

Rewarding Learning

## General Certificate of Secondary Education

 January 2010Mathematics


Module N2 Paper 2
(With calculator)
Foundation Tier
[GMN22]
TUESDAY 12 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 twelve 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 |  |
| Total |  |
| Marks |  |

## Formula Sheet

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



Use the decision tree diagram to sort the integers from 1 to 10 The integer $\mathrm{N}=3$ has already been done.

| Download speed | 15 Mb |
| :--- | :--- |
| Wireless router | One off payment $£ 20$ |
| Monthly price | $£ 16$ per month for first six months <br> $£ 22$ per month thereafter |

Darragh wants Internet Broadband together with a wireless router and signs up for the 15 Mb package.

After a period of time he decides to upgrade to a new package. At this stage he has paid $£ 270$ altogether. After how many months did he decide to upgrade?
$\qquad$
(a)


Calculate the angle $x$ in the isosceles triangle.

Answer $\qquad$
(b) A rectangle measures 6.8 cm by 2.6 cm .

Calculate
(i) the area,

Answer $\qquad$ $\mathrm{cm}^{2}$ [2]
(ii) the perimeter of this rectangle.

Answer $\qquad$ cm [1]
Anser

4 A taxi firm operates with a number of cars and $n$ minibuses.
(a) Each minibus can hold 13 passengers. Write an expression for the maximum number of passengers that can be transported by $n$ minibuses.

Answer
(b) The taxi firm has 16 times as many cars as minibuses.

Write an expression for the number of cars the taxi firm has.

Answer
(c) Each car can hold four passengers. Write an expression for the maximum number of passengers that can be transported using cars only.

Answer

5 (a) Draw the graph of $y=2 x-3$ on the grid below.

(b) Solve $\frac{t}{3}=12$

Answer $t=$ $\qquad$ [1]

6 (a) Find the cube root of 35 correct to two significant figures.

## Answer

(b) Calculate $\frac{4.3 \times 3.9}{7.8-1.9}$ correct to one decimal place.

Answer $\qquad$

7 Penny recorded the play time of each of the tracks on her iPod. The results are shown in the table below.

| Time <br> $(\boldsymbol{t}$ seconds $)$ | $90<t \leqslant 120$ | $120<t \leqslant 150$ | $150<t \leqslant 180$ | $180<t \leqslant 210$ | $210<t \leqslant 240$ |
| :--- | :---: | :---: | :---: | :---: | :---: |
| Frequency | 22 | 35 | 18 | 10 | 6 |

(a) Show this information on a grouped frequency diagram.

(b) What is the modal class interval?

8 (a) Change $4.6 \mathrm{~m}^{2}$ into $\mathrm{cm}^{2}$.
$\qquad$ $\mathrm{cm}^{2}$ [2]
(b)


G is the point $(-2,4) . \mathrm{H}$ is the point $(8,-2)$.
Find the co-ordinates of the midpoint of GH.

Answer ( $\qquad$ , $\qquad$ ) [2] ,

9


Calculate the perimeter of a semicircle with diameter 8 cm .

> Answer
$\qquad$

10 In September, Georgina received $£ 600$ commission on sales she had made that month.
In October she received $15 \%$ less than September.
In November her commission increased by $18 \%$ and in December by $25 \%$ on the previous month.
How much commission did Georgina receive in December?
Show all your working.

Answer £
Calculate ter
$\qquad$ [3]

11 (a) What type of correlation exists between the ages of cars and their mileage travelled?

Answer $\qquad$
(b) (i) What type of correlation exists between the ages of cars and their value?

Answer $\qquad$
(ii) Sketch a scatter graph with at least six points to illustrate this correlation.

(c) Write down a variable for cars which would have no correlation to the ages of the cars.

12 The size of the angles, in degrees, of the triangle below are $2 x, 2 x+19$ and $x+16$

(a) Use the information to write down an equation in terms of $x$.

Answer
(b) Solve your equation to find the value of $x$.

$$
\begin{equation*}
\text { Answer } x= \tag{2}
\end{equation*}
$$

$\qquad$

