#### DIRECTORATE FOR QUALITY AND STANDARDS IN EDUCATION

Department for Curriculum Management and eLearning Educational Assessment Unit Annual Examinations for Secondary Schools 2011



**TIME: 30 minutes** 

#### FORM 3

## **MATHEMATICS** (Non-Calculator Paper)

Name: \_\_\_\_\_

Class: \_\_\_\_\_

1	2	3	4	5	6	7	8	9	Total

### **INSTRUCTIONS TO CANDIDATES**

- Answer ALL questions.
- This paper carries a total of 25 marks.
- Calculators and protractors are NOT ALLOWED.

1.	a) <b>Simplify</b> : i) $2x + 5 + 7(x - 1)$	ii) $\frac{x+y}{5x+5y}$
	Ans (i)	Ans (ii)
	b) Find the <b>value</b> of $3x(y + z)$ , when $x = 7$ , $y = -$	1, $z = -2$ .
		Ans:(3 marks)
2.	a) Simplify this ratio: 12:72:144	
	b) Work out the average speed of a plane that fli	Ans:
	b) work out the average speed of a plane that his	es 210 km m 90 minutes.
		Ans: (2 marks)
3.	Work out the following:	,           ,
	a) $2^4 = $ b) $\left(\frac{1}{2}\right)^0 = $	c) $3^{-2} = \$
		(3 marks)
4.	At a sale prices are reduced by 15%. Work out th	e sale price of a glass table marked €160.

Ans: \_\_\_\_\_

\_\_\_\_\_(2 marks)

5. Calculate the size of each **angle** marked by a letter.



6. a) Fill in:  $\triangle$ ABC is **enlarged** to  $\triangle$ PQR by **scale factor** \_\_\_\_\_.



b) Complete the LOGO program which draws the figure on the right.



7. Work out  $4\frac{1}{5} - 1\frac{1}{2} + 3\frac{1}{10}$  giving your answer as a mixed number in its lowest term.



# **Annual Examinations for Secondary Schools 2011**

Name: \_\_\_

2

1

3

4

5

6

7

8

#### **MATHEMATICS** (Main Paper) FORM 3

9

10 11 TIME: 1h 30min

GLOBAL

MARK

CALCULATORS ARE ALLOWED BUT ALL NECESSARY WORKING MUST BE SHOW ANSWER ALL QUESTIONS.									
) Write	5468000 in <b>standard form</b> .	Ans:							
) i) Fac	torise completely: $9ab + 6b^2$	Ans:							
ii) Exj	pand and simplify: $(2a + 1)(a - 3)$	Ans:							
) Write the	next two terms of this sequence: $3$ , e $n^{\text{th}}$ term of the above sequence.	(4							
		Ans:							
ii) Write	the $50^{\text{th}}$ term of the sequence.								
		Ans:							

Total

Main

13

12

Class: \_\_\_\_

Non

Calculator



3. Rebecca throws two ordinary dice, one yellow and the other blue. She **adds** the scores shown on the dice.

				Dice 1 (Yellow)				
			1	2	3	4	5	6
		1	2	3				
	lue)	2	3	4				
	2 (B	3						
	Dice	4						
		5						
		6						
b) Use your tab	le to	find	i)	P (8)	e than	=		
answers in their simplest form.			iii) P (square number) =					
L		1						

a) Complete the table to show all the possible outcomes.

4. O is the centre of a circle of radius 13 cm. AB is a chord 24 cm long and OC is perpendicular to the chord AB.



∠COB = \_\_\_\_°

c) Find the length of the **minor arc AB.** Give your answer correct to **3 significant figures**.

 $AB = \__cm$ \_\_\_(8 marks)

A

- 5. This sketch shows the positions of three schools A, B and C.
  - a) Make an accurate drawing of the sketch using a scale of 1 cm to 5 km.

(b) Use your **protractor** to find the **bearing** of A from C.

Bearing of A from C = \_\_\_\_\_

\_(4 marks)

6. Solve the simultaneous equations:  $\begin{aligned} 4x - y &= 10\\ 3x + 2y &= 13 \end{aligned}$ 

(4 marks)



- 7. a) i) Draw a triangle with vertices (1, 4), (1, 6) and (2, 6). Label it **A**.
  - ii) Draw the line y = x. Reflect triangle A in the line y = x. Label it **B**.
  - iii) Rotate triangle B through  $90^{\circ}$  anticlockwise, about the point (5, 5). Label it C.



b) ABCD is a quadrilateral with AB parallel to DC.Work out, giving reasons, the values of the angles marked *x*, *y* and *z*.



8. 90 people take part in a survey on how they prefer to spend their leisure time. These results are to be illustrated in a pie chart.

a) Complete the table by working out the angle of each slice of the pie chart.

Leisure Time	No. of People	Angle
Watching Live Sport	5	
Playing sport	23	
Watching TV	45	
Internet	7	
Going Out	10	

b) **Draw** and **label** the pie chart.



9. ABCDE is a regular pentagon of side 10 cm and O is the centre of the pentagon.



OJ = \_\_\_\_\_cm

(5 marks)

d) Calculate the **area** of triangle AOB. Give your answer correct to 3 significant figures.

Area =  $\__cm^2$ (8 marks) 10. Luke is saving money from his part-time work. The amounts he saves each month are shown in the spreadsheet.

	А	В
1		Amount
	Month	€
2	January	142.80
3	February	153.50
4	March	149.20
5	April	151.30
6	May	143.00
7	June	145.80
8	Average	

a) What **formula** should be written in cell B8 to find the average?

Ans: =\_\_\_\_\_

b) Work out his average of savings per month.

Ans: €\_\_\_\_\_

c) Luke puts all his savings in a bank. Interest is at 4% p.a. How much **simple interest** correct to the nearest cent, will he receive after 2 years?

Ans: €\_\_\_\_\_

25 cm

\_\_\_\_(6 marks)

h cm

11. a) A hollow cylinder has a diameter of 25 cm. Work out the height, h, if its curved surface area is  $900\pi$  cm<sup>2</sup>.



12. a) Show that  $\angle ACB$  is a right angle.



b) Work out the **angle of elevation** of B from A, giving your answer correct to the nearest degree.

Ans: \_\_\_\_\_

\_\_\_\_\_(5 marks)

13. a) Complete the table for values of  $y = x^2 - 2x - 3$ .

x	-2	-1	0	1	2	3	4
$x^2$	4		0	1	4		
-2x	4		0	-2	-4		
-3	-3		-3	-3	-3		
у	5		-3	-4	-3		

b) Use a scale of 2 cm = 1 unit on both axes to draw the graph  $y = x^2 - 2x - 3$ .

c) Write the minimum value of y and the corresponding value of x.

d) Use your graph to solve  $x^2 - 2x - 3 = 0$ .

x =\_\_\_\_, \_\_\_\_(7marks)



Page 8 of 8

Mathematics – Secondary Schools – Scheme A – Form 3 – 2011 – Main