

Every Topic on the AQA
2022 Advanced Information
Practice Booklet
Paper 1 (Non-Calculator)

Higher Tier



GCSE
Maths Tutor



How it all Works!

Work through the practice booklet,
scan the code, watch the live
tutorial and check your answers!

Try it out!

Disclaimer: There is no guarantee that any specific topic will be examined this way in the summer and you cannot rely on this as your only source of revision. Please visit the YouTube channel for in depth lessons on each of the topics within this document along with any recommended revision that has been instructed by your education provider.

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Answer ALL questions.

Write your answers in the spaces provided.

You must write down all the stages of your working.

1. Work out 2.6×3.4

.....
(2 marks)

2. a) Work out $2\frac{1}{7} - 1\frac{1}{4}$

Give your answer in its simplest form.

.....
(3 marks)

b) Work out $3\frac{1}{2} \times 1\frac{3}{5}$

Give your answer as a mixed number in its simplest form.

.....
(3 marks)

3. a) Work out $\frac{3}{5}$ of 65.

b) $\frac{2}{7}$ of a number is 18. Work out that number.

.....
(1 mark)

.....
(1 mark)

4. Prove algebraically that $0.\dot{2}\dot{7}$ can be written as $\frac{3}{11}$

.....
(3 marks)

5. Work out 45% of 64

.....
(2 marks)

6. a) Write down the value of $\frac{5^7 \times 5^{-3}}{5^2}$

.....
(2 marks)

b) Write down the value of 4^{-2}

.....
(2 marks)

c) Write down the value of $64^{\frac{1}{2}}$

.....
(1 mark)

7. a) Write 0.00345 in standard form

.....
(1 mark)

b) Write 504,000 in standard form

.....
(1 mark)

8. a) Write 3.4×10^4 as an ordinary number

.....
(1 mark)

b) Write 8.03×10^{-5} as an ordinary number

.....
(1 mark)

9. a) Work out $(4.3 \times 10^{-5}) \times (3 \times 10^2)$

Give your answer in standard form.

.....
(2 marks)

b) Work out $(8 \times 10^7) \div (4 \times 10^3)$

Give your answer in standard form.

.....
(2 marks)

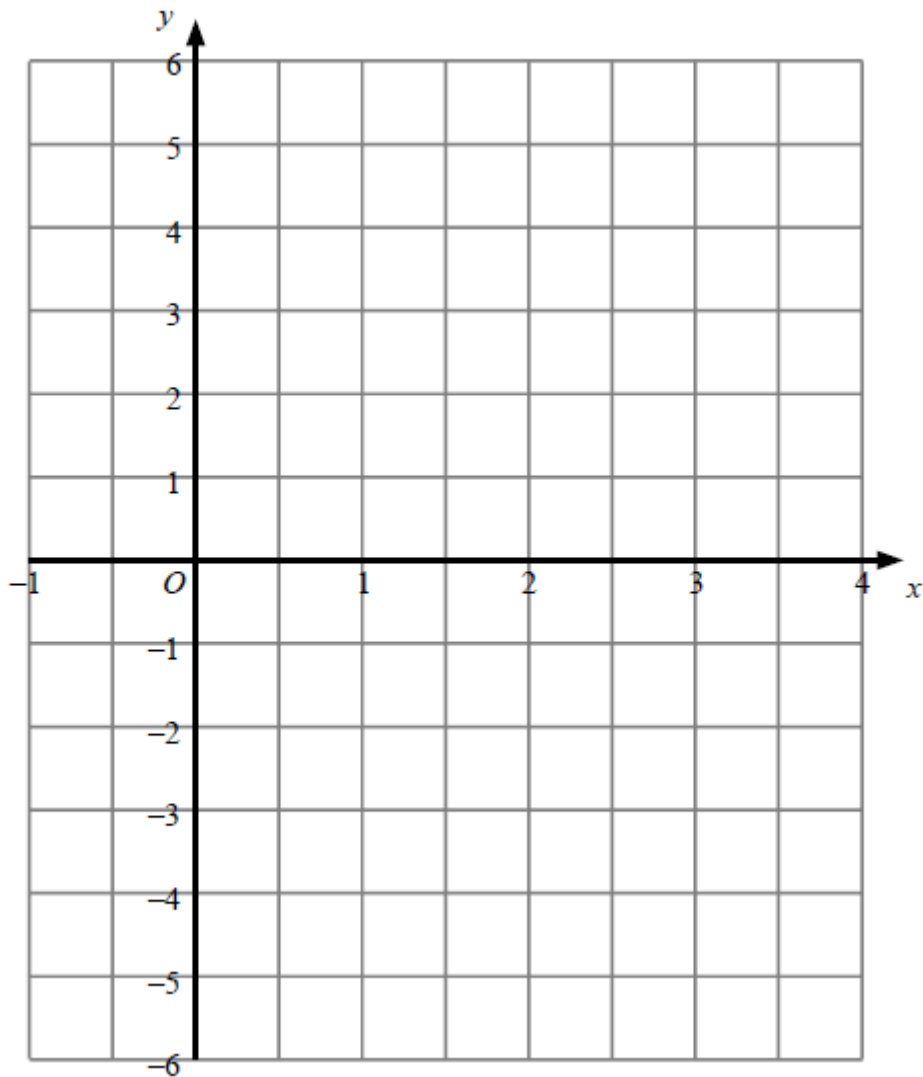
10. a) Write $3\sqrt{20}$ in the form $k\sqrt{5}$, where k is an integer

.....
(1 mark)

b) Write $\sqrt{27} + \sqrt{48}$ in the form $a\sqrt{3}$, where a is an integer

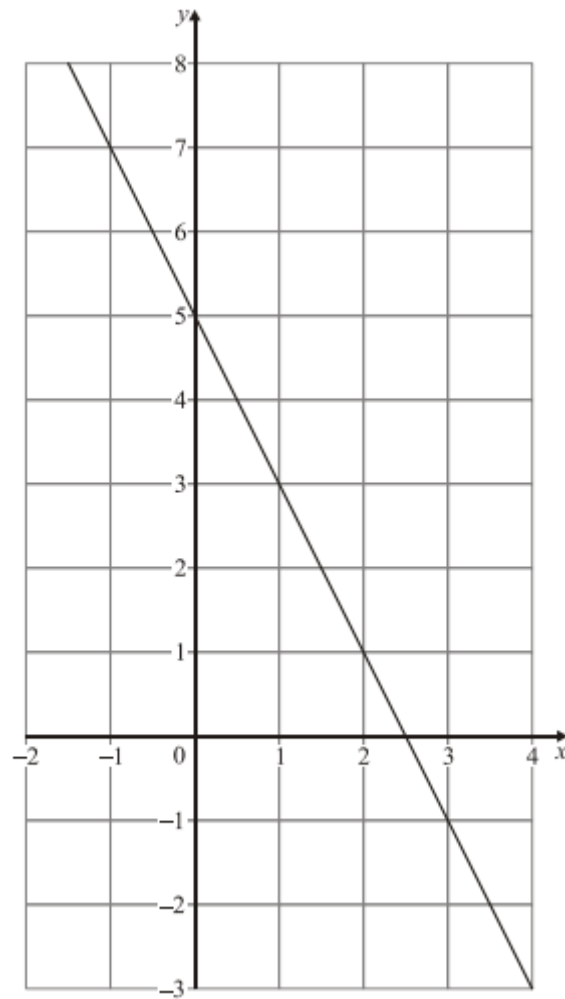
.....
(2 marks)

11. On the grid, draw the graph of $y = 2x + 1$



(3 marks)

12.



Write down the equation of the line.

.....
(3 marks)

13. a) Solve $\frac{4x+2}{5} = 6$

.....
(2 marks)

b) Solve $2x - 2 = 7x + 8$

.....
(2 marks)

14. $\frac{ax^2+11x+b}{x+4} \equiv 2x + 3$

Find the values of a and b .

.....
(3 marks)

15. Simplify $\frac{x^2+5x}{x^2+7x+10}$

.....
(3 marks)

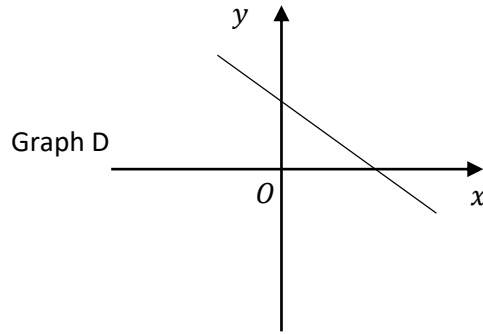
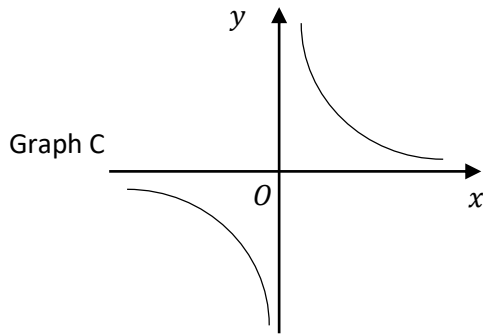
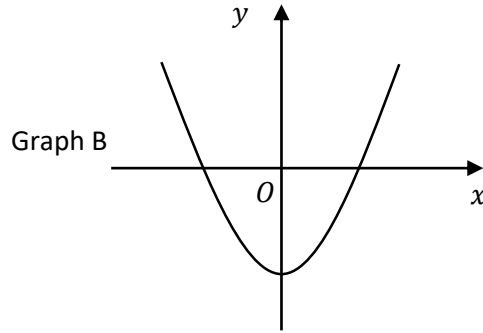
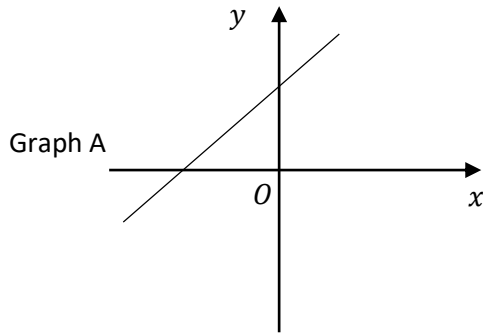
16. a) Make x the subject of $y = \sqrt{\frac{3x-5}{4}}$

.....
(2 marks)

b) Make x the subject of $4x - y = z(x + 5)$

.....
(3 marks)

17. Here are four graphs.



Write down the letter of the graph that could have equation

a) $y = x^2 - 7$

.....
(1 mark)

b) $y = 3 - 2x$

.....
(1 mark)

c) $y = \frac{1}{x}$

.....
(1 mark)

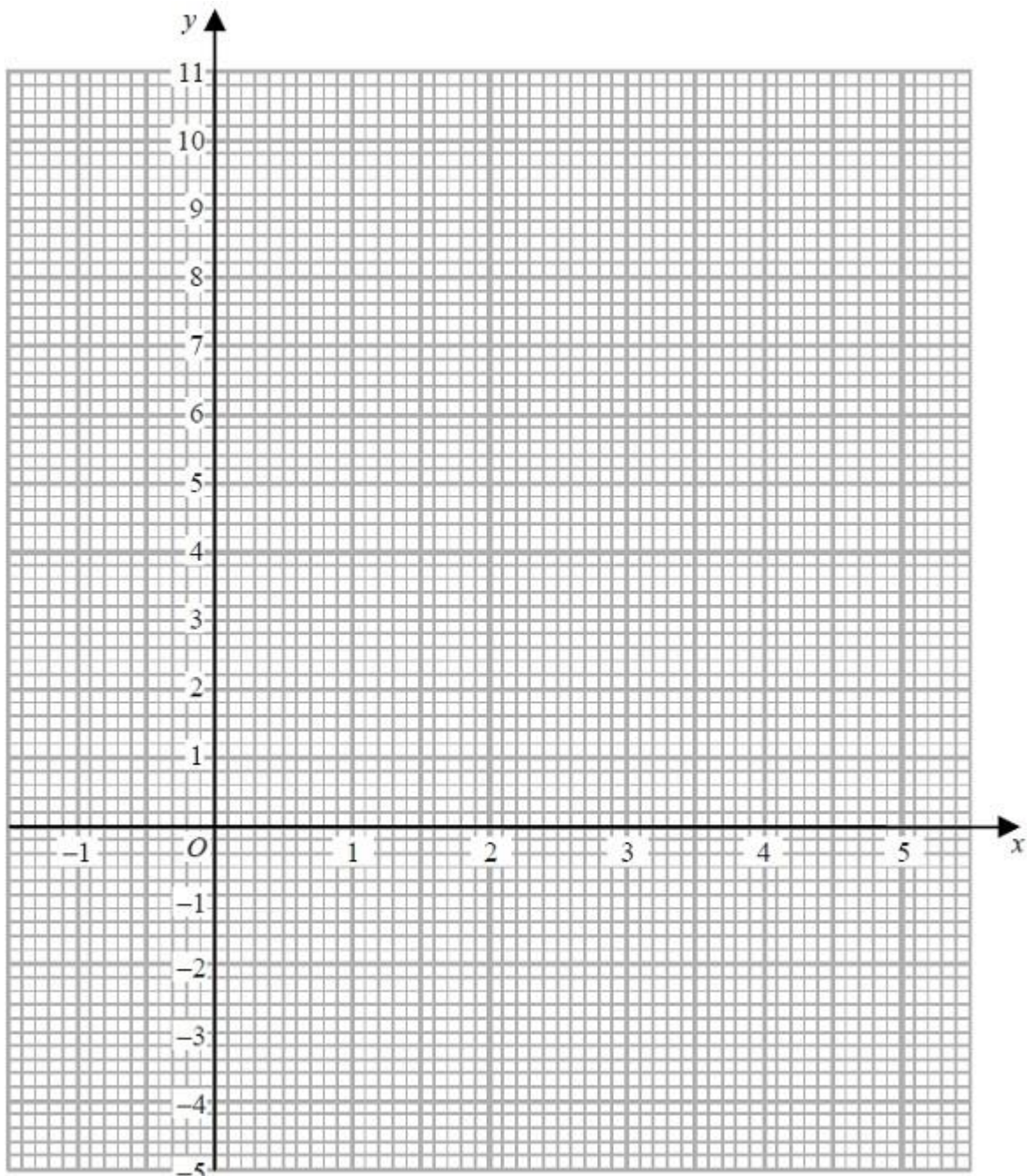
d) $y = 2x + 3$

.....
(1 mark)

18. a) Complete the table of values for $y = x^2 - 5x + 3$

x	-1	0	1	2	3	4	5
y		3	-1		-3		3

b) On the grid, draw the graph of $y = x^2 - 5x + 30$ for $x = -1$ to $x = 5$

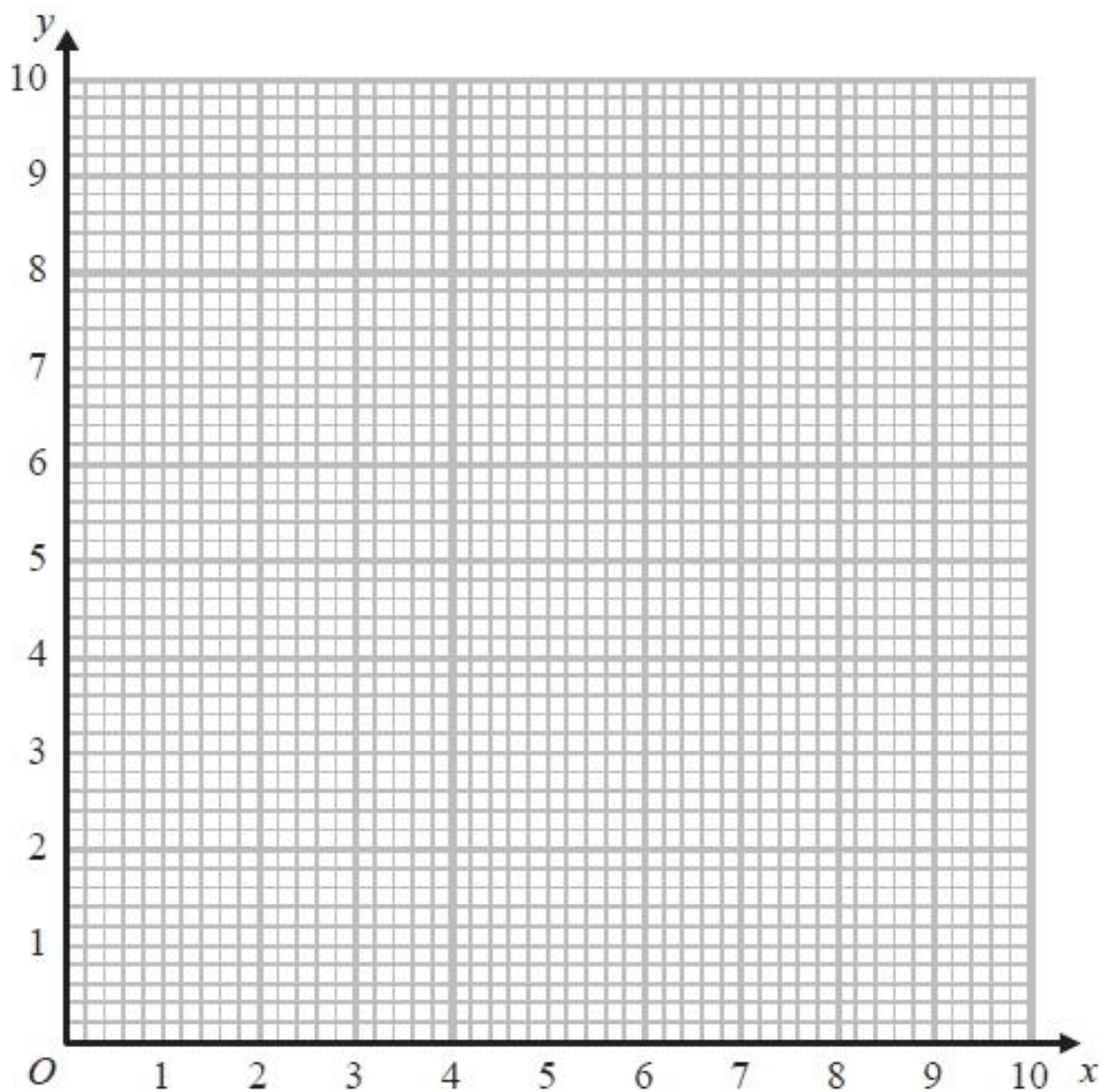


(4 marks)

19. a) Complete the table of values for $y = \frac{4}{x}$

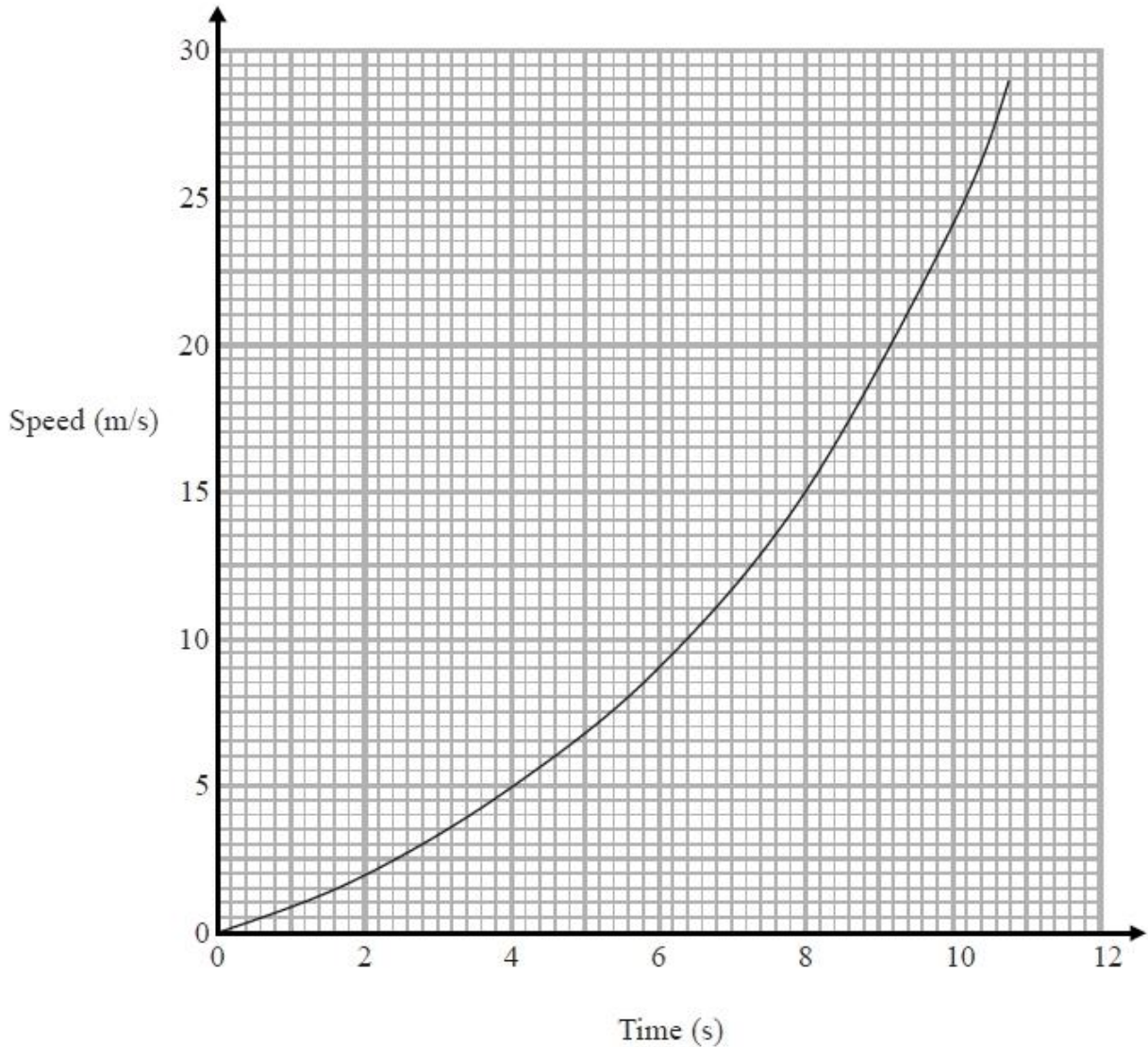
x	0.5	1	2	4	5	8
y		4	2			

b) On the grid, draw the graph of $y = \frac{4}{x}$ for $0.5 \leq x \leq 8$



(4 marks)

20. Here is a speed time graph for a car.



a) Work out an estimate for the distance the car travelled in the first 10 seconds. Use 5 strips of equal width.

.....
(3 marks)

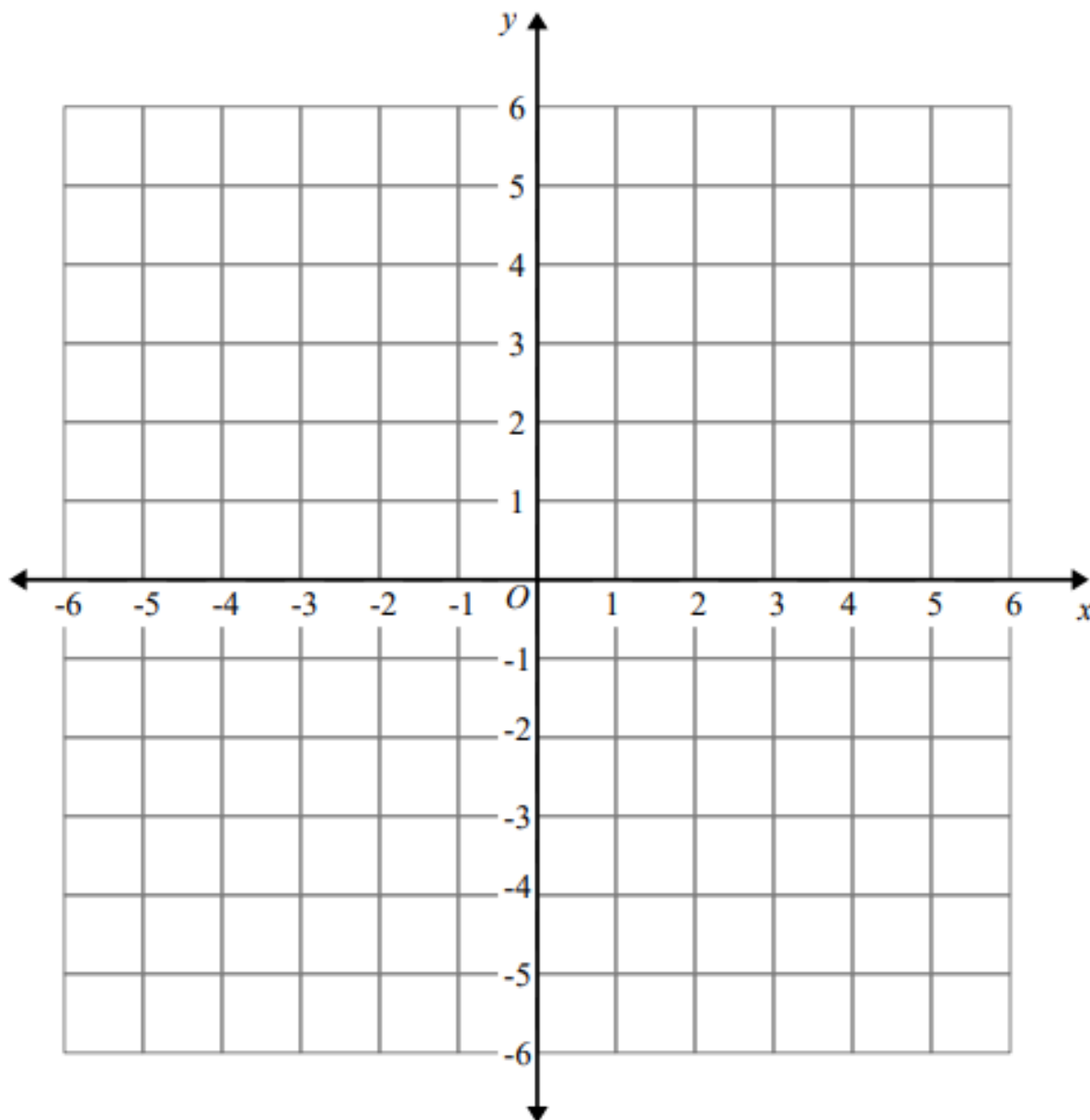
(b) Is your answer to (a) an underestimate or an overestimate of the actual distance? Give a reason for your answer.

.....
.....

(1 mark)

21. On the grid, shade the region that satisfies these inequalities

$$y < 3x \quad y > 0 \quad 4x + 3y < 12$$



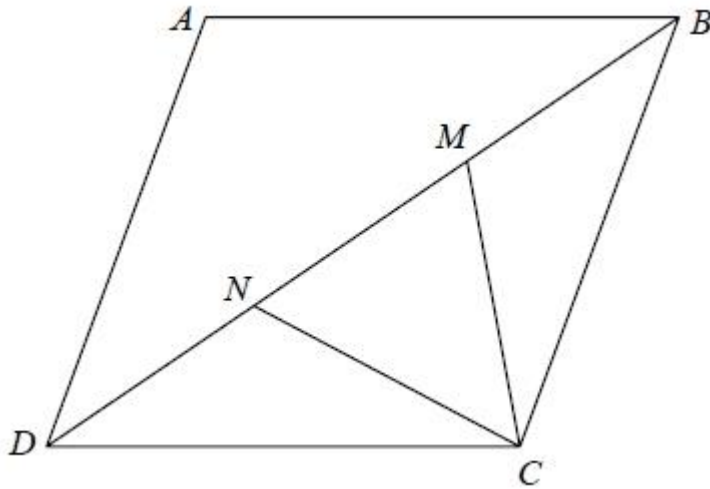
(3 marks)

22. Find the next 3 terms in this Fibonacci style sequence:

$$a, a + b, \dots, \dots, \dots$$

.....
(2 marks)

23. ABCD is a Rhombus



M and N are points on BD such that $DM = NB$

Prove that triangle DMC is congruent to triangle BNC.

(3 marks)

24. The diagram shows a prism.

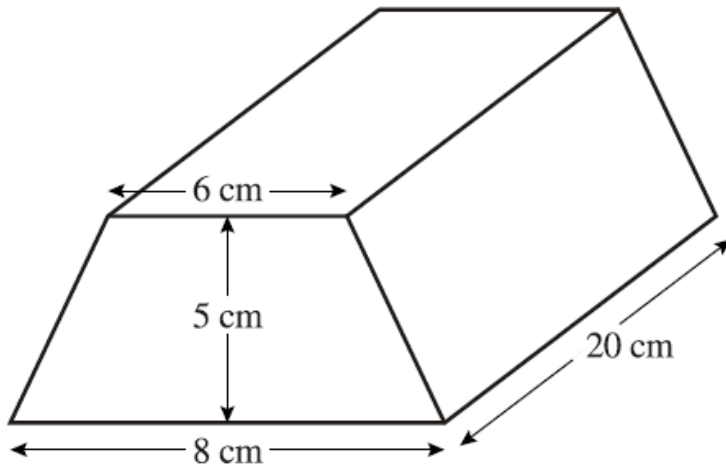


Diagram **NOT** accurately drawn.

The cross-section of the prism is a trapezium.
The lengths of the parallel sides of the trapezium are 8 cm and 6 cm.
The distance between the parallel sides of the trapezium is 5 cm.
The length of the prism is 20 cm.
Work out the volume of the prism.

.....
(3 marks)

25.

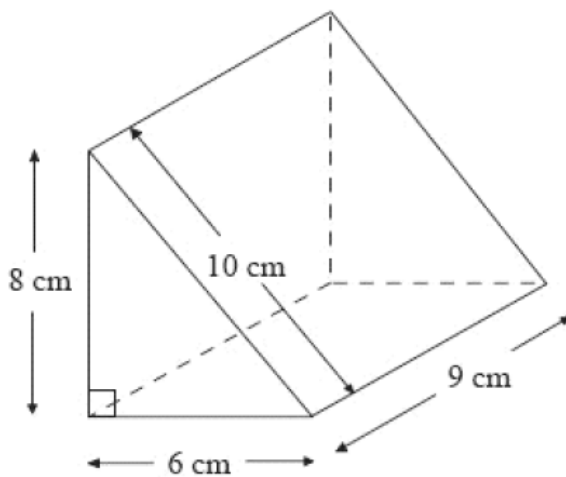


Diagram **NOT** accurately drawn

Work out the surface area of the triangular prism.
State the units with your answer.

.....
(3 marks)

26. Find the exact value of $\tan 30^\circ \times \sin 60^\circ$

Give your answer in its simplest form

.....
(3 marks)

27. The diagram shows a sector of a circle radius 7cm.

Work out the area of the sector.

Give your answer in terms of π .

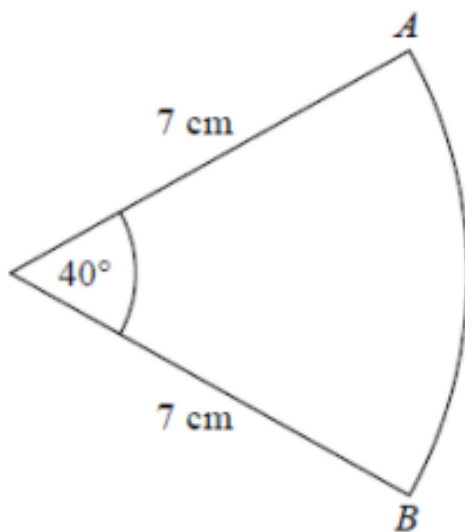
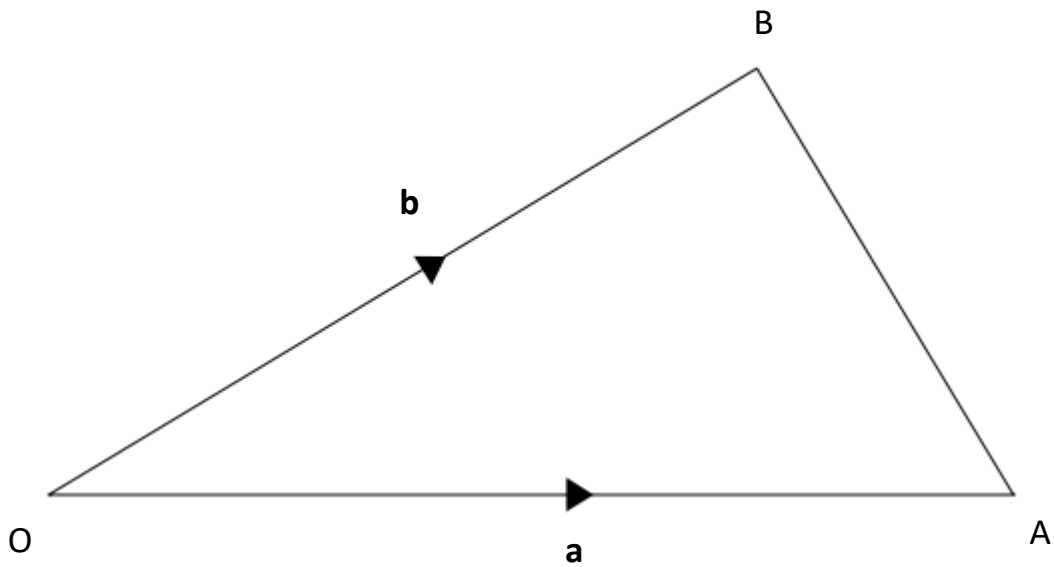


Diagram NOT
accurately drawn

.....
(4 marks)

28.



$$\vec{OB} = \mathbf{b}$$

$$\vec{OA} = \mathbf{a}$$

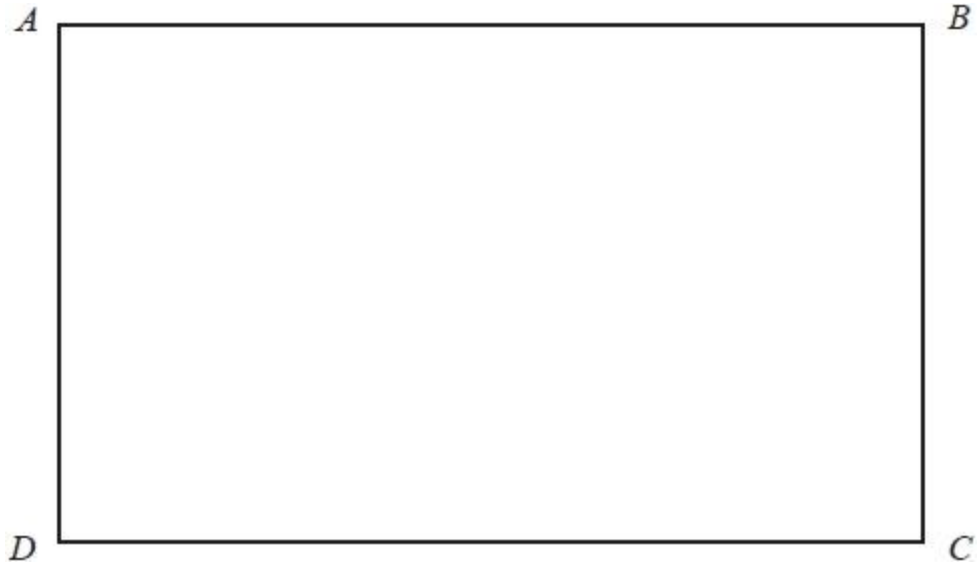
P is the point on AB such that $AP:PB = 3:1$

Find \vec{OP} in terms of \mathbf{a} and \mathbf{b}

Give your answer in its simplest form.

.....
(4 marks)

29. Here is a scale drawing of a garden.



1 cm represents 1 m

Alice is going to plant a tree in the garden.

The tree has to be

- at least 5 m from *C*
- closer to *AB* than to *AD*
- less than 3 m from *DC*

Show, by shading on the diagram, the region where Alice can plant the tree.

(4 marks)

30. In a bag there are only red, blue and white counters.

A counter is taken at random from the bag.

The table shows the probability of getting each coloured counter.

Colour	Red	Blue	White
Probability	0.5	0.3	

James is going to take a counter, replace it and take another.

He does this 50 times.

Estimate how many times he will take a white counter.

.....
(3 marks)

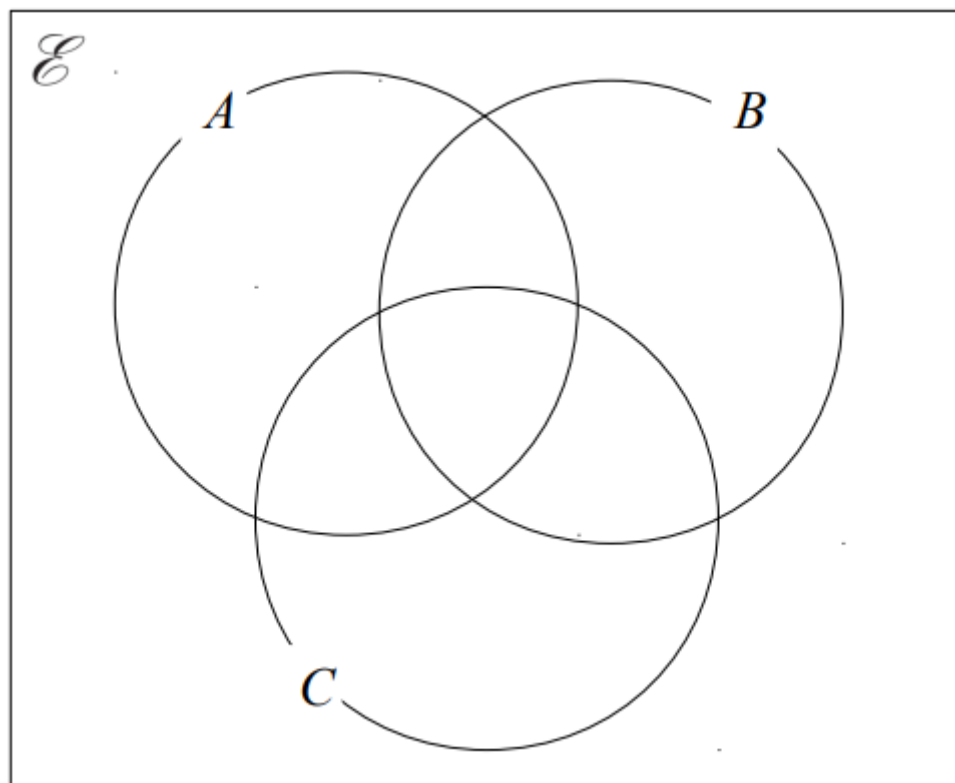
31. $\mathcal{E} = \{\text{even numbers between 1 and 25}\}$

$A = \{2, 8, 16, 20\}$

$B = \{4, 6, 8, 10, 16\}$

$C = \{4, 8, 12, 20, 24\}$

a) Complete the Venn diagram to represent this information.



A number is chosen at random from \mathcal{E} .

b) Find the probability that the number is a member of $(A \cap B)$

.....
(3 marks)

32. Mary has two bags of counters.
In bag A there are 3 red counters and 2 blue counters.
In bag B there are 4 red counters and 3 blue counters.

Mary takes at random a counter from bag A and notes its colour.
She then takes at random a counter from bag B.

Work out the probability that Mary takes the same coloured counters.

.....
(4 marks)

33. There are 60 people in a choir. Half of the people in the choir are women.
The number of women in the choir is 3 times the number of men in the choir.
The rest of the people in the choir are children.

The number of children in the choir : the number of men in the choir = n : 1

Work out the value of n .

You must show how you get your answer.

.....
(3 marks)

34. It takes 6 taps 12 hours to fill up a water tank.

a) How long would it take 8 taps to fill up the same water tank?

.....

(2 marks)

b) State one assumption you made in working out your answer to part (a).

.....

.....

(1 mark)

35. h is inversely proportional to p

p is directly proportional to \sqrt{t}

Given that $h = 10$ and $t = 144$ when $p = 6$

Find a formula for h in terms of t

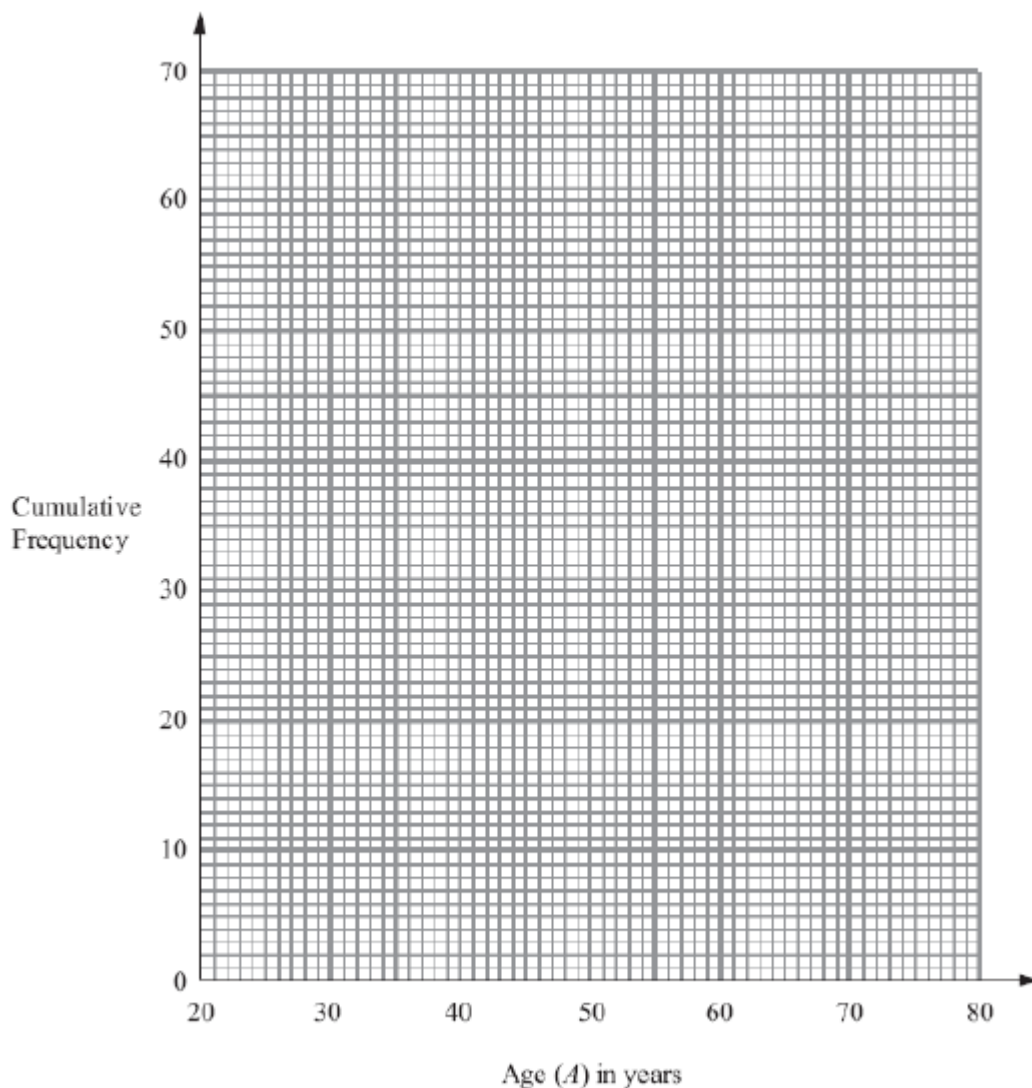
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(4 marks)

36. The frequency table gives the information about the ages of 60 teachers.

Age (A) in years	Frequency
$20 < A \leq 30$	12
$30 < A \leq 40$	15
$40 < A \leq 50$	18
$50 < A \leq 60$	12
$60 < A \leq 70$	3

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



b) Use your cumulative frequency graph to find an estimate for the median age.

.....
(4 marks)

End of Paper