Write your name here

Surname	Other names

Edexcel GCSE

Centre Number	Candidate Number

Mathematics A

Paper 2 (Calculator)

Higher Tier

Mock Paper **Time: 1 hour 45 minutes**	Paper Reference **1MA0/2H**

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.

Information

- The total mark for this paper is 100.
- The marks for **each** question are shown in brackets
  – *use this as a guide as to how much time to spend on each question.*
- Questions labelled with an **asterisk** (*) are ones where the quality of your written communication will be assessed
  – *you should take particular care on these questions with your spelling, punctuation and grammar, as well as the clarity of expression.*

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 ▶

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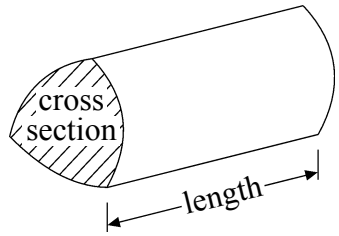
GCSE Mathamatics 1MA0

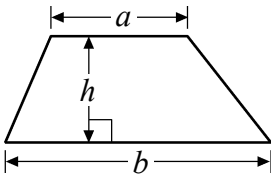
Formulae – Higher Tier

You must not write on this formulae page.
Anything you write on this formulae page will gain NO credit.

Volume of a prism = area of cross section × length

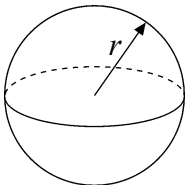


Area of trapezium = $\frac{1}{2}(a+b)h$



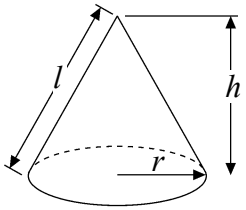
Volume of sphere = $\frac{4}{3}\pi r^3$

Surface area of sphere = $4\pi r^2$

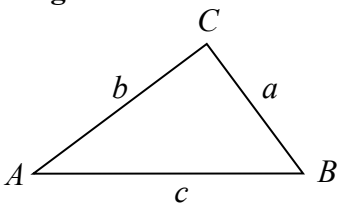


Volume of cone = $\frac{1}{3}\pi r^2 h$

Curved surface area of cone = πrl



In any triangle *ABC*



The Quadratic Equation

The solutions of $ax^2 + bx + c = 0$ where $a \neq 0$, are given by

$$x = \frac{-b \pm \sqrt{(b^2 - 4ac)}}{2a}$$

Sine Rule $\frac{a}{\sin A} = \frac{b}{\sin B} = \frac{c}{\sin C}$

Cosine Rule $a^2 = b^2 + c^2 - 2bc\cos A$

Area of triangle = $\frac{1}{2}ab\sin C$

Answer ALL questions.

Write your answers in the spaces provided.

You must write down all stages in your working.

1 5 kg of apples cost £7

2 kg of apples and 3 kg of bananas cost £5.65

Work out the cost of 1 kg of bananas.

.....

(Total for Question 1 is 3 marks)

---

2 (a) Use your calculator to work out the value of $\frac{45.6 \times 123}{0.34^2 - 0.28^2}$

Write down all the figures on your calculator display.

(2)

.....

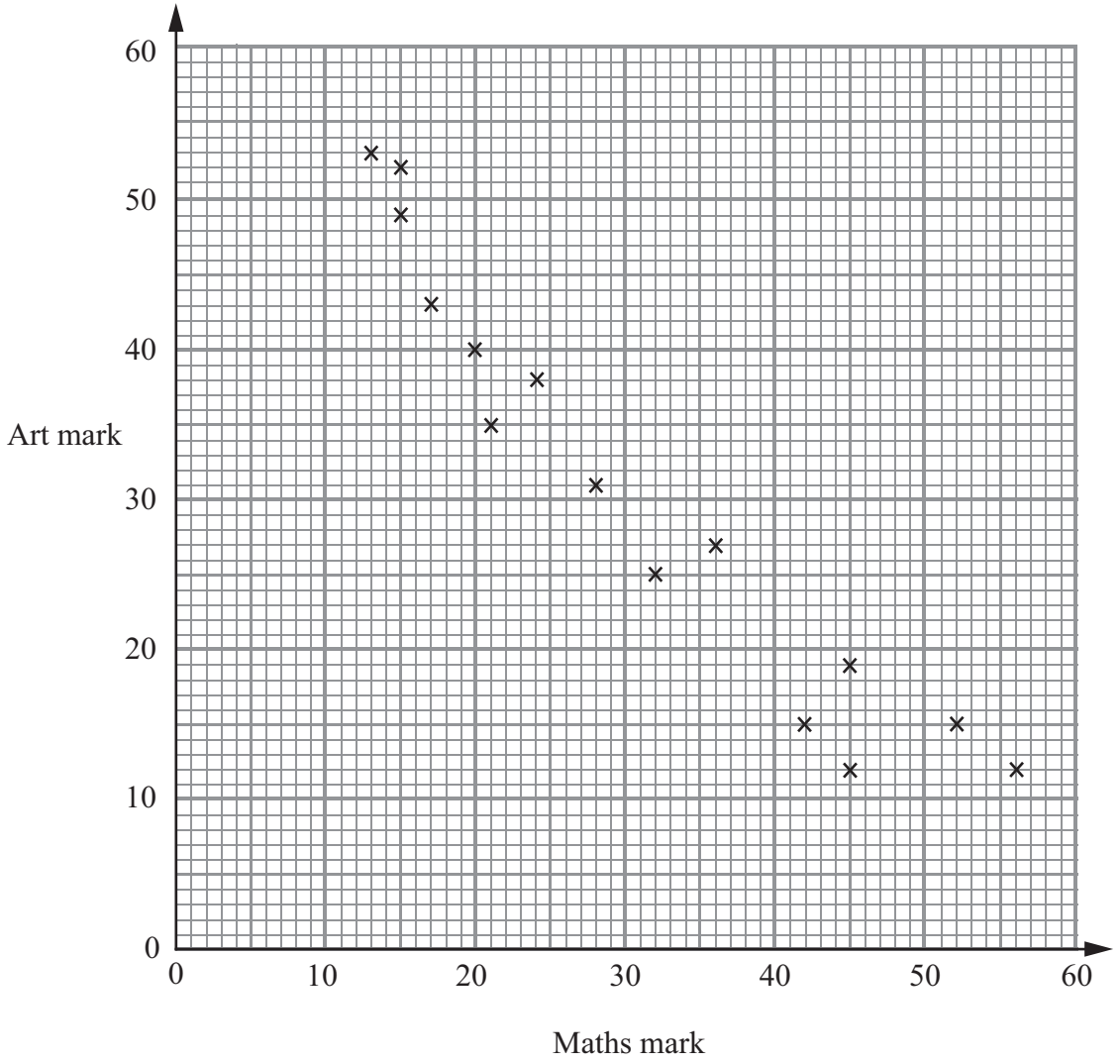
(b) Write your answer to part (a) correct to 3 significant figures.

(1)

.....

(Total for Question 2 is 3 marks)

3 The scatter graph shows the maths mark and the art mark for each of 15 students.



(a) What type of correlation does this scatter graph show?

(1)

.....

(b) Draw a line of best fit on the scatter graph.

(1)

Sarah has not got a maths mark.
Her art mark is 23

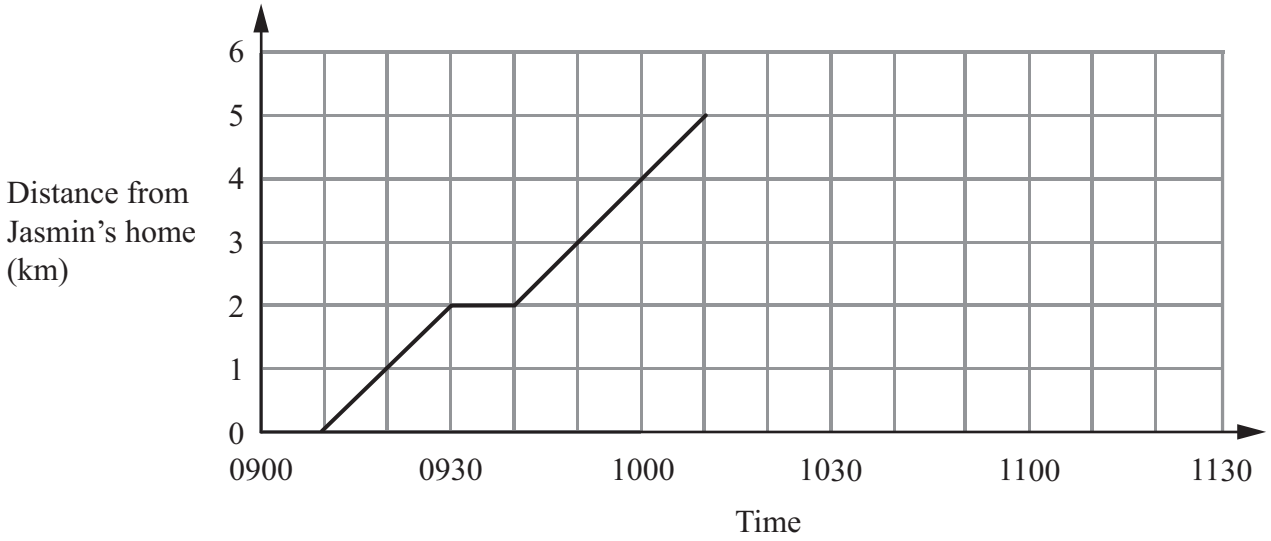
(c) Use your line of best fit to estimate a maths mark for Sarah.

(1)

.....

(Total for Question 3 is 3 marks)

4 Jasmin walked from her home to the park.
Here is a travel graph for Jasmin's journey from her home to the park.



(a) For how long did she stop?

(1)

..... minutes

Jasmin stayed at the park for half an hour.
She then walked home at a speed of 7.5 km/h.

(b) Complete the travel graph.

(3)

(Total for Question 4 is 4 marks)

5

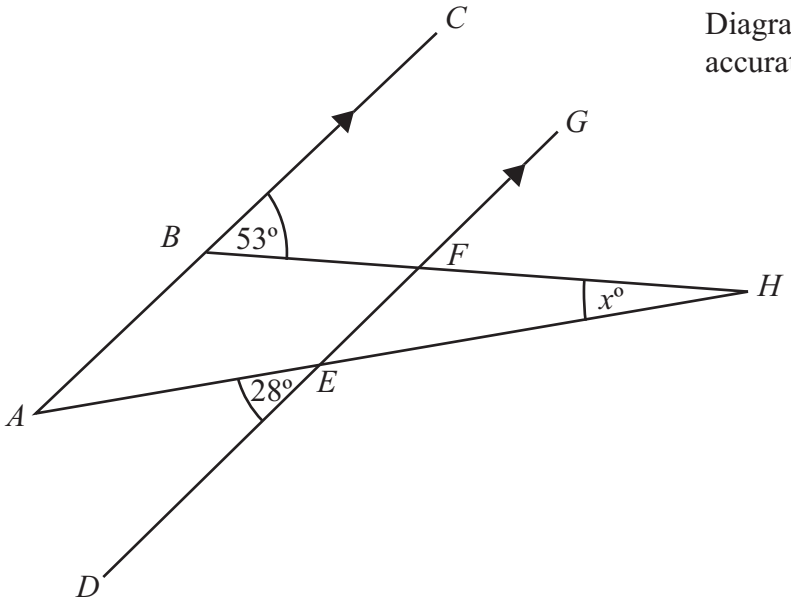


Diagram **NOT** accurately drawn

ABC and *DEFG* are parallel.
AEH and *BFH* are straight lines.

Work out the size of the angle marked $x°$.

.....°

(Total for Question 5 is 3 marks)

6 (a) Solve $5x + 2 = 2x + 17$

(2)

x = ...

(b) Solve the inequality $3(2y + 1) > 10$

(2)

.....

(Total for Question 6 is 4 marks)

7 Here are some people's ages in years.

62	27	33	44	47
30	22	63	67	54
69	56	63	50	25
31	63	42	48	51

In the space below, draw an ordered stem and leaf diagram to show these ages.

(Total for Question 7 is 3 marks)

8 Tim is travelling home from holiday by plane.
He buys some food and drink on the plane.

Price List

Cheese Roll	£3.50
Crisps	£1.20
Chocolate bar	£1.30
Coffee	£2.50
Tea	£2.00
Orange Juice	£2.20

Exchange rate £1 = 1.25 euros

Tim buys two cheese rolls, a coffee and an orange juice.

He pays part of the cost with a 10 euro note.
He pays the rest of the cost in pounds (£).

How much does Tim pay in pounds?

£ .....

(Total for Question 8 is 4 marks)

9 (a) Factorise fully $6y^2 + 12y$

(2)

.....

(b) Factorise $k^2 + 13k + 30$

(2)

.....

(Total for Question 9 is 4 marks)

10 The diagram shows a cuboid.

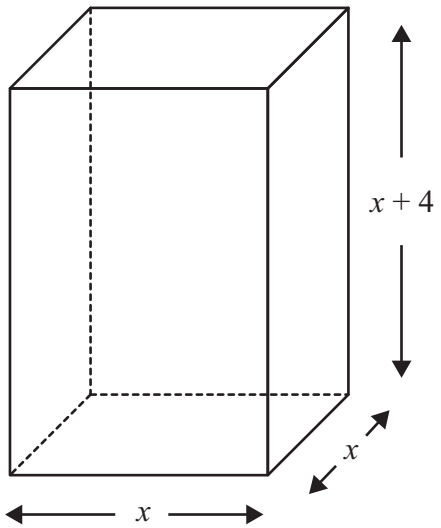


Diagram **NOT** accurately drawn

A cuboid has a square base of side x cm.
The height of the cuboid is $(x + 4)$ cm.
The volume of the cuboid is 150 cm^3.

(a) Show that $x^3 + 4x^2 = 150$

(2)

The equation $x^3 + 4x^2 = 150$ has a solution between 4 and 5

(b) Use a trial and improvement method to find this solution.
Give your answer correct to one decimal place.
You must show ALL your working.

(4)

$x =$ .....

(Total for Question 10 is 6 marks)

11 The table shows information about the numbers of hours 40 children watched television one evening.

Number of hours (h)	Frequency
$0 \leqslant h < 1$	3
$1 \leqslant h < 2$	8
$2 \leqslant h < 3$	7
$3 \leqslant h < 4$	10
$4 \leqslant h < 5$	12

(a) Find the class interval that contains the median.

(1)

.....

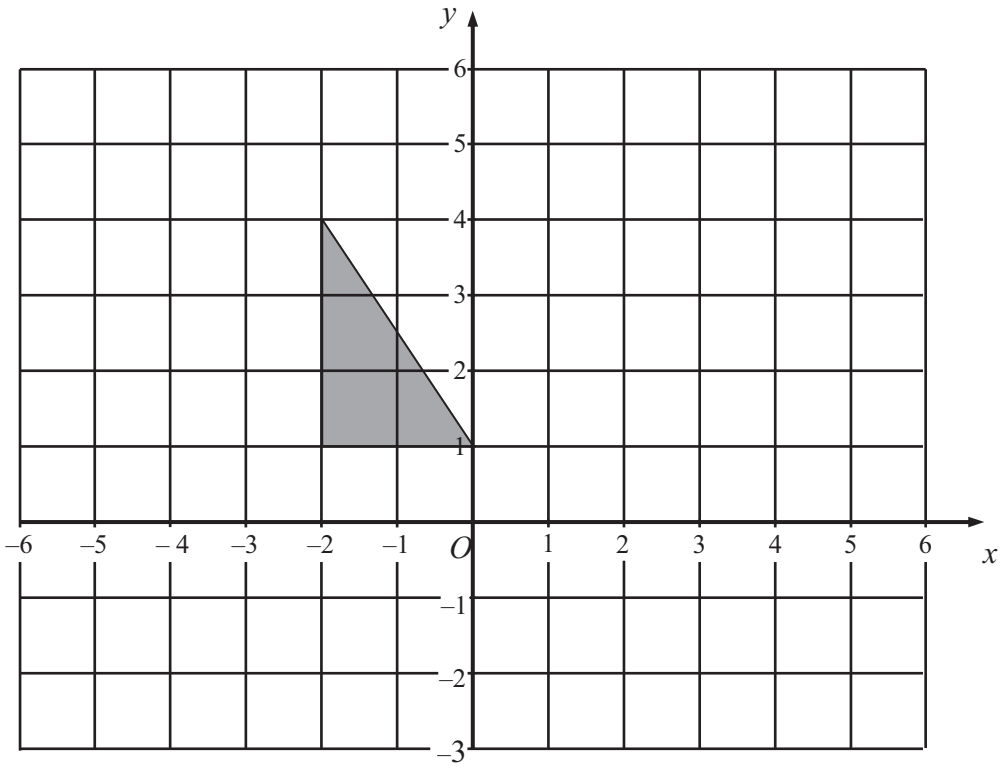
(b) Work out an estimate for the mean number of hours.

(4)

..... hours

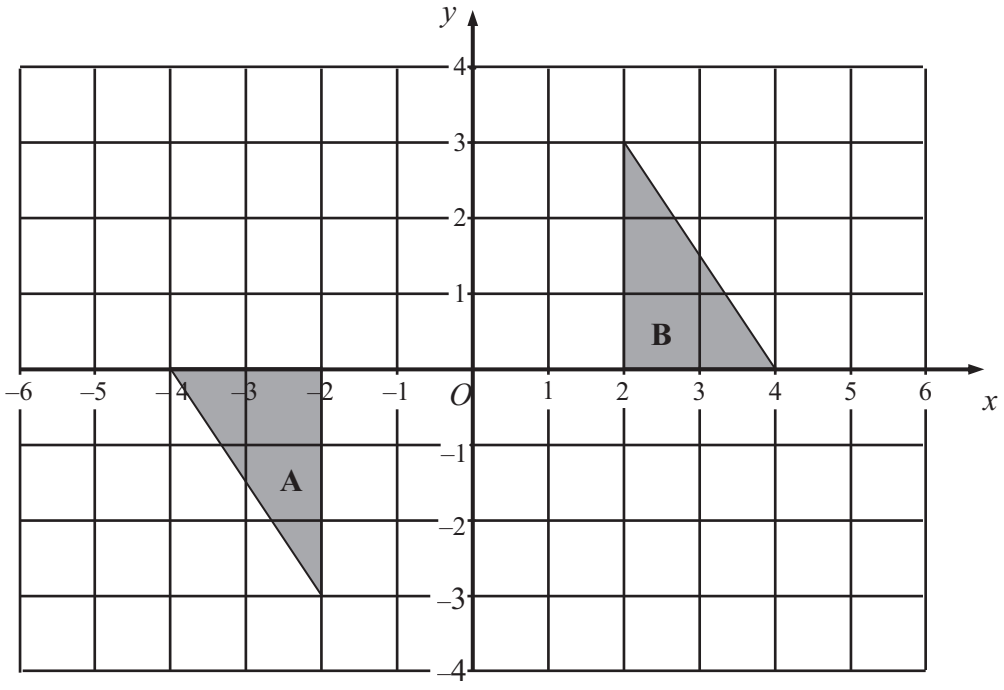
(Total for Question 11 is 5 marks)

12



(a) Translate the triangle above by the vector $\begin{pmatrix} 3 \\ -2 \end{pmatrix}$

(1)



(b) Describe fully the single transformation that maps triangle **A** onto triangle **B.**

(3)

.....

.....

(Total for Question 12 is 4 marks)

***13** Jenny fills some empty flowerpots completely with compost.

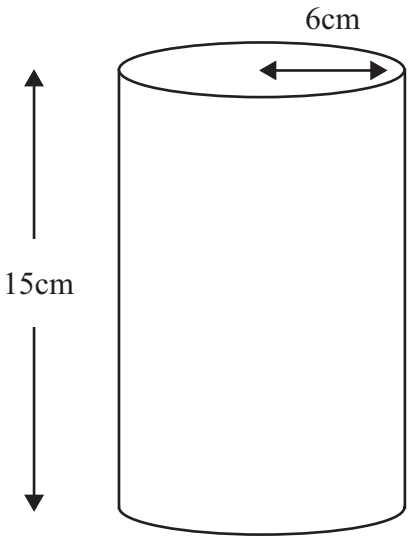


Diagram **NOT** accurately drawn

Each flowerpot is in the shape of a cylinder of height 15 cm and radius 6 cm.
She has a 15 litre bag of compost.

She fills up each flowerpot completely.
How many flowerpots can she fill?
You must show your working.

.....

(Total for Question 13 is 4 marks)

14 A ladder is 6 m long.
The ladder is placed on horizontal ground, resting against a vertical wall.

The instructions for using the ladder say that the bottom of the ladder must not be closer than 1.5 m from the bottom of the wall.

How far up the wall can the ladder reach?
Give your answer correct to 1 decimal place.

..... m

(Total for Question 14 is 3 marks)

15 In a sale, normal prices are reduced by 20%.
The sale price of a coat is £52

Work out the normal price of the coat.

£ .....

(Total for Question 15 is 3 marks)

16

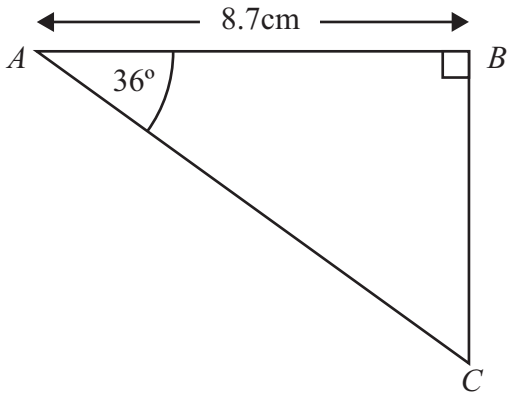


Diagram **NOT** accurately drawn

ABC is a right-angled triangle.
Angle $B = 90^{\circ}$.
Angle $A = 36^{\circ}$.
$AB = 8.7$ cm.

Work out the length of *BC*.
Give your answer correct to 3 significant figures.

..... cm

(Total for Question 16 is 3 marks)

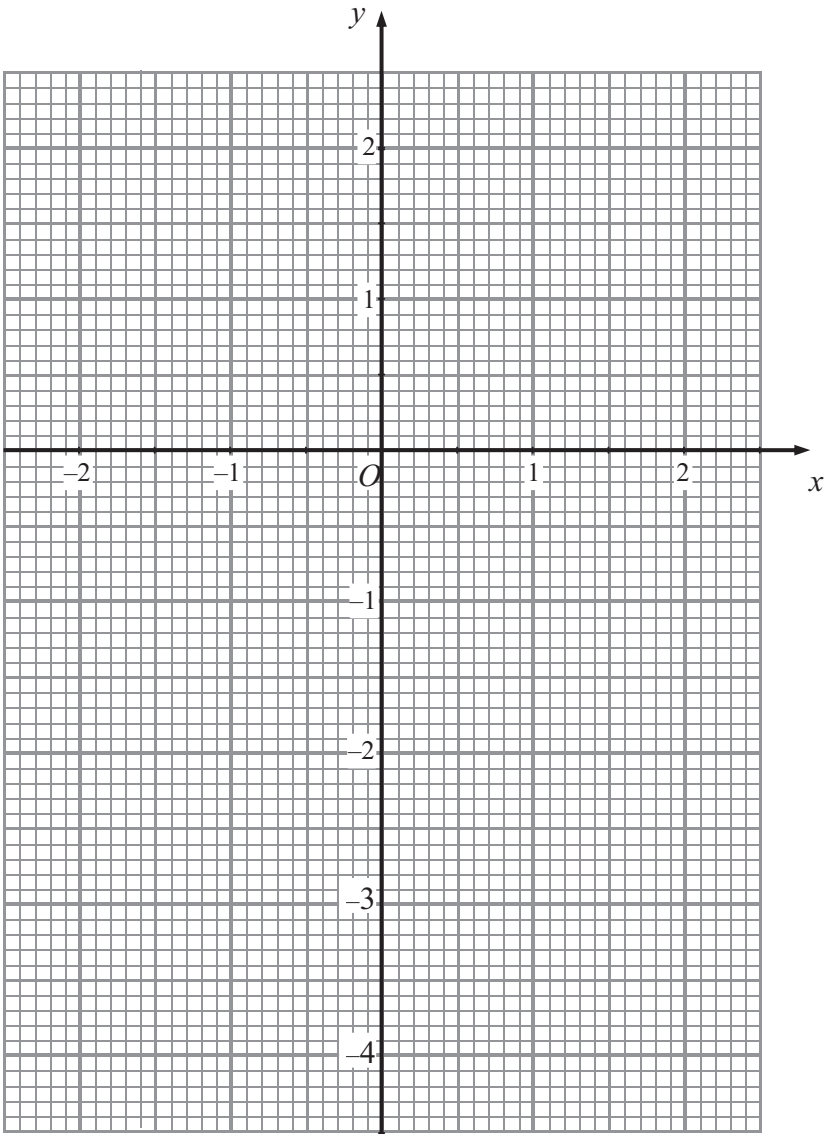
17 (a) Complete the table of values for $y = x^3 - 3x - 1$

(2)

x	–2	–1.5	–1	–0.5	0	0.5	1	1.5	2
y	–3	0.125		0.375		–2.375	–3		

(b) On the grid, draw the graph of $y = x^3 - 3x - 1$ for $-2 \leqslant x \leqslant 2$

(2)



(c) Use your graph to estimate the solutions of the equation $x^3 - 3x - 1 = 0$

(1)

.....

(Total for Question 17 is 5 marks)

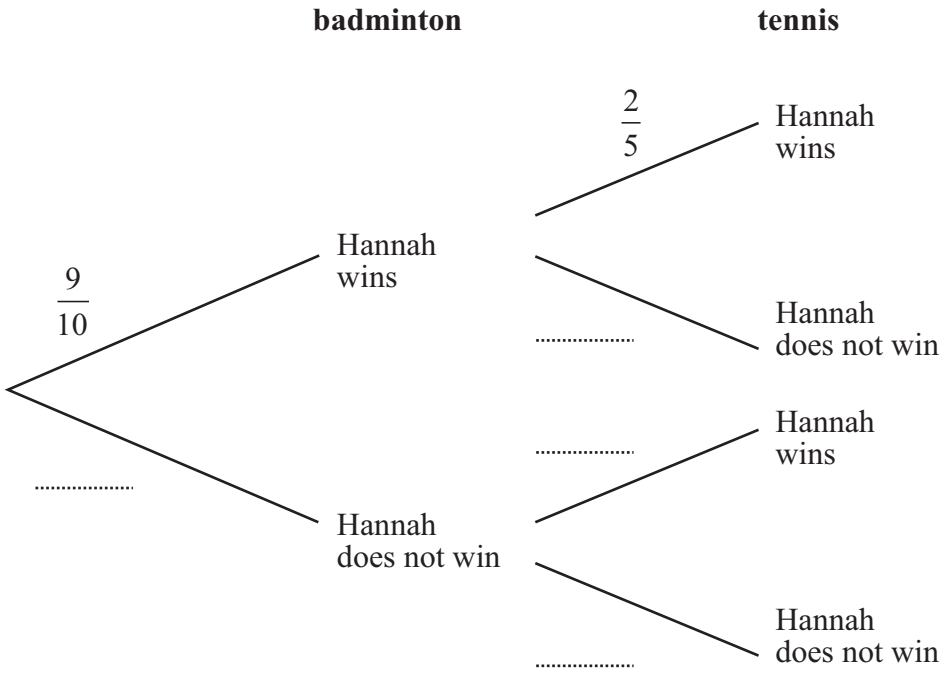
18 Hannah is going to play one badminton match and one tennis match.

The probability that she will win the badminton match is $\frac{9}{10}$

The probability that she will win the tennis match is $\frac{2}{5}$

(a) Complete the probability tree diagram.

(2)



(b) Work out the probability that Hannah will win **both** matches.

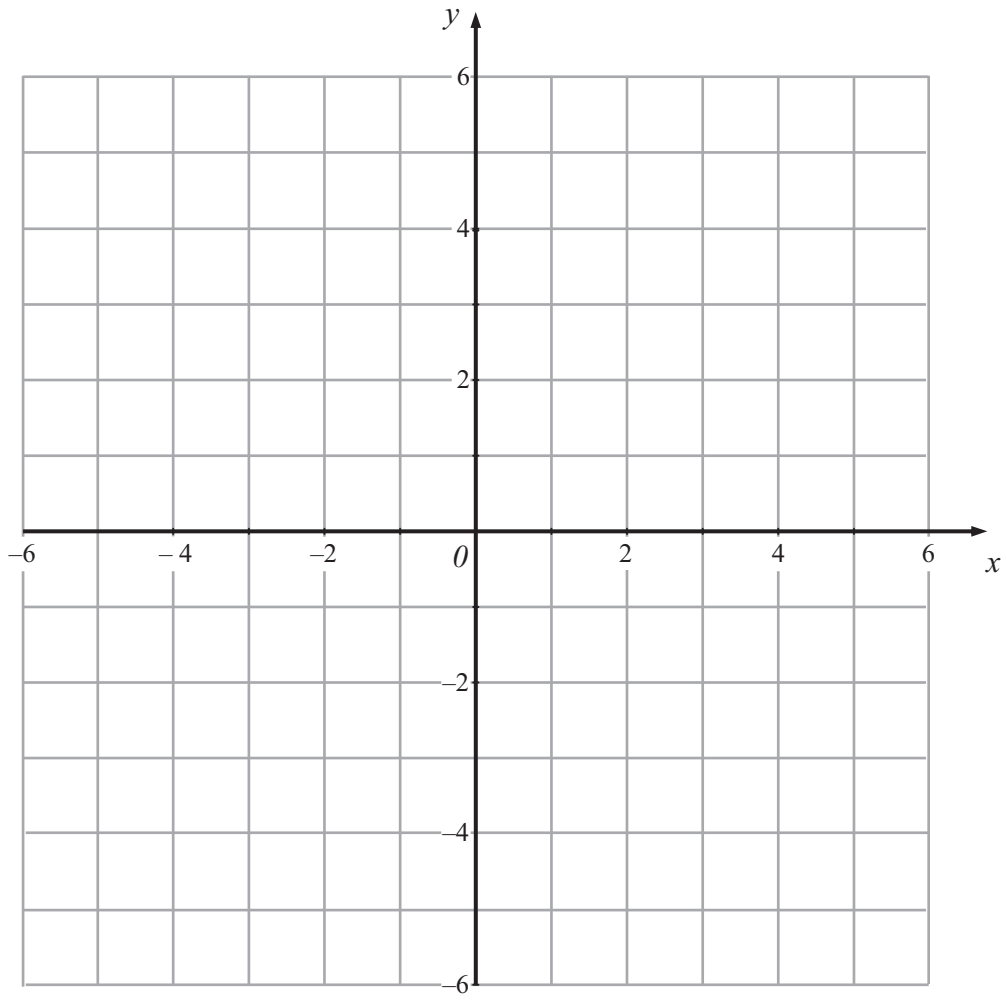
(2)

.....

(Total for Question 18 is 4 marks)

19 On the grid, shade the region that satisfies all three of these inequalities

$y > -4$ $x < 2$ $y < 2x + 1$



(Total for Question 19 is 4 marks)

20 (a) Write the number 0.00037 in standard form.

(1)

.....

(b) Write 8.25×10^3 as an ordinary number.

(1)

.....

(c) Work out $(2.1 \times 10^8) \times (6 \times 10^{-5})$.
Write your answer in standard form.

(2)

.....

(Total for Question 20 is 4 marks)

---

21 The length of a rectangle is 30 cm, correct to 2 significant figures.
The width of a rectangle is 18 cm, correct to 2 significant figures.

(a) Write down the upper bound of the width.

(1)

..... cm

(b) Calculate the upper bound for the area of the rectangle.

(2)

..... cm

(Total for Question 20 is 3 marks)

22 The diagram shows a child's toy.

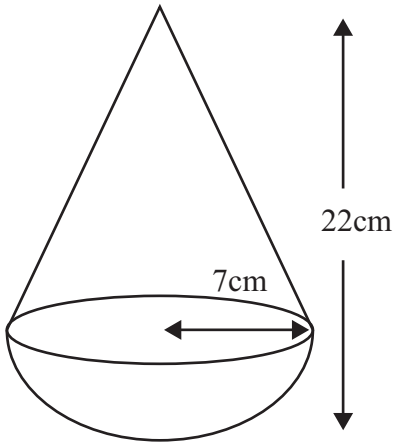


Diagram **NOT** accurately drawn

The toy is made from a cone on top of a hemisphere.

The cone and hemisphere each have radius 7 cm.
The total height of the toy is 22 cm.

Work out the volume of the toy.
Give your answer correct to 3 significant figures.

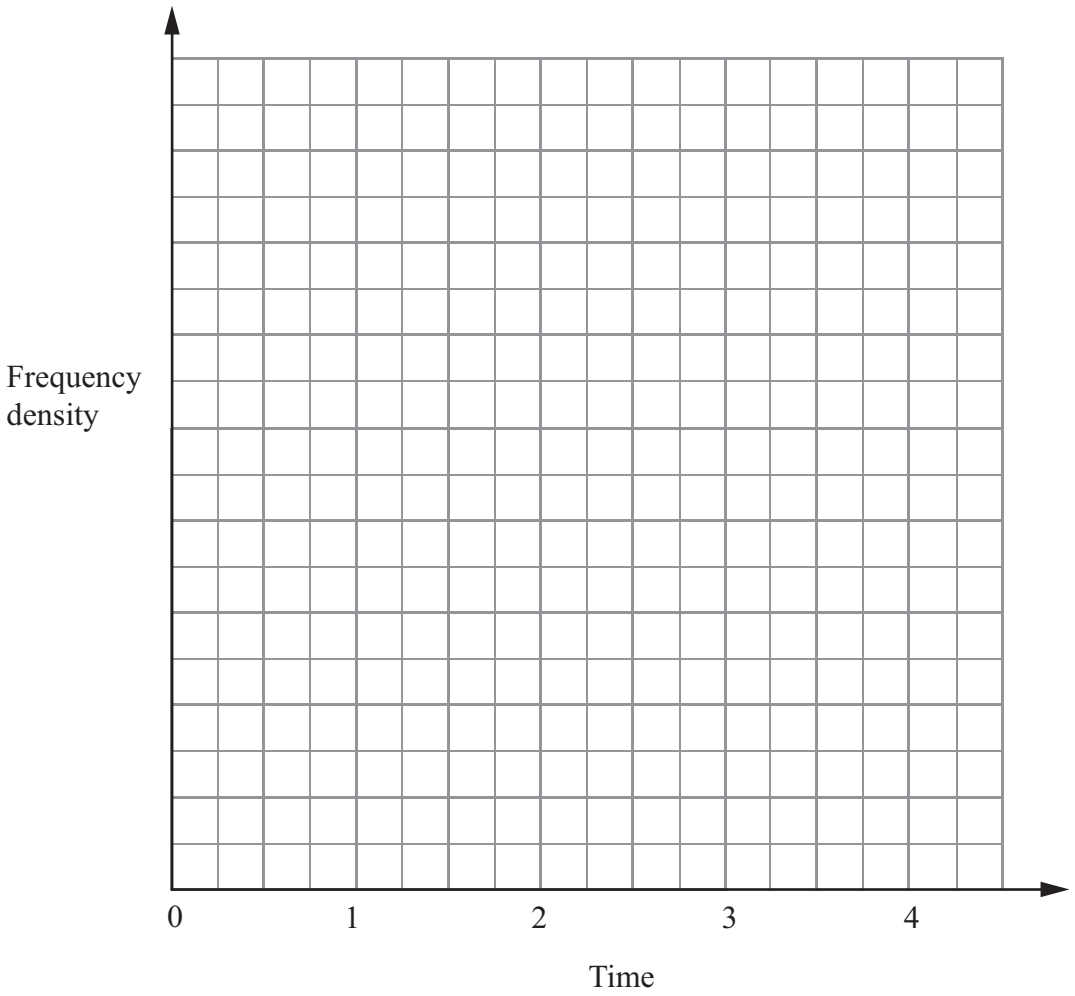
..... cm^3

(Total for Question 22 is 3 marks)

23 The table shows information about the total times that 35 students spent using their mobile phones one week.

Time (h hours)	Frequency
$0 \leqslant h < \frac{1}{2}$	8
$\frac{1}{2} \leqslant h < 1$	7
$1 \leqslant h < 2$	11
$2 \leqslant h < 4$	9

On the grid below, draw a histogram for this information.



(Total for Question 23 is 3 marks)

***24** The diagram shows the plan of a field.

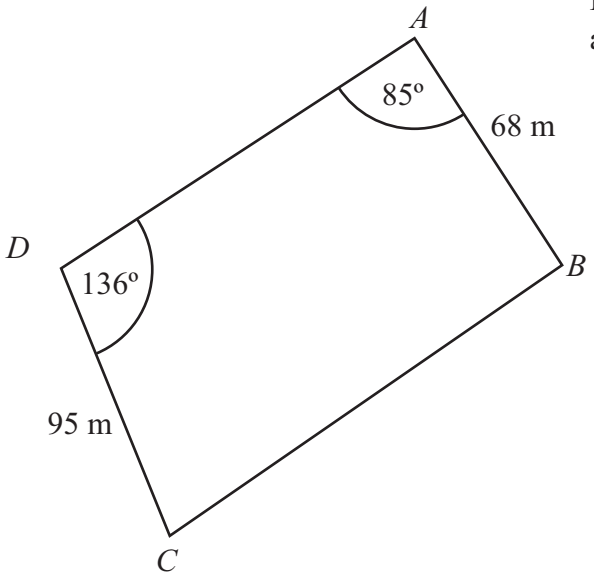


Diagram **NOT** accurately drawn

$AB = 68$ m.
$DC = 95$ m.
Angle $ADC = 136°$.
Angle $DAB = 85°$.

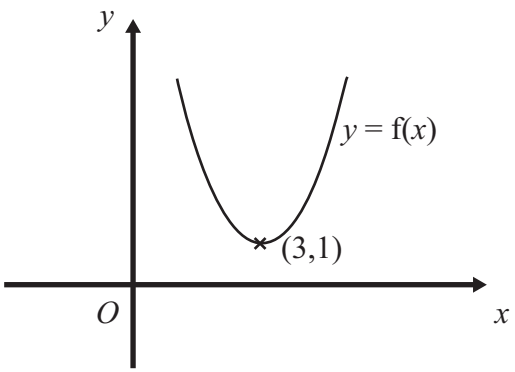
$DB = 240$ m.

Work out the area of the field.
Give your answer correct to 3 significant figures.

..... m^2

(Total for Question 24 is 6 marks)

25



The diagram shows part of the curve with equation $y = f(x)$.
The coordinates of the minimum point of this curve are (3,1).

Write down the coordinates of the minimum point of the curve with equation

(a) $y = f(x) + 3$

(1)

(……, ……)

(b) $y = f(x - 2)$

(1)

(……, ……)

(c) $y = f(\frac{1}{2}x)$

(1)

(……, ……)

(Total for Question 25 is 3 marks)

***26** The diagram below shows a hexagon.

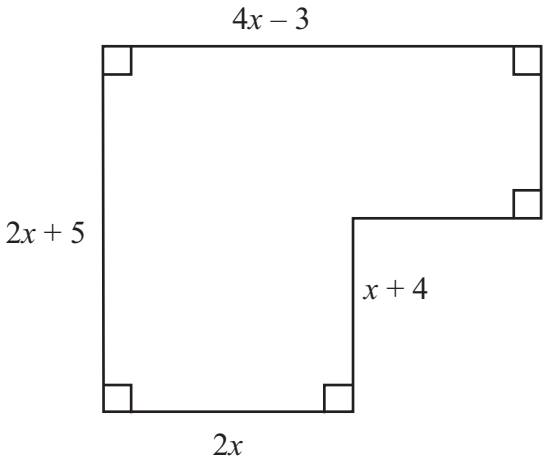


Diagram **NOT** accurately drawn

All the measurements are in centimetres.

The area of this shape is 102 cm^2.

Work out the length of the longest side of the shape.

..... cm

(Total for Question 26 is 6 marks)

TOTAL FOR PAPER IS 100 MARKS

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