

Rewarding Learning

## General Certificate of Secondary Education

January 2011

## Mathematics



Module N2 Paper 1
(Non-calculator)
Foundation Tier
[GMN21]
TUESDAY 11 JANUARY
$9.15 \mathrm{am}-10.00 \mathrm{am}$

## TIME

45 minutes.

## 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 eleven 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.


## Formula Sheet

Volume of prism $=$ area of cross section $\times$ length


1 A sequence of patterns is drawn below.

(a) Draw the pattern for $5^{2}-4^{2}$
(b) Fill in the blanks in the table

$$
\begin{aligned}
& 2^{2}-1^{2}=4-1=3 \\
& 3^{2}-2^{2}=9-4=5 \\
& 4^{2}-3^{2}=16-9=7 \\
& 5^{2}-4^{2}=\ldots-\ldots=
\end{aligned}
$$

(c) Use the pattern in your table to find easily the answer to

$$
500^{2}-499^{2}
$$

Answer $\qquad$

2 The map shows the position of five towns around a lake.

(a) Use the map to measure the bearing of Roseville from Ardhill.

Answer $\qquad$ ${ }^{\circ}$ [1]
(b) Use the map and scale to find the direct distance across the lake between Kildrum and Clonmore.

Answer $\qquad$ km [3]
(a) $5^{3}$
(b) $4.2-1.66$

## Answer

$\qquad$
(c) $0.3 \times 0.3$

Answer $\qquad$
(d) the cube root of 64

Answer $\qquad$ [1]
(e) $\frac{3}{4}-\frac{5}{12}$

Answer $\qquad$

4 The colours of the cars passing the school gates were noted during a school day.

Draw a clearly labelled pie chart for this data.


5 VWXYZ is a regular pentagon.


Diagram not drawn accurately

Calculate angle $p$.
Show your working.

Answer $\qquad$ ${ }^{\circ}$ [3]

6 A baker uses $\frac{3}{5}$ of a bag of flour to make 6 muffins. How many bags of flour will he need to make 48 muffins?

Answer $\qquad$ bags

7 The school bus for Oldtown Secondary School carried a mixture of boys and girls. Some of the students were wearing scarves.
(a) Design a table in the space below which could be used to record the numbers of boys and girls and the numbers of each wearing scarves and not wearing scarves.
(b) There were 40 students on the bus. Show how they might have been recorded in your table above.

8
(a) Solve $\quad 18-3 x=2+5 x$

Answer $\qquad$
(b) Solve $\quad \frac{21-2 x}{3}=5$

Answer

9 The heights of trees in an orchard were recorded. The heights were grouped as shown in the table.

| Height $\boldsymbol{h}$ (metres) | Frequency | Mid Point |  |
| :---: | :---: | :---: | :---: |
| $0<\boldsymbol{h} \leq 2$ | 12 | 1 |  |
| $2<\boldsymbol{h} \leq 4$ | 8 | 3 |  |
| $4<\boldsymbol{h} \leq 6$ | 12 |  |  |
| $6<\boldsymbol{h} \leq 8$ | 10 |  |  |
| $8<\boldsymbol{h} \leq 10$ | 7 |  |  |
| $10<\boldsymbol{h} \leq 12$ | 1 |  |  |

(a) Which class interval contains the median height?

Answer $\qquad$
(b) Complete the table and hence find an estimate for the mean height of the trees.

Answer $\qquad$ m [3]

10 (a) Convert $0.6 \mathrm{~m}^{3}$ into $\mathrm{cm}^{3}$

> Answer
$\qquad$ $\mathrm{cm}^{3}$
(b) P is the point $(8,-1)$ and Q is the point $(-2,3)$

Find the co-ordinates of the midpoint of the line PQ .

Answer ( $\qquad$ , $\qquad$

11 Work out $5 \frac{3}{4}-2 \frac{5}{6}$

Give your answer as a mixed number.

Answer

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