DIRECTORATE FOR QUALITY AND STANDARDS IN EDUCATION
Department for Curriculum Management and eLearning Educational Assessment Unit
Annual Examinations for Secondary Schools 2012

FORM 5
MATHEMATICS SCHEME B
TIME: 20 minutes
Non Calculator Paper

Name: $\qquad$ Class: $\qquad$


## INSTRUCTIONS TO CANDIDATES

- Answer all questions. There are 20 questions to answer.
- Each question carries 1 mark.
- Calculators, protractors and other mathematical instruments are not allowed.
- You are not required to show your working. However space for working is provided if you need it.


| No. | Question | Space for Working |
| :---: | :---: | :---: |
| 8 | A sum of money is divided in the ratio $2: 3: 5$. The smallest share is $€ 24$. What is the sum of money? <br> $€$ $\qquad$ |  |
| 9 | Work out the total area of the two rectangles. <br> Area $=$ $\qquad$ $\mathrm{cm}^{2}$ |  |
| 10 | A euro is approximately equal to $£ 0.80$. How much do I get for $€ 200$ ? <br> £ $\qquad$ |  |
| 11 | A car travels at an average speed of $60 \mathrm{~km} / \mathrm{h}$ for $31 / 2$ hours. How far does it travel? $\qquad$ km |  |
| 12 | Given that $f(x)=2 x-5$, work out the value of $x$ if $f(x)=8$. |  |
| 13 | Underline the point that passes through the line whose equation is $y=3 x-2$. <br> $\mathbf{A}(-2,-4) \quad \mathbf{B}(2,4) \quad \mathbf{C}(2,-4) \quad \mathbf{D}(-2,4)$ |  |
| 14 | Work out the value of $(0.4)^{2} \times 1000$. Give your answer in standard form. <br> Answer: $\qquad$ |  |


| No. | Question | Space for Workin |
| :---: | :---: | :---: |
| 15 | Divide 690 by 23. <br> Answer: $\qquad$ |  |
| 16 | Underline the number which is equal to $\frac{1}{4}$. <br> A. $4 \%$ <br> B. 0.4 <br> C. $40 \%$ <br> D. $4^{-1}$ |  |
| 17 | Underline the number of positive factors of 12 . <br> A. 4 <br> B. 5 . <br> C. 6 <br> D. 7 |  |
| 18 | The perimeter of a rectangular field is 40 m . The length is three times the width. Work out the area of the field. <br> Area $=$ $\qquad$ $\mathrm{m}^{2}$ |  |
| 19 | Work out the gradient of a line that passes through $(6,-2)$ and $(1,8)$. <br> Gradient $=$ $\qquad$ |  |
| 20 | Write $60 \%$ as a fraction in its lowest terms. <br> Answer: $\qquad$ |  |

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MAIN PAPER

| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | NC | Main | Total |
| :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- |
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Name:
Class: $\qquad$
Calculators are allowed but the necessary working must be shown. Answer all questions.

1 Pawlu bought a car in January 2009 for $€ 15600$. The price of the car decreased by $8 \%$ in 2009 and by $12 \%$ in 2010. Work out the price of the car on 31 December 2010.
Give your answer correct to the nearest euro.

2 Karmenu uses a spreadsheet to work out the simple interest.
(a) Write the formula which Karmenu types in
(i) $\quad$ cell $\mathrm{B} 4=$ $\qquad$

|  | A | B | C |
| :--- | :--- | :---: | :---: |
| $\mathbf{1}$ | Sum invested $(€)$ | 4600 |  |
| $\mathbf{2}$ | Rate $(\%)$ | 3.5 |  |
| $\mathbf{3}$ | Time (years) | 4 |  |
| $\mathbf{4}$ | Interest $(€)$ |  |  |
| $\mathbf{5}$ | Amount $(€)$ |  |  |

(ii) cell $\mathrm{B} 5=$ $\qquad$
(b) What output will Karmenu get in cell B5?
$\qquad$

3 The formula $V=\frac{\pi r^{2} h}{3}$ is used to find the volume of a cone.
(a) Work out the volume of a cone when $r=3.2 \mathrm{~cm}$ and $h=5.7 \mathrm{~cm}$. (Give your answer correct to $\mathbf{3}$ significant figures.)


Volume $=$ $\qquad$ $\mathrm{cm}^{3}$
(b) Make $r$ the subject of the formula.

$$
r=
$$

$\qquad$

4 The equation of a straight line, $\boldsymbol{L}$, is $4 x=2 y+3$.
(a) Write down the gradient and the $y$-intercept of this straight line.

$$
\begin{aligned}
& \text { gradient }= \\
& y \text {-intercept }= \\
& \hline
\end{aligned}
$$

(b) The line passes through the point $\mathbf{A}(2, b)$. Write down the value of $b$.

$$
b=
$$

$\qquad$
(c) Another straight line is parallel to $L$ and passes through the point $\mathbf{B}(0,-5)$. Write down the equation of this straight line.

Equation of line: $\qquad$
$\qquad$
$\qquad$

5 (a) Which one of these three triangles is not similar to the other two? Explain.

$\qquad$
$\qquad$
(b) The sides of a triangle have length $5 \mathrm{~cm}, 6 \mathrm{~cm}$ and 8 cm . The longest side of a similar triangle is 12 cm . Work out the length of the other two sides of this triangle.
$\qquad$ cm
$\qquad$
$6 A B$ is a chord of a circle with centre $O$. $O M$ is drawn perpendicular to $A B$.

(a) Prove that $M$ is the midpoint of $A B$.
(b) C is a point on the circumference of the circle. $\mathrm{OA}=6.2 \mathrm{~cm}$ and $\mathrm{AB}=9.6 \mathrm{~cm}$. Work out the size of $\angle \mathrm{AOB}$ and $\angle \mathrm{ACB}$ correct to $\mathbf{1}$ decimal place.
$\qquad$ $\circ$
$\angle \mathrm{ACB}=$ $\qquad$ $-$

Name: $\qquad$ Class: $\qquad$
$7 x$ and $y$ represent two numbers, $x$ being larger than $y$. Write down two equations to represent the following statements.
(a) The sum of $y$ and double $x$ is 4 .
(b) The difference between the two numbers is 5 .
(c) Hence solve the two equations.

$$
\begin{aligned}
& x=\text { _ } \\
& y=\text { (6 marks) }
\end{aligned}
$$

8 (a) The diameter of an atom is 0.00000000025 cm . Write this in standard form.
$\qquad$ cm
(b) The speed of light is $3.0 \times 10^{5}$ kilometres per second.
(i) Write this number in ordinary form.
$\qquad$ km/s
(ii) The distance of the Earth from the Sun is 148800000 km . Work out the time taken for light from the Sun to reach the earth. Give your answer correct to the nearest minute.
$\qquad$ minutes

9 (a) (i) Form and simplify an equation in $x$.
(ii) Solve this equation.

$x=$ $\qquad$
(b) One of the graphs below shows the cost of printing posters. The cost consists of a fixed charge and an additional charge for each poster printed.


Fill in with $\mathbf{A}, \mathbf{B}, \mathbf{C}$ or $\mathbf{D}$.
Graph $\qquad$ best describes the cost of printing the posters.

10 A boat, $S$, is 45 km South of a lighthouse, $L$. The boat sails to $X$, on a beari until it is due East of the lighthouse.

(a) Work out the distance SX. (Give your answer correct to $\mathbf{3}$ decimal places.)

SX = $\qquad$ km
(b) Work out the bearing of $\mathbf{S}$ from $\mathbf{X}$.
$\qquad$

11 ECF is a tangent to a circle with centre O .
$\mathrm{A}, \mathrm{B}, \mathrm{C}$ and D are points on the circumference of the circle.

(a) Explain why $\angle \mathrm{ABC}=90^{\circ}$.
(b) Work out the size of angles $p, q$ and $r$.

Give reasons for your answers.
$p=$ $\qquad$ ${ }^{\circ}$
reason: $\qquad$
$q=$ $\qquad$ $\circ$
reason: $\qquad$
$r=$ $\qquad$
reason: $\qquad$

12 Use ruler, compasses and pencil to
(a) construct a triangle ABC in which $\mathrm{AB}=8 \mathrm{~cm}, \mathrm{AC}=6 \mathrm{~cm}$ and $\mathrm{BC}=9 \mathrm{~cm}$.

## B

(b) Construct the bisector of $\angle \mathrm{ABC}$.
(c) Construct the line through A , perpendicular to BC . Mark the point X where this line meets the bisector of $\angle \mathrm{ABC}$.
(d) Measure the length CX.
$\mathrm{CX}=$ $\qquad$ cm

13 (a) A survey was carried out to find what 180 students did after they finis secondary school. These were the results.

MCAST 54
Junior College 36
Higher Secondary 45
Employment 29
Unemployed 16
(i) Draw a pie chart to show the information above.

(ii) What percentage of the students went to Higher Secondary? $\qquad$ \%
(b) The mean mass of 12 boys is 52 kg . The mean mass of 15 girls is 44 kg .
(i) Work out the total mass of the 12 boys.

Total mass $=$ $\qquad$ kg
(ii) Work out the mean mass of the 27 children. (Give your answer correct to the nearest kilogram.)
Mean mass =
$\qquad$ kg

