Centre No.						Paper Reference							Surname	Initial(s)
Candidate No.						5	5	2	3	/	0	3	Signature	

Paper Reference(s)

5523/03

Examiner's use only

Team Leader's use only

Edexcel GCSE

Mathematics A – 1387

Paper 3 (Non-Calculator)

Intermediate Tier

Monday 5 June 2006 – Afternoon

Time: 2 hours

Materials required for examination

Ruler graduated in centimetres and millimetres, protractor, compasses, pen, HB pencil, eraser.
Tracing paper may be used.

Items included with question papers

Nil

Instructions to Candidates

In the boxes above, write your centre number, candidate number, your surname, initials and signature.
Check that you have the correct question paper.
Answer ALL the questions in the spaces provided in this question paper.
You must NOT write on the formulae page. Anything you write on the formulae page will gain NO credit.
If you need more space to complete your answer to any question, use additional answer sheets.

Information for Candidates

The marks for individual questions and the parts of questions are shown in round brackets: e.g. **(2)**.
There are 27 questions in this question paper. The total mark for this paper is 100.
There are 24 pages in this question paper. Any blank pages are indicated.
Calculators must not be used.

Advice to Candidates

Show all stages in any calculations.
Work steadily through the paper. Do not spend too long on one question.
If you cannot answer a question, leave it and attempt the next one.
Return at the end to those you have left out.

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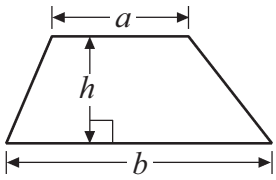
edexcel

GCSE Mathematics 1387/8

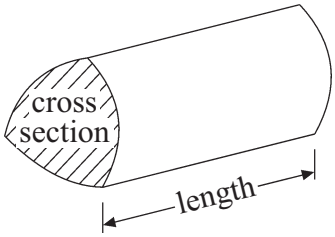
Formulae: Intermediate Tier

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

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



Volume of prism = area of cross section × length



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Answer ALL TWENTY SEVEN questions.

Write your answers in the spaces provided.

You must write down all stages in your working.

You must NOT use a calculator.

1. The two-way table gives some information about the lunch arrangements of 85 students.

	School lunch	Packed lunch	Other	Total
Female	21		13	47
Male		5		
Total	40			85

Complete the two-way table.

Q1

(Total 3 marks)

2. S = $2p + 3q$

$p = -4$
$q = 5$

(a) Work out the value of S.

$S =$ .....

(2)

$T = 2m + 30$

$T = 40$

(b) Work out the value of m.

$m =$ .....

(2)

Q2

(Total 4 marks)

Leave blank

3. A train travels from London to Manchester.

It leaves London at 16 55
It arrives in Manchester at 19 45

(a) Work out the number of minutes this train takes to travel from London to Manchester.

..... minutes
(3)

There are 800 people on the train at Manchester.

$\frac{1}{10}$ of these 800 people are children

(b) (i) Work out $\frac{1}{10}$ of 800

.....

$\frac{3}{8}$ of these 800 people are women.

(ii) Work out $\frac{3}{8}$ of 800

.....

The rest of the 800 people are men.

(iii) Work out the number of men on the train.

.....
(4)

320 out of the 800 people are under 21 years old.

(c) Work out 320 out of 800 as a percentage.

..... %
(2)

Q3

(Total 9 marks)

Leave blank

4.

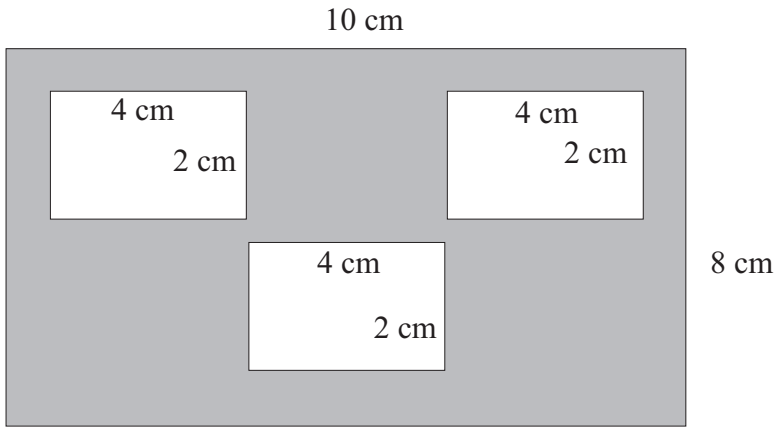


Diagram **NOT** accurately drawn

The diagram shows 3 small rectangles inside a large rectangle.
The large rectangle is 10 cm by 8 cm.
Each of the 3 small rectangles is 4 cm by 2 cm.

Work out the area of the region shown shaded in the diagram.

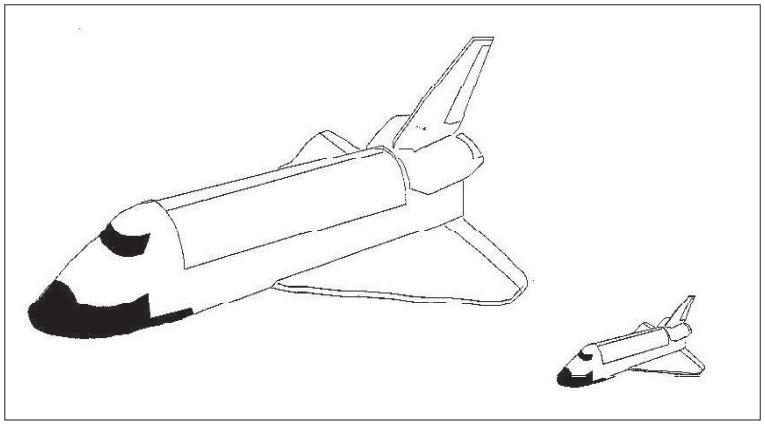
..... cm^2

Q4

(Total 3 marks)

Leave blank

5.



Picture **NOT** accurately drawn

A model of a space shuttle is made to a scale of 2 centimetres to 1 metre.

The length of the space shuttle is 24 metres.

(a) Work out the length of the model.
Give your answer in centimetres.

..... cm
(2)

The height of the model is 10 centimetres.

(b) Work out the height of the space shuttle.
Give your answer in metres.

..... m
(2)

Q5

(Total 4 marks)

Leave blank

6. Use the information that

$$257 \times 34 = 8738$$

to find the value of

(a) 2.57×34

.....

(1)

(b) $873.8 \div 2.57$

.....

(1)

Q6

(Total 2 marks)

7. Work out $\frac{2}{3} + \frac{1}{5}$

.....

Q7

(Total 2 marks)

Leave blank

8.

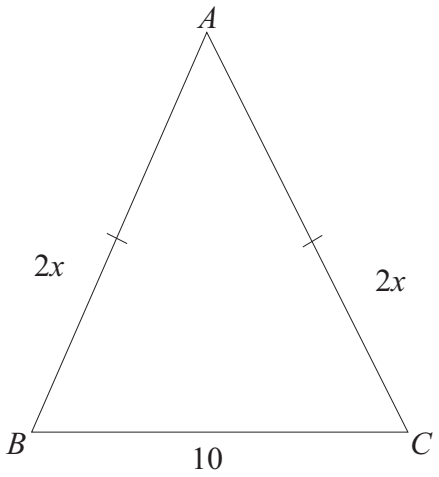


Diagram **NOT** accurately drawn

In the diagram, all measurements are in centimetres.

ABC is an isosceles triangle.
$AB = 2x$
$AC = 2x$
$BC = 10$

(a) Find an expression, in terms of x, for the **perimeter** of the triangle.
Simplify your expression.

.....

(2)

The perimeter of the triangle is 34 cm.

(b) Find the value of x.

$x =$ .....

(2)

Q8

(Total 4 marks)

Leave blank

9. The table shows some rows of a number pattern.

Row 1	$2^2 - 0^2 = 4 = 4 \times 1$
Row 2	$3^2 - 1^2 = 8 = 4 \times 2$
Row 3	$4^2 - 2^2 = 12 = 4 \times 3$
Row 4	

(a) Complete Row 4 of the number pattern.

(1)

(b) Use the number pattern to find the answer to $121^2 - 119^2$

.....

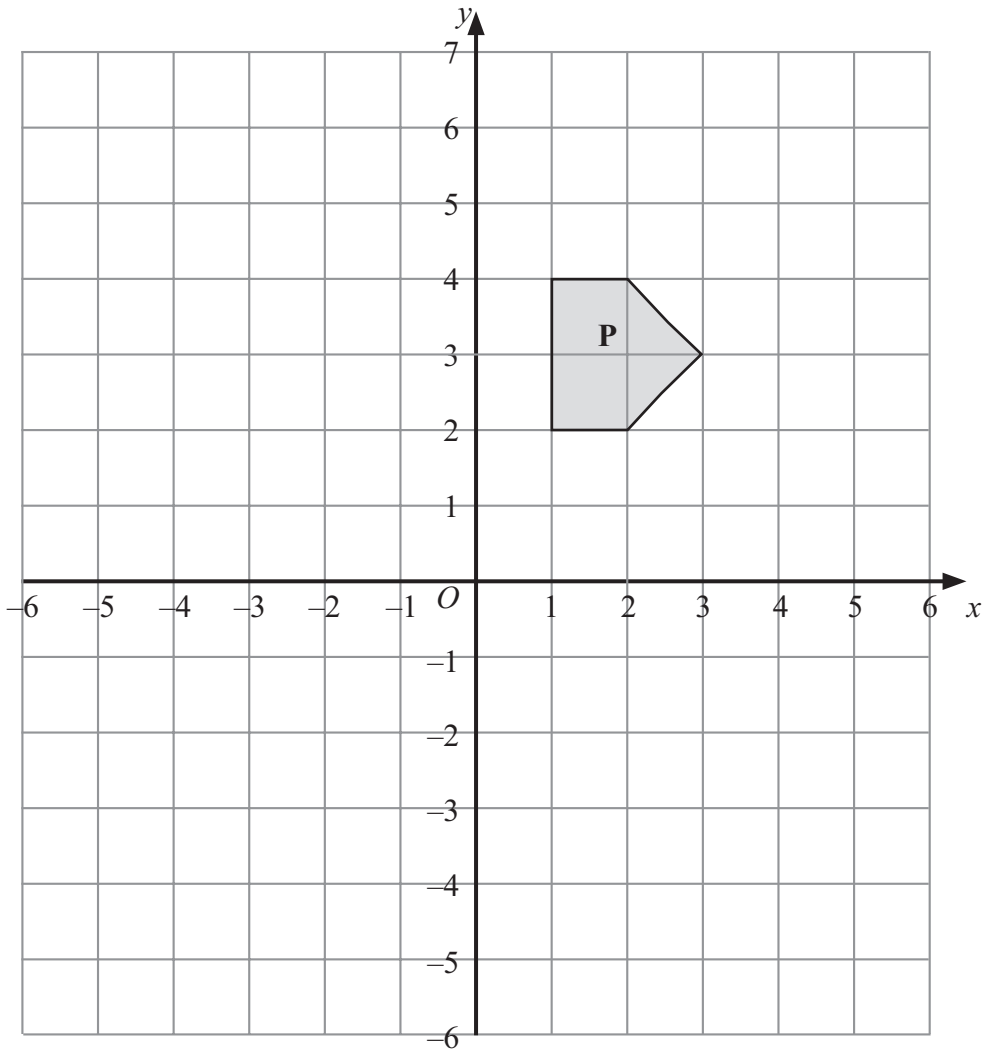
(2)

Q9

(Total 3 marks)

Leave blank

10.



On the grid, rotate the shaded shape **P** one quarter turn anticlockwise about *O*.

Label the new shape **Q**.

Q10

(Total 3 marks)

11. An aeroplane flies from Liverpool to Prague, a distance of 1200 km.
The aeroplane takes 4 hours.

Work out the average speed of the aeroplane.
State the units of your answer.

.....

Q11

(Total 3 marks)

Leave blank

12. (a) Solve $4x + 3 = 19$

$x =$ .....

(2)

(b) Solve $4y + 1 = 2y + 8$

$y =$ .....

(2)

(c) Simplify $2(t + 5) + 13$

.....

(2)

Q12

(Total 6 marks)

Leave blank

13. $3x^2 = 108$

(a) Find a value of x

$x =$ .....

(2)

(b) Express 108 as a product of its prime factors.

.....

(3)

Q13

(Total 5 marks)

14. A silver chain has a volume of 5 cm^3.
The density of silver is 10.5 grams per cm^3.

Work out the mass of the silver chain.

..... grams

Q14

(Total 2 marks)

Leave blank

15. Fred did a survey of the time, in seconds, people spent in a queue at a supermarket. Information about the times is shown in the table.

Time (t seconds)	Frequency
$0 < t \leqslant 40$	8
$40 < t \leqslant 80$	12
$80 < t \leqslant 120$	14
$120 < t \leqslant 160$	16
$160 < t \leqslant 200$	10

(a) Write down the modal class interval.

..... seconds
(1)

A person is selected at random from the people in Fred's survey.

(b) Work out an estimate for the probability that the person selected spent more than 120 seconds in the queue.

.....
(2)

Q15

(Total 3 marks)

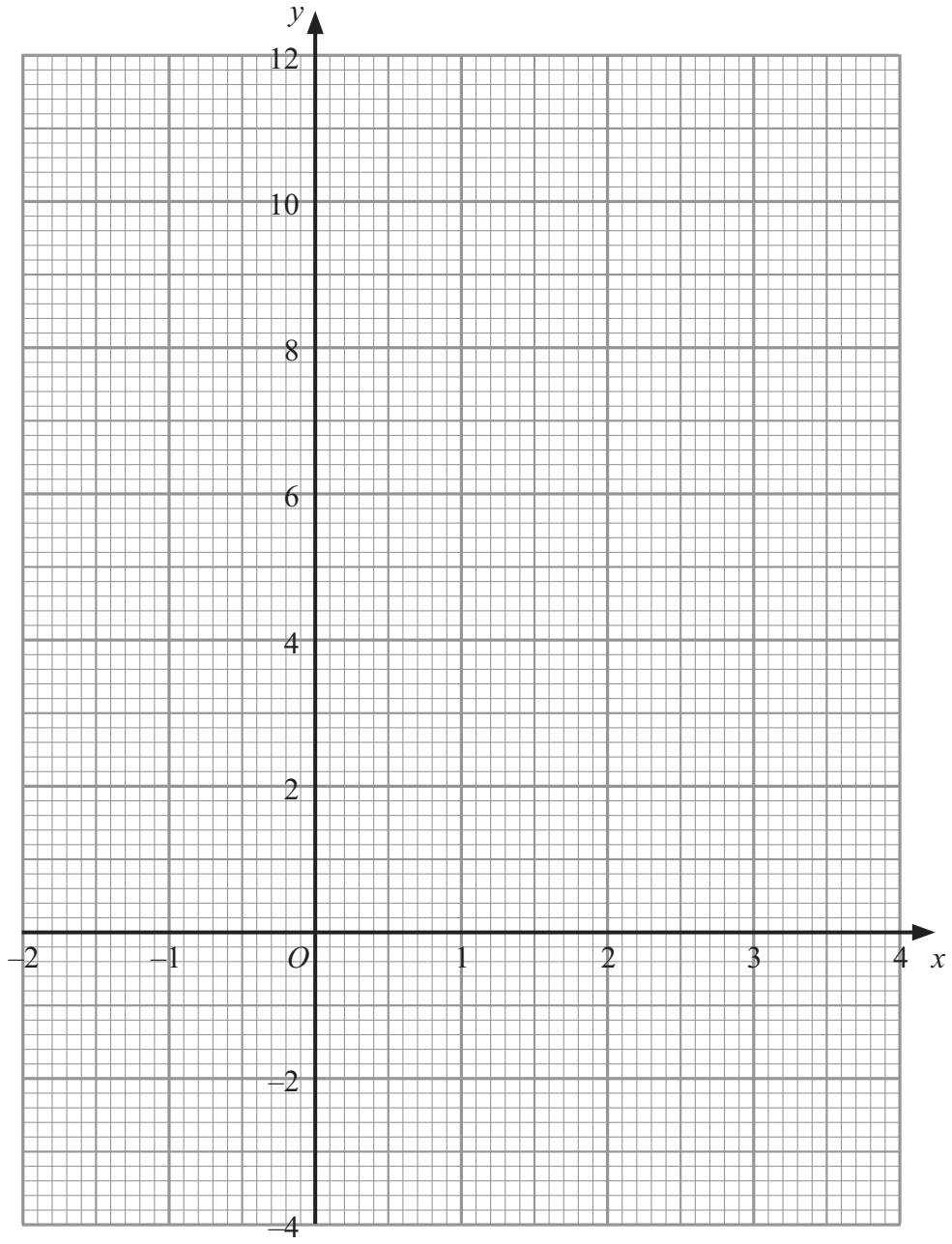
Leave blank

16. (a) Complete the table of values for $y = x^2 - 3x + 1$

x	–2	–1	0	1	2	3	4
y	11		1	–1			5

(2)

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



(2)

(c) Use your graph to estimate the values of x for which $y = 3$

$x =$ .....

$x =$ .....

(2)

Q16

(Total 6 marks)

Leave blank

17. A gold necklace has a mass of 127 grams, correct to the nearest gram.

(a) Write down the **least** possible mass of the necklace.

..... grams
(1)

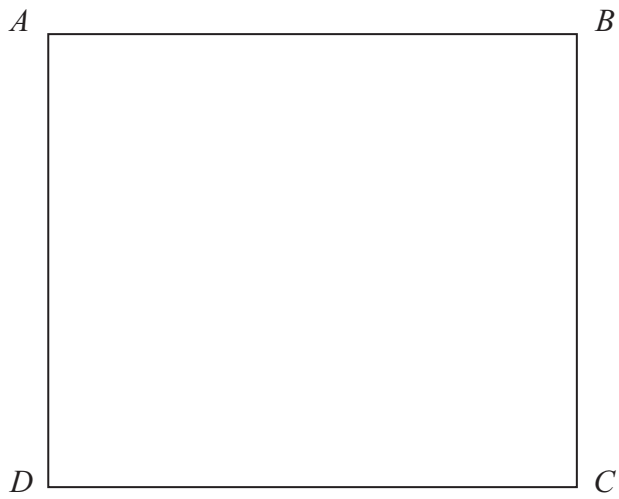
(b) Write down the **greatest** possible mass of the necklace.

..... grams
(1)

Q17

(Total 2 marks)

18.



ABCD is a rectangle.

Shade the set of points inside the rectangle which are **both**

more than 4 centimetres from the point *A*
and more than 1 centimetre from the line *DC*.

Q18

(Total 4 marks)

Leave blank

19. A student wanted to find out how many pizzas adults ate.

He used this question on a questionnaire.

'How many pizzas have you eaten?'

☐	☐
A few	A lot

(a) Write down **two** things that are wrong with this question.

.....

.....

.....

(2)

(b) Design a better question that the student can use to find out how many pizzas adults ate.
You should include some response boxes.

(2) **Q19**

(Total 4 marks)

Leave blank

20. Work out an estimate for $\dfrac{412 \times 5.904}{0.195}$

.....

(Total 3 marks)

Q20

21. Write in standard form

(a) 456 000

.....

(1)

(b) 0.00034

.....

(1)

(c) 16×10^7

.....

(1)

(Total 3 marks)

Q21

Leave blank

22. (a) Factorise $x^2 + 6x + 8$

.....

(2)

(b) Solve $x^2 + 6x + 8 = 0$

$x =$ .....

or $x =$ .....

(1)

(Total 3 marks)

Q22

23. Hajra's weekly pay this year is £240
This is 20% more than her weekly pay last year.

Bill says 'This means Hajra's weekly pay last year was £192'.

Bill is wrong.

(a) Explain why.

.....

.....

(1)

(b) Work out Hajra's weekly pay last year.

£ .....

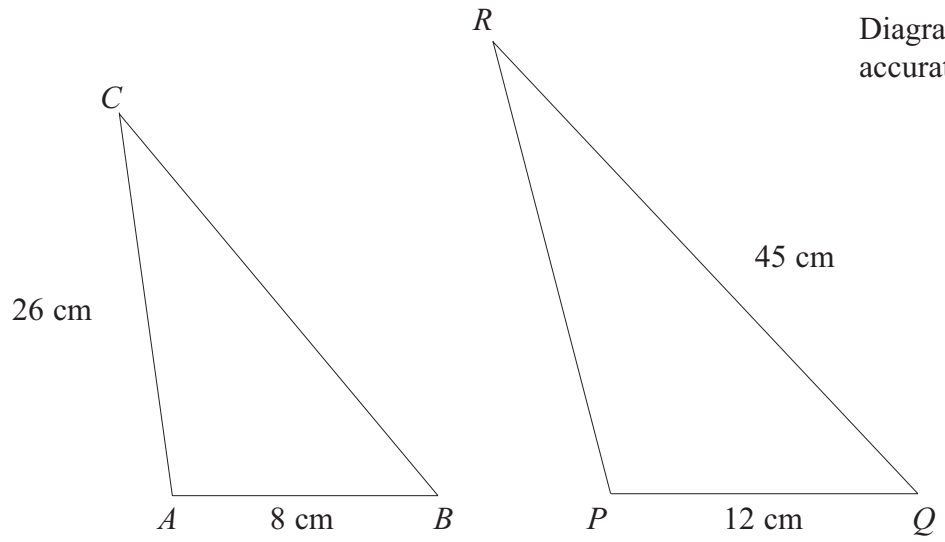
(2)

(Total 3 marks)

Q23

Leave blank

24.



The two triangles *ABC* and *PQR* are mathematically similar.

Angle *A* = angle *P*.
Angle *B* = angle *Q*.
AB = 8 cm.
AC = 26 cm.
PQ = 12 cm.
QR = 45 cm.

(a) Work out the length of *PR*.

..... cm
(2)

(b) Work out the length of *BC*.

..... cm
(2)

Q24

(Total 4 marks)

Leave blank

25. A company tested 100 batteries.

The table shows information about the time in hours that the batteries lasted.

Time (t hours)	Frequency
$50 \leqslant t < 55$	12
$55 \leqslant t < 60$	21
$60 \leqslant t < 65$	36
$65 \leqslant t < 70$	23
$70 \leqslant t < 75$	8

(a) Complete the cumulative frequency table.

(1)

Time (t hours)	Cumulative frequency
$50 \leqslant t < 55$	12
$50 \leqslant t < 60$	
$50 \leqslant t < 65$	
$50 \leqslant t < 70$	
$50 \leqslant t < 75$	

(b) On the grid, draw a cumulative frequency graph for your completed table.

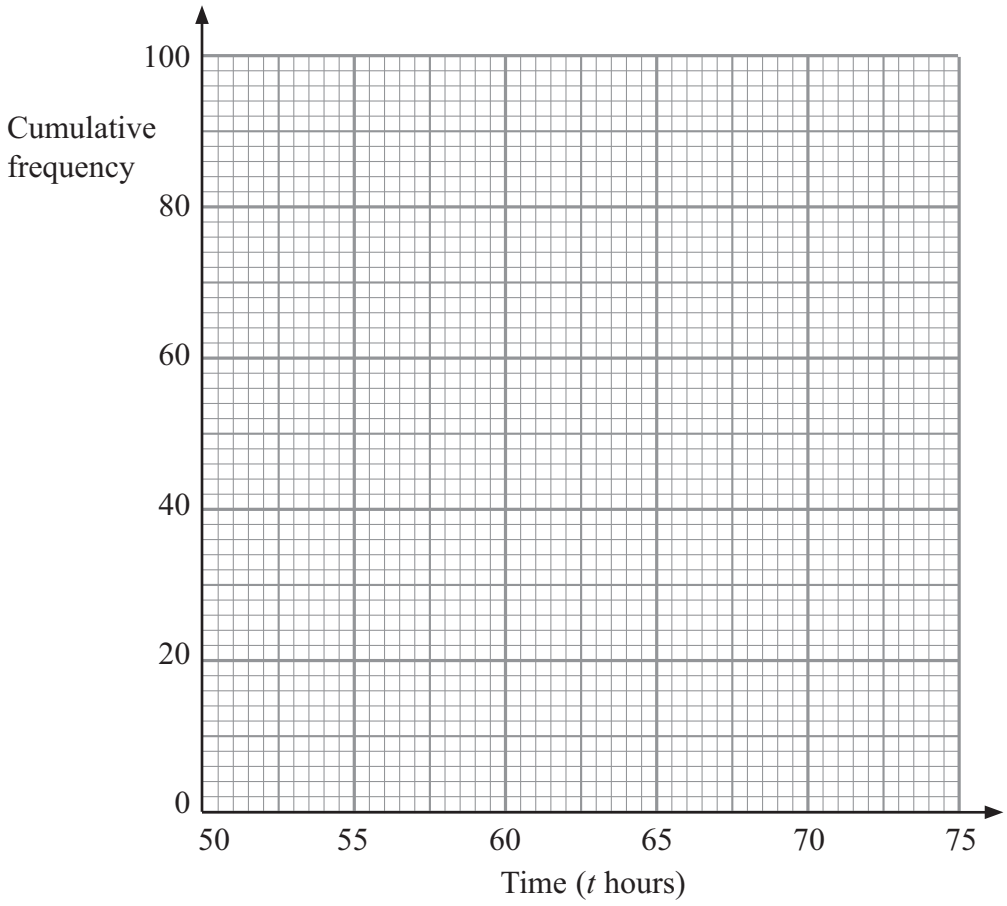
(2)

(c) Use your completed graph to find an estimate for the median time.

..... hours

(1)

Leave blank

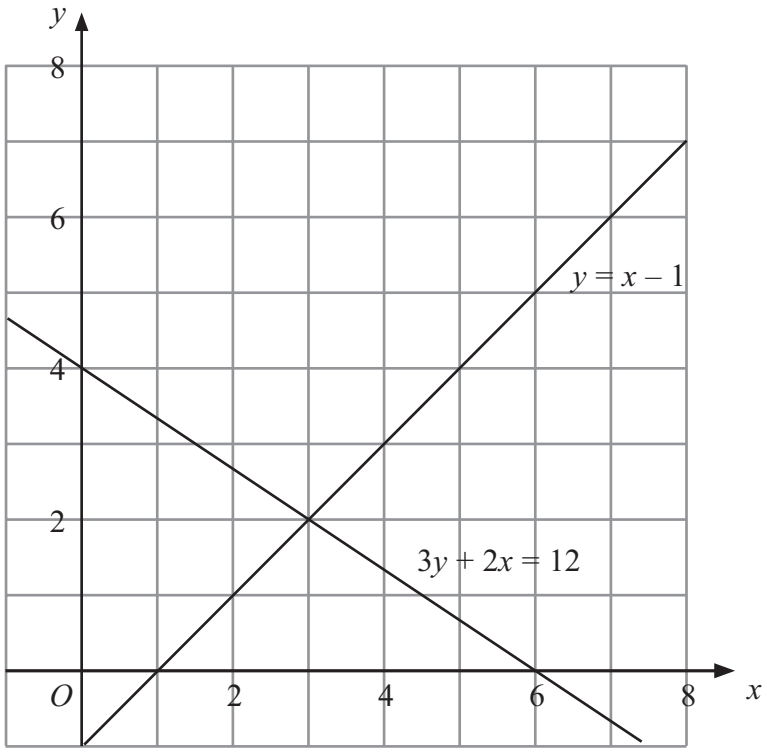


Q25

(Total 4 marks)

Leave blank

26. The graphs of the straight lines with equations $3y + 2x = 12$ and $y = x - 1$ have been drawn on the grid.



(a) Use the graphs to solve the simultaneous equations

$$3y + 2x = 12$$
$$y = x - 1$$

$x =$ .....

$y =$ .....

(1)

(b) $3y + 2x > 12$ $y < x - 1$ $x < 6$

x and y are integers.

On the grid, mark with a cross (×) each of the **four** points which satisfies **all** these 3 inequalities.

(3)

Q26

(Total 4 marks)

Leave blank

27.

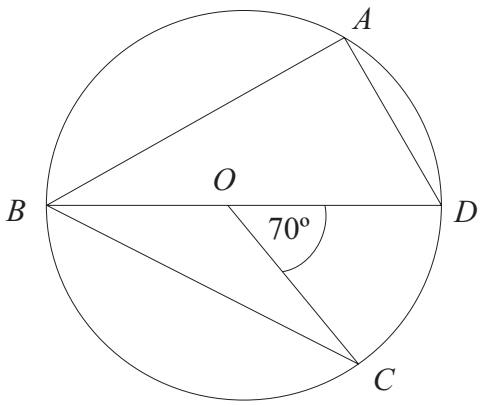


Diagram **NOT** accurately drawn

A, *B*, *C* and *D* are points on the circumference of a circle, centre *O*.
BOD is a straight line.
Angle *COD* = 70º

(a) Find the size of angle *BAD*.
Give a reason for your answer.

..... º

(2)

(b) Find the size of angle *CBD*.
Give a reason for your answer.

..... º

(2) **Q27**

(Total 4 marks)

TOTAL FOR PAPER: 100 MARKS

END