y =$ 3

(Total for Question 16 is 3 marks)

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17. A is the point with coordinates (2, 10)
B is the point with coordinates (5, d)

The gradient of the line AB is 4

Work out the value of d.

$\frac{10 - d}{2 - 5} = 4$

$\therefore \quad 10 - d = 4 \times -3 = -12$

$\therefore \quad d = 10 + 12$

$= 22$

$d =$ 22

(Total for Question 17 is 3 marks)

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18. Sophia pays £222 for a plane ticket.
She also pays 100 euros airport tax.

The exchange rate is £1 = 1.38 euros.

What percentage of the total cost of the ticket and the airport tax does Sophia pay for the airport tax?

Give your answer correct to 1 decimal place.

£1 = 1.38 EUROS

$\therefore \frac{£1}{1.38} = 1$ EURO

$\therefore \frac{£1}{1.38} \times 100 = 100$ EUROS

$\therefore$ AIRPORT TAX = £72.46

$\therefore$ TOTAL COST = 222 + 72.46 = £294.46

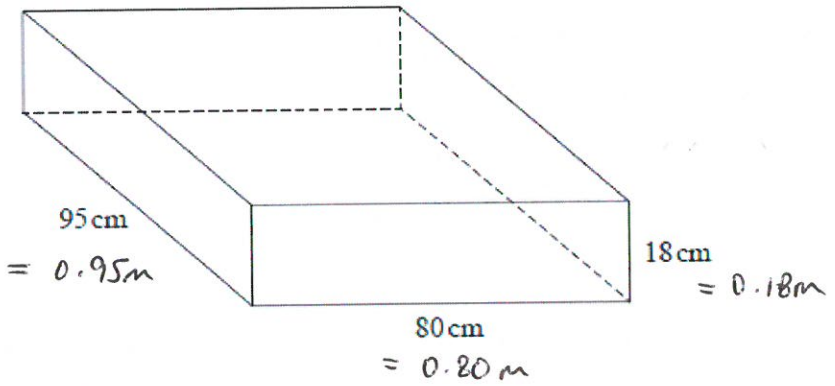
$\therefore$ % TAX = $\frac{72.46}{294.46} \times 100$

$= 24.6$

24.6 .....%

(Total for Question 18 is 3 marks)

19. A sofa has 6 identical cushions.
Each cushion is a cuboid 18 cm by 80 cm by 95 cm.



The cushions are covered with a protective spray.
The protective spray is in cans.

The label on each can has this information.

Spray in this can covers 4 m^2

(a) Work out how many cans are needed to cover the 6 cushions with protective spray.

SURFACE AREA OF ONE CUSHION

$= (0.95 \times 0.18 + 0.95 \times 0.80 + 0.18 \times 0.80) \times 2$

$= 2.15\ m^2$

$\therefore$ S.A. OF 6 CUSHIONS $= 6 \times 2.15 = 12.9\ m^2$

NUMBER OF CANS $= \frac{12.9}{4} = 3.225$

4

(5)

The information on each label is inaccurate.
The spray in each can covers 10% more than 4 m^2.

(b) How will this affect the number of cans needed for the 6 cushions?
You must show how you get your answer.

EACH CAN NOW COVER $1.1 \times 4 = 4.4 m^2$

$\therefore$ NUMBER OF CANS $= \frac{12.9}{4.4} = 2.93$

$\therefore$ NOW REQUIRE ONLY 3 CANS.

.....

.....

.....

(2)

(Total for Question 19 is 7 marks)

20. $\mathbf{a} = \begin{pmatrix} 1 \\ 4 \end{pmatrix}$ and $\mathbf{b} = \begin{pmatrix} 3 \\ 2 \end{pmatrix}$

(a) Write down as a column vector

(i) $\mathbf{a} + \mathbf{b}$

$\begin{pmatrix} 4 \\ 6 \end{pmatrix}$

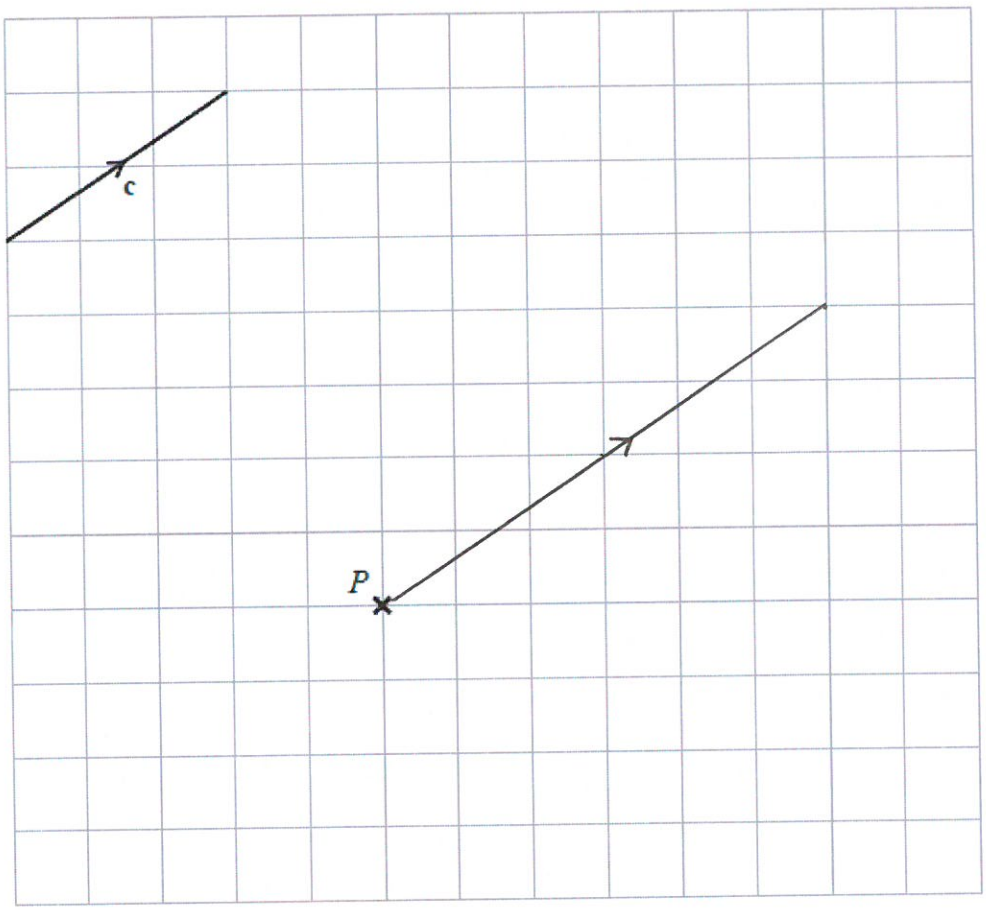
(ii) $2\mathbf{a} + 3\mathbf{b}$

$\begin{pmatrix} 2 \\ 8 \end{pmatrix} + \begin{pmatrix} 9 \\ 6 \end{pmatrix}$

$\begin{pmatrix} 11 \\ 14 \end{pmatrix}$

(3)

The vector **c** is drawn on the grid.



(b) From the point P, draw the vector $2\mathbf{c}$

(1)

(Total for Question 20 is 4 marks)

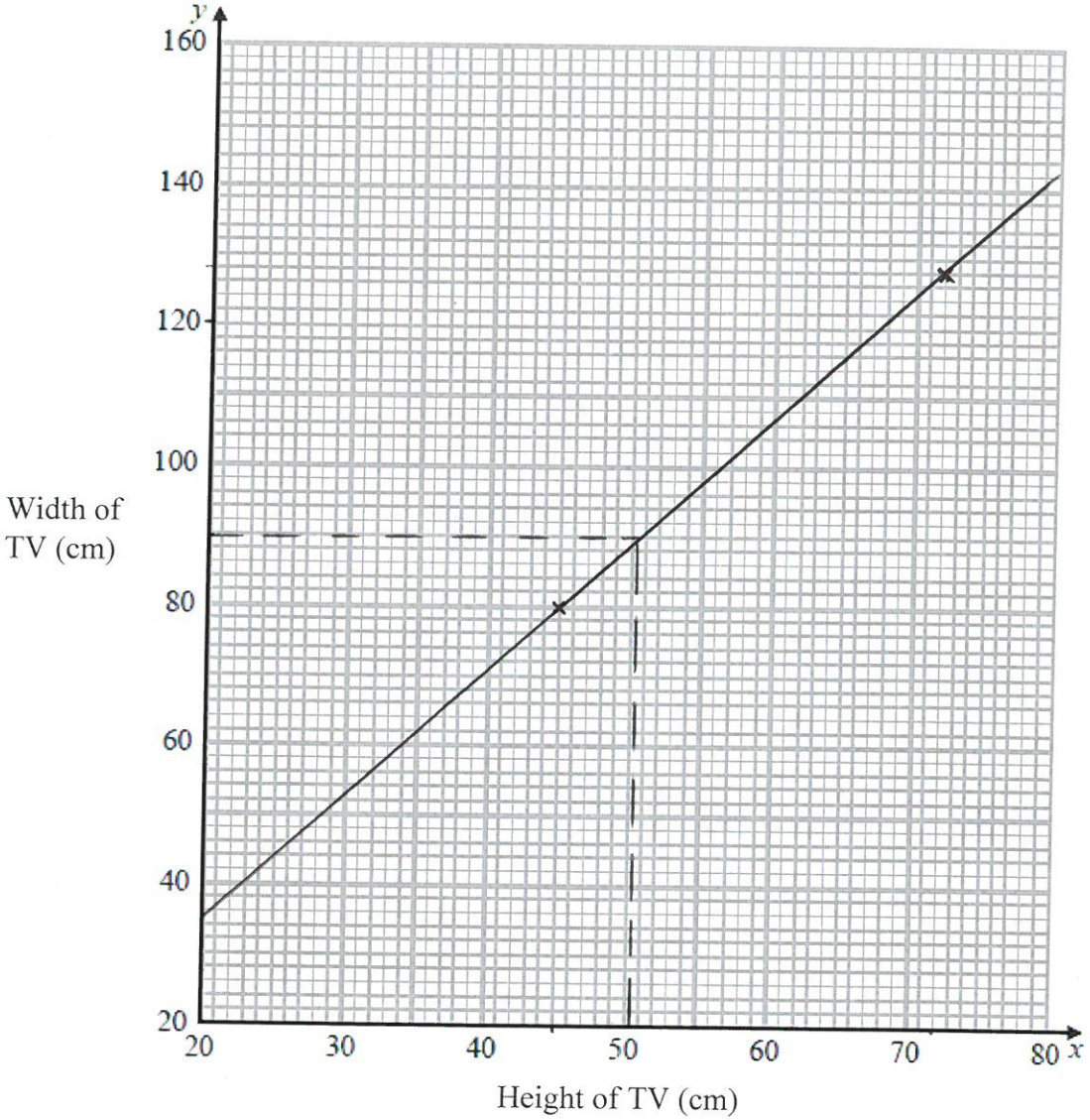
21. The height (x cm) and the width (y cm) of TVs are in the ratio 9 : 16

(a) Use this information to draw a graph to show the relationship between the height and the width of TVs.

Use values of x from 20 to 80

9 : 16
45 : 80 ×5

9 : 16
72 : 128 ×8



(2)

A TV has a width of 90 cm.

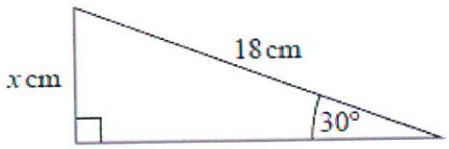
(b) Use your graph to work out the height of this TV.

50 (48-52) cm

(1)

(Total for Question 21 is 3 marks)

22.



Work out the value of x.

$\sin 30 = \frac{x}{18}$

$\therefore x = 18 \sin 30$

9 cm.

(Total for Question 22 is 2 marks)

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23. In a sale, normal prices are reduced by 17%.
The normal price of a washing machine is reduced by £42.50

Work out the sale price of the washing machine.

17% is £42.50 $\therefore$ 100% = $\frac{42.50}{17} \times 100 = 250$

$\therefore$ NORMAL PRICE = £250

$\therefore$ SALE PRICE = 250 − 42.50
= £207.50

£ 207.50

(Total for Question 23 is 3 marks)

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24. $p^2 \times p^n = p^6$

Find the value of n.

$n = 4$

(Total for Question 24 is 1 mark)

TOTAL FOR PAPER: 80 MARKS