

Rewarding Learning

## General Certificate of Secondary Education

 January 2009
## Mathematics



Module N2 Paper 2
(With calculator)
Foundation Tier
[GMN22]
FRIDAY 9 JANUARY
10.30 am - 11.15 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 fourteen questions.
Any working should be clearly shown in the spaces provided since marks may be awarded for partially correct solutions.

## 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 calculator, ruler, compasses, set-square and protractor.
The Formula Sheet is on page 2.

| For Examiner's <br> use only |  |
| :---: | :---: |
| Question <br> Number | Marks |
| 1 |  |
| 2 |  |
| 3 |  |
| 4 |  |
| 5 |  |
| 6 |  |
| 7 |  |
| 8 |  |
| 9 |  |
| 10 |  |
| 11 |  |
| 12 |  |
| 13 |  |
| 14 |  |

Total Marks

## Formula Sheet

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


1 The table below gives the estimated population of each of five countries in the year 2000.

Draw a pie chart to illustrate this information.

| Country | Population (millions) |
| :--- | :---: |
| N. Ireland | 1.6 |
| Wales | 2.7 |
| Republic of Ireland | 3.9 |
| Scotland | 5.0 |
| England | 46.8 |



2 (a) Simplify $4 x-3 y+5 y-x$

Answer
(b) Write down the next term in the sequence
$22,15,8,1, \ldots$
Answer $\qquad$ [1]
$\qquad$


Using the decision tree diagram, name the box for
(a) 22

Answer Box $\qquad$
(b) 31

Answer Box $\qquad$
(c) 40

Answer Box $\qquad$ [2]

4 A boy starts school at 9 am . He finishes at 3.25 pm .
There is a 15 minute mid-morning break and a 50 minute lunch break.
There are 8 lessons in the day, each of the same length.
How long is each lesson?
Show your working.

Answer $\qquad$ minutes [3]

5 Calculate
(a) (i) the cube of 6

> Answer
$\qquad$ [1]
(ii) $2^{4}$

## Answer

$\qquad$ [1]
(b) Write 34.56 correct to three significant figures.

Answer
$\qquad$

6 (a) A cuboid has volume $300 \mathrm{~cm}^{3}$. Its breadth is 5 cm .
Write down possible dimensions for its length and height.

Answer $\qquad$ cm and $\qquad$ cm [1]
(b) Calculate the area of a circle of radius 2.5 cm .

Answer $\qquad$ $\mathrm{cm}^{2}$ [2]

7 A new table is priced at $£ 140$
In a sale it is reduced by $35 \%$ Calculate the sale price.

8 The table shows the engine capacity in litres and the fuel consumption (number of miles per gallon (mpg)) for a selection of new cars.

| Car | Engine capacity (litres) | Fuel consumption (mpg) |
| :--- | :---: | :---: |
| Aster | 1.3 | 45 |
| Viva | 2.0 | 37 |
| Megro | 2.5 | 32 |
| Lazio | 1.6 | 42 |
| Torino | 1.8 | 39 |
| Serene | 1.0 | 50 |

(a) Draw a scatter graph on the grid opposite to show the data in the table.
(b) Describe the type of correlation shown on the scatter graph.

Answer $\qquad$
(c) Draw a line of best fit for the data.
(d) Using your line of best fit, what fuel consumption in mpg would you expect from a car with an engine capacity of 2.2 litres?

Answer $\qquad$ mpg [1]
Anser

Answer



Diagram not drawn accurately

Calculate
(a) angle $p$
Answer $\qquad$ ${ }^{\circ}$ [1]
(b) angle $q$
Answer ${ }^{\circ}$ [1]


The line $y=x-2$ has been drawn on the grid.
(a) Draw the line $y=\frac{1}{2} x+1$ on the same grid.
(b) Write down the coordinates of the point of intersection of the two lines.

Answer ( $\qquad$ , $\qquad$ ) [1]

11 Carol leaves $£ 1200$ in the bank for three years. It earns compound interest of $6 \%$ each year.

Calculate the total amount Carol has in the bank at the end of the three years.

Answer £

12 The PSNI recorded the speeds of a number of vehicles passing under a bridge on the M2 motorway during a 2 minute period one morning. The speeds recorded are in miles per hour (mph).

| Speed $\boldsymbol{s}$ (mph) | Frequency |  |  |
| :---: | :---: | :--- | :--- |
| $44 \leq s<50$ | 3 |  |  |
| $50 \leq s<56$ | 7 |  |  |
| $56 \leq s<62$ | 8 |  |  |
| $62 \leq s<68$ | 6 |  |  |
| $68 \leq s<74$ | 5 |  |  |
| $74 \leq s<80$ | 1 |  |  |

Calculate an estimate for the mean speed.
$\qquad$ mph [4]

13 The interior angle of a regular polygon is $135^{\circ}$
How many sides has the polygon?
Show your working.

Answer $\qquad$

A straw of length 15 cm just fits inside a cylindrical container of length 12 cm as shown. Calculate the diameter of the cylinder.

Answer $\qquad$ cm [3]


Answ

