	SECONDARY SCHOOL ANNUAL EXAMINATION Directorate for Quality and Standards in Education Educational Assessment Unit	ONS 2010
FORM 5	MATHEMATICS SCHEME B Non Calculator Paper	TIME: 20 minutes
Name:		Class:
	Mark	

# **INSTRUCTIONS TO CANDIDATES**

- Answer all questions. There are 20 questions to answer.
- Each question carries 1 mark.
- Calculators and protractors 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         1       Each exterior angle of a regular polygon is 24°. How many sides has the polygon?       Answer:         2       Write 2 300 000 in standard form. Answer:       Answer:
1       Each exterior angle of a regular polygon is 24°. How many sides has the polygon?         Answer:         2       Write 2 300 000 in standard form.         Answer:
2 Write 2 300 000 in standard form. Answer:
Allswei
3 Write down the gradient of the line. x $x$ $x$ $x$ $x$ $x$
<b>Answer: 4</b> Given that $f(x) = 2x - 8$ , write down the value of $f(3)$ .
Answer:
5 Lawrence invests € 3500 in a bank at 4% per annum. Find the <b>interest</b> that Lawrence receives from the bank after <b>one year</b> .
Answer: €
$\begin{array}{c c} 6 \\ & & \\ P \\ \hline \\ P \\ \hline \\ P \\ \hline \\ \\ P \\ \hline \\ \\ \\ \\$
Answer:
7 How many <b>hours</b> are there from 1900 hours on Monday to 0800 hours on Wednesday of the same week?
Answer: hours

		12
No.	Question	Space for Work
8	Three athletes run a marathon in: 2 hours 37 minutes, 3 hours 23 minutes and 3 hours. What is the <b>average</b> time taken by the athletes? <b>Answer:</b>	
9	$\begin{array}{c}     A \underbrace{9 \text{ cm}}_{15 \text{ cm}} C \\     B \\     B \\     Answer: cm   \end{array}$	
10	There are 150 students in a hall sitting for an examination. Each student requires 8 foolscaps. Each sealed packet of foolscaps contains 500 foolscaps. How many <b>packets</b> of foolscaps are needed? <b>Answer: packets</b>	
11	In a survey at an airport it was found that $\frac{1}{8}$ of the flights arrived early, $\frac{5}{8}$ of the flights arrived on time and the remainder arrived late. What <b>fraction</b> of the flights arrived <b>late</b> ? <b>Answer:</b>	
12	Sarah buys three different kinds of postage stamps: €0.05, €0.19, €0.26 She buys 80 of each kind. How much does she spend? Answer: €	
13	Pizza Burger 445° 110° Chips Chicken chicken nuggets?	

		Flides
No.	Question	Space for Work
14	Given that $a = \frac{3}{4}$ and $b = \frac{3}{2}$ , find the value of	SIN
	$\frac{1}{a} + \frac{1}{b}$ .	
	Answer:	
15	Given that $\tan x^{\circ} = \frac{1}{3}$ , find the <b>length of QR</b> .	
	$Q^{\square (x^{\circ})} R$ Answer: cm	
16	The graph shows the journey of a cyclist.	
	$(\widetilde{\mathbf{y}})$ 20 Write down the speed of the cyclist in <b>km/h</b> .	
	$\begin{array}{cccccccccccccccccccccccccccccccccccc$	
17	A man earns $\in$ 13400 and is allowed $\in$ 11400 free of tax. He pays a tax of <b>15% on the remainder</b> . How much <b>tax</b> does he pay?	
	Answer: €	
18	Work out $4 - \left(\frac{2}{9} + \frac{2}{3}\right)$ , giving your answer as a	
	mixed number. Answer:	
19	The <b>sum</b> of three <b>consecutive</b> numbers is $3x + 51$ . Which <b>one</b> of the following is the <b>largest</b> number?	
	A) $x + 16$ B) $x + 17$ C) $x + 18$ D) $x + 19$ Answer:	
20	Make y the subject of the formula $x = \sqrt{\frac{y}{18}}$ .	
	Answer:	

SECONDARY SCHOOL ANNUAL EXAMINATIONS 2010

Directorate for Quality and Standards in Education **Educational Assessment Unit** 

#### StudentBounty.com FORM 5 **MATHEMATICS SCHEME B Main Paper** 5 7 8 9 13 NC 1 2 3 4 6 10 11 12 Main Global

Name:

Class:

### DO NOT WRITE ABOVE THIS LINE

CALCULATORS ARE ALLOWED BUT ALL NECESSARY WORKING MUST BE SHOWN. **ANSWER ALL QUESTIONS.** 

1. (a) The price for accommodation at a hotel in Spain is  $\in$  11625, **not** including 7% VAT. Work out the total amount paid including VAT. Give your answer correct to the nearest cent.

Total amount including VAT = €\_\_\_\_\_

(b) Another hotel quotes a total price of  $\in$  14980, including 7% VAT. Work out the price of accommodation before VAT was included.

Price before VAT was included = €\_\_\_\_\_

(4 marks)



3. The figure shows a cylinder **closed at both ends and its net**.



- (a) Show that the **total surface area**, *S*, of the cylinder is:  $S = 2\pi r (r + h)$ .
- (b) Work out the **total surface area** when r = 4 cm and h = 10 cm. Give your answer correct to **three significant figures**.

Total surface area = \_\_\_\_ cm<sup>2</sup>

(c) Make *h* the subject of the formula given in (a).

IL/SS Form 5 Scheme B Mathematics Main Paper 2010



(ii) Explain why AC and BD are **perpendicular**.





The angles of elevation of the top of a building, D, from A and B are  $36^{\circ}$  and  $62^{\circ}$  respectively. BA = 10 m.

### NO marks will be awarded unless ALL working is shown.

- (a) Show that BX = 5.88 m, correct to the **nearest cm**.
- (b) (i) Explain why  $\angle ADB = 26^{\circ}$ .

(ii) Hence work out the length of BD, correct to the nearest cm.

BD = \_\_\_\_\_ m

(c) Work out the height of the building, CD, correct to the **nearest cm**.

CD = \_\_\_\_\_ m

(8 marks)

Page 4 of 10

II /SS Form 5 Scheme B Mathematics Main Paper 2010

Studente
Class:
his question. early shown.
$h$ $45^{\circ}$ R
]



- (b) Construct the perpendicular height, *h*, from P to QR.
- (c) Measure and write down the length of the perpendicular height, *h*, correct to the **nearest cm**.

*h* = \_\_\_\_\_ cm

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

8. A DVD shop has a special offer on the sale of DVD's and video games.

StudentBounty.com Any 2 DVD's + 3 video games for  $\in 42$ Any 4 DVD's + 1 video game for  $\in 39$ 

Use d to represent the cost of 1 DVD and v to represent the cost of 1 video game, in euro.

- (a) Use the information shown above to write down two equations in d and v.
- (b) Solve your equations simultaneously to find the cost of 1 DVD and 1 video game during the special offer. Show ALL your working.

1 DVD costs €\_\_\_\_\_

1 Video game costs €\_\_\_\_\_

(6 marks)

9. A small factory employs 30 workers. The table below gives the number of days off, due to illness, of the workers during one month.

Two of the workers were in hospital for most of the month.

Number of days off due to illness	0	1	2	3	4	6	18	19
Number of workers	10	7	1	2	5	3	1	1

- (a) Write down the **modal** number of days off.
- (b) Find the **median** number of days off.
- (c) Work out the **mean** number of days off.

Mean number of days off: \_\_\_\_\_ days

(d) Which average, the median or the mean, do you think describes the data better? Explain your answer.

(7 marks)

II /SS Form 5 Scheme B Mathematics Main Paper 2010

10. (a) Below is a description in words of the connection between the y-value a *x*-value when points are plotted on a grid.

StudentBounty.com "The *y*-value is found by doubling the *x*-value and then adding three". Write down an equation for this description in terms of x and y.

- (b) The table below gives x- and y- values for a set of points.
  - (i) Fill in the blanks to complete a description in words of the connection between the x- and y- values.



y =\_

"The *y*-value is found by multiplying the *x*-value by \_\_\_\_\_ then subtracting ".

- (ii) Write down an equation for the connection between the x- and y- values given in the table, in **terms of** *x* **and** *y*.
- *y* = \_\_\_\_\_ (iii) Use the x- and y- values given in the table to draw the graph of the equation. 2  $\blacktriangleright x$ (iv) A line passes through (0, 2). 0 This line is **parallel** to the line drawn. -2 Write down the equation of the line Equation of line: \_\_\_\_\_ (7 marks)

www.StudentBounty.com omework Help & Pastpar

- 11. (a) Draw the image of triangle **P** after reflection in the line y = -x. Label the image **Q**.
- StudentBounty.com (b) Describe **fully** the single transformation that maps triangle **P** to triangle **R**.
  - (c) Draw the image of triangle **P** after an **enlargement** scale factor 2 with centre (0, 0). Label the image **S**.



StudentBounty.com 12. The diagram shows a rectangle formed by using a wall for one side and a rop 24 m for the other three sides.



- (a) Show that the area, A, of the rectangle is given by  $A = 24x 2x^2$ .
- (b) The table shows values of *x* from 1 to 11 for  $A = 24x - 2x^2.$ Complete the table.

x	1	3	5	7	9	11
24 <i>x</i>	24		120			264
$-2x^{2}$	-2		-50			-242
Α	22		70			22

(c) Use the values of x and A in the table to draw the graph of  $A = 24x - 2x^2$ .



(d) On your graph mark with a  $\times$  the point which shows where the greatest area of the rectangle occurs and write down the greatest value of the area.



13. P, Q, R and S are four points on the circumference of a circle centre O.

TP and TR are tangents to the circle at P and R.

TP = TR.

Angle  $PTR = 76^{\circ}$ .



Work out the size of the following angles.

Show all your working and give reasons for your answers.

(a) ∠PRT

(b) ∠POR

(c) ∠PQR

(d) ∠PSR

(7 marks)

## **END OF PAPER**

II /SS Form 5 Scheme B Mathematics Main Paner 2010

Page 10 of 10