



Rewarding Learning

General Certificate of Secondary Education
January 2010

Mathematics

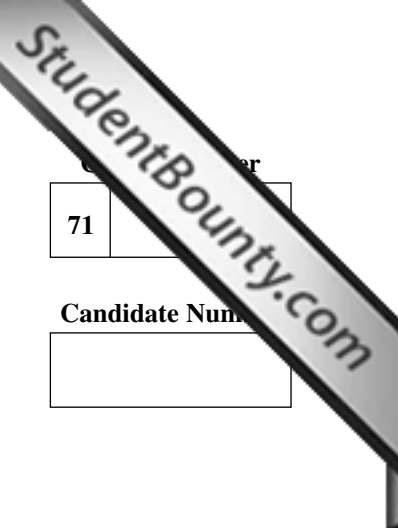
Module N3 Paper 1
(Non-calculator)
Higher Tier
[GMN31]



TUESDAY 12 JANUARY
9.15 am – 10.15 am



GMN31



71	
Candidate Number	
<input type="text"/>	

TIME

1 hour.

INSTRUCTIONS TO CANDIDATES

Write your Centre Number and Candidate Number in the spaces provided at the top of this page.
 Write your answers in the spaces provided in this question paper.
 Answer **all thirteen** questions.
 Any working should be clearly shown in the spaces provided since marks may be awarded for partially correct solutions.
 You **must not** use a calculator for this paper.

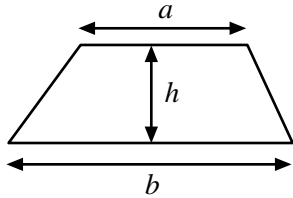
INFORMATION FOR CANDIDATES

The total mark for this paper is 44.
 Figures in brackets printed down the right-hand side of pages indicate the marks awarded to each question or part question.
 You should have a ruler, compasses, set-square and protractor.
 The Formula Sheet is on page 2.

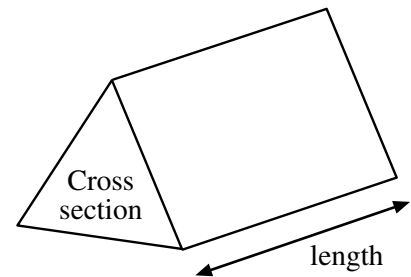
For Examiner's use only	
Question Number	Marks
1	
2	
3	
4	
5	
6	
7	
8	
9	
10	
11	
12	
13	
Total Marks	

Formula Sheet

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



Volume of prism = area of cross section \times length

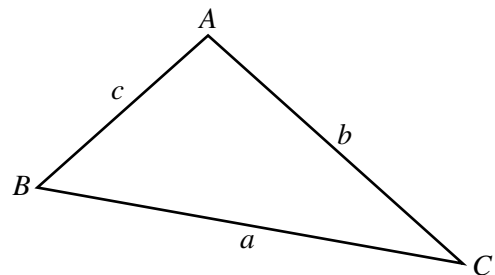


In any triangle ABC

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

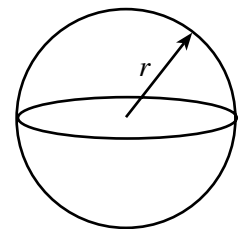
Sine rule: $\frac{a}{\sin A} = \frac{b}{\sin B} = \frac{c}{\sin C}$

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



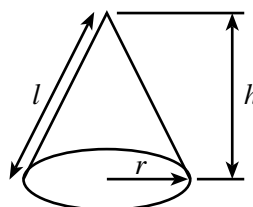
Volume of sphere = $\frac{4}{3}\pi r^3$

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



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

Curved surface area of cone = $\pi r l$



Quadratic equation:

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

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

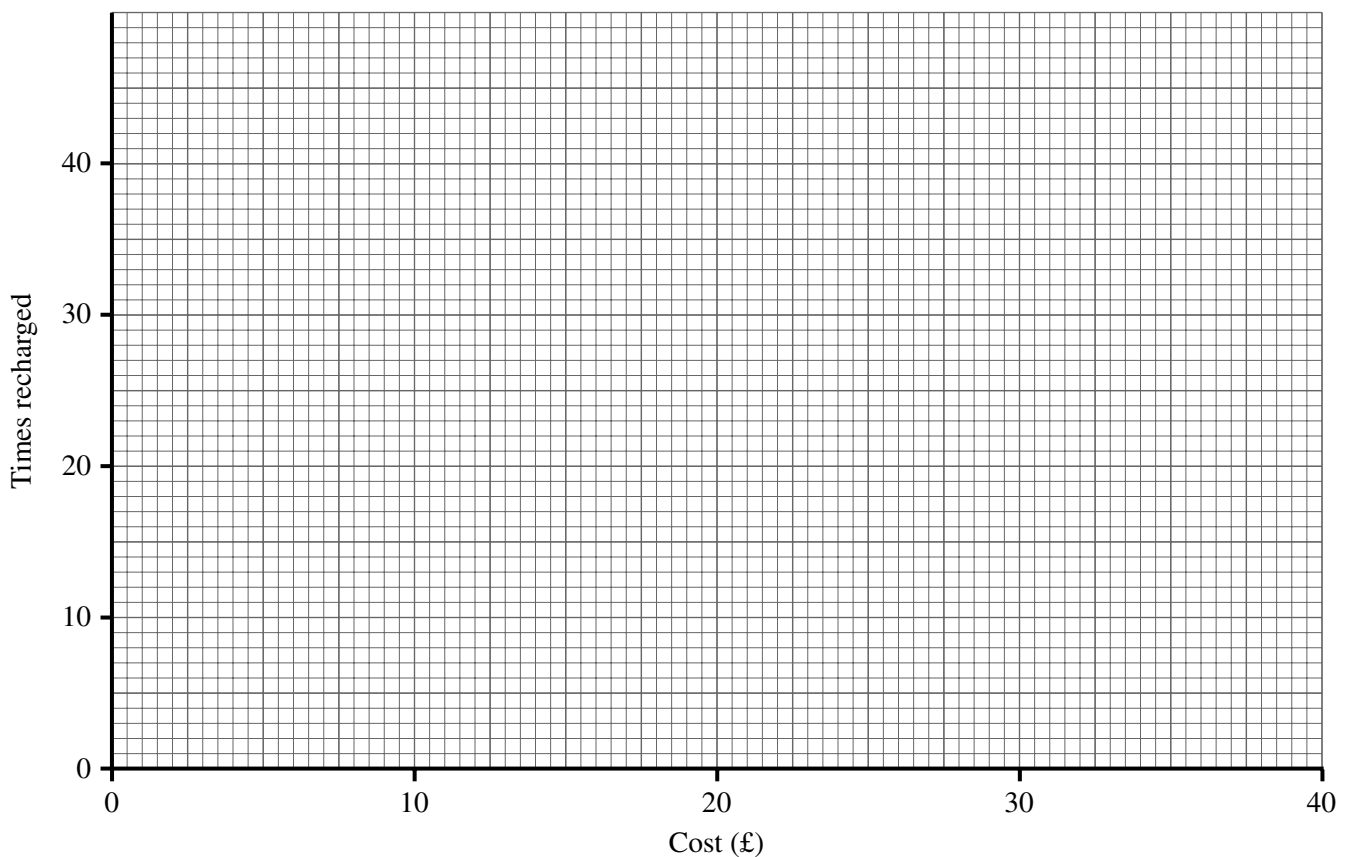
- 3 Seven friends compared the costs of their mobile phones and how many times they had to recharge them in a period of 2 months.

The table shows the results.

Cost (£)	17	19	21	23	25	27	30
Times recharged	38	31	28	24	20	16	8

- (a) Draw a scatter graph for this data.

[2]



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

[1]

- (c) Estimate the cost of another mobile phone which had to be recharged four times.

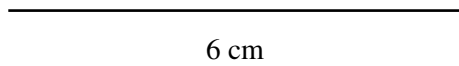
Answer £ _____ minutes [1]

Examiner Only	
Marks	Remark

Examiner Only	
Marks	Remark

4 A parallelogram has sides 6 cm and 5 cm. The shorter diagonal is 5 cm.

Make an **accurate** drawing of this parallelogram.
One side has been drawn for you.



[4]

Examiner Only	
Marks	Remark

5 (a) $\frac{5}{8}$ of the length of a wall has been completed.

If there is still 30 ft to build, how long will the wall be when it is finished?

Answer _____ ft [3]

(b) Calculate $6\frac{3}{4} - 4\frac{1}{3}$

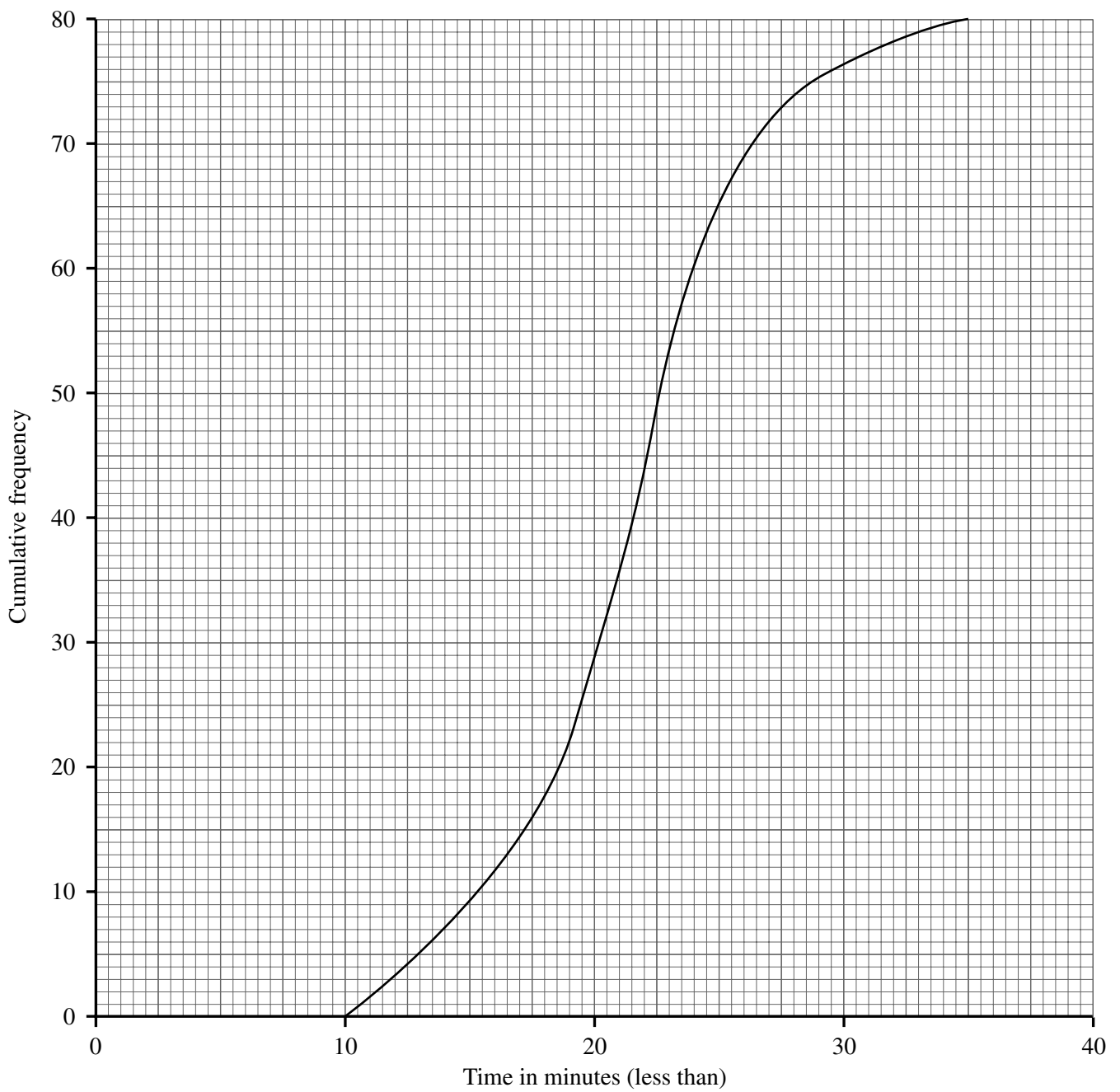
Answer _____ [3]

Examiner Only	
Marks	Remark

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(Questions continue overleaf)

- 10 The time taken by a number of adults to complete a Sudoku puzzle was recorded. The cumulative frequency graph for the results is shown.



Use the graph to estimate

(a) the median time,

Answer _____ minutes [1]

(b) the interquartile range.

Answer _____ minutes [2]

Examiner Only	
Marks	Remark

12 A new HD ready TV was sold at the reduced price of £434 because the surround was slightly damaged.

30% of the original price had been deducted.
What was the original price?

Answer £ _____ [3]

Examiner Only	
Marks	Remark

- 13 A, B, C and D are points on the circumference of a circle with centre O.
Angle DAC = 20°

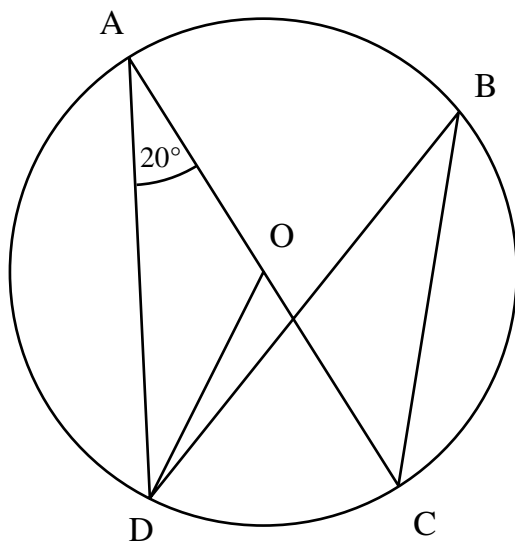


Diagram not
drawn accurately

- (a) Find the size of angles:

(i) DOC,

Answer _____ $^\circ$ [1]

(ii) ADC.

Answer _____ $^\circ$ [1]

- (b) Explain why angle DBC = 20°

Answer _____ [1]

Examiner Only	
Marks	Remark

THIS IS THE END OF THE QUESTION PAPER

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