DIRECTORATE FOR QUALITY AND STANDARDS IN EDUCATION
Department for Curriculum Management and eLearning
Educational Assessment Unit
Annual Examinations for Secondary Schools 2013

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

Name: _____   **Class:** _____

Mark

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 Work
1	Work out. $4^2 - 2^4 =$ _____	
2	Write down the **two prime numbers** between 30 and 40. _____	
3	**Subtract** 499 from 1000. _____	
4	If the first of January is a Thursday, what day will the first of February be? _____	
5	Work out the number of **minutes** in one day. _____ minutes	
6	An aeroplane leaves Malta International Airport at quarter to nine and arrives at Gatwick airport at 11.35 (Malta time). How long does the flight take? _____ hours _____ minutes	
7	A train travels at a speed of 120 km/h. How long does it take the train to travel 480 km? _____ hours _____ minutes	
8	The mean of two numbers is 21. The range is 6. Work out the value of the **larger** number. _____	

No.	Question	Space for Working
9	Write down the **largest** possible **even** number using each of the digits 8, 3, 2 and 1 only once. _____	
10	Work out the value of $$2^3 \times \sqrt{\frac{1}{4}}$$ _____	
11	What is the value of $\sqrt{p^2 - q^2}$, given that $p = -10$ and $q = 8$? _____	
12	a and b are **two different fractions**. Write two possible values of a and b such that $a + b = 1$ $a =$ _____, $b =$ _____	
13	Work out $$60 \times 7.28 + 40 \times 7.28$$ _____	
14	The distance of the earth from the sun is 1.488×10^{11} metres. Change this distance to **kilometres**. Give your answer in **standard form**. _____km	
15	Work out the **difference** between 10% of €143 and 10% of €93. Difference = €_____	

No.	Question	Space for Working
16	Write down the next number. $\dfrac{1}{4}, \dfrac{1}{2}, \dfrac{3}{4},$ _____	
17	Write down one possible value of *x*, given that $3x^2 = 48$ $x =$ _____	
18	The sides of a rectangle are 8 cm and 6 cm long. Work out the length of a **diagonal** of the rectangle. _____ cm	
19	A pool is filled at the rate of 18 litres per minute. Write this rate in **millilitres per second**. _____ ml/s	
20	3 burgers and 7 drinks cost €13. 8 burgers and 4 drinks cost €9. What is the **total cost** of 1 burger and 1 drink? €_____	

FORM 5   **MATHEMATICS SCHEME B**   **TIME: 1h 40min**
                    MAIN PAPER

1	2	3	4	5	6	7	8	9	10	11	12	13	Main	NC	Total

Name: _____   **Class:** _____

> **Calculators are allowed but the necessary working must be shown.
> Answer all questions.**

1   Mr and Ms Borg are buying a washing machine during a sale.

   Work out the **percentage reduction**.

   SALE

   Washing Machine

   Was €400

   Now €320

   Percentage reduction = _____%

   3 marks

2   These four numbers are written in **standard form**.

   7.6×10^3 1.57×10^6 9.8×10^{-3} 4.9×10^{-2}

   (i)   Write down the **largest** number. _____

   (ii)   Write down the **smallest** number. _____

   (iii)   Write 4.9×10^{-2} as an **ordinary number**. _____

   (iv)   **Multiply** 7.6×10^3 by 1.57×10^6. Give your answer in **standard form**.

   _____

   4 marks

3   (i)   Two triangles are **congruent**. **Underline** the statement that is **true**.

        A. The areas of the two triangles are **always** equal.

        B. The areas of the two triangles are **sometimes** equal.

        C. The areas of the two triangles are **never** equal.

   (ii) In the diagram the straight lines PRT and QRS intersect at R. PQ is **parallel** and **equal** to ST. Prove that triangles PQR and TSR are congruent.
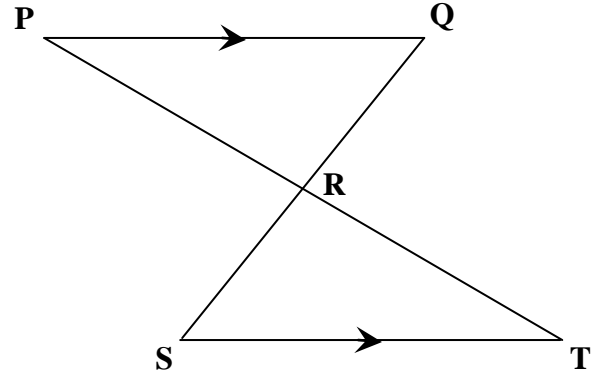
<div align="right">4 marks</div>

4   The heights of six boys are 1.53 m, 1.49 m, 1.60 m, 1.65 m, 1.90 m and 1.43 m.

   (i)   Work out the **mean** height of the six boys.

        Mean = _____ metres

   (ii) Five other boys join the six boys to form a football team. The mean of these five boys is 1.55 m. Work out the **mean** of the eleven boys.
Give your answer correct to **2 decimal places**.

        Mean = _____ metres

<div align="right">5 marks</div>

Name: _____   Class: _____

5 (i) The angles of a triangle are $x°$, $y°$ and $z°$. Write a **formula** for x in terms of y and z.

$x =$ _____

(ii) The formula

$$c = \sqrt{a^2 + b^2}$$

is used to find the length of the hypotenuse, c, in a right-angled triangle.

(a) Work out the value of c when $a = 12$ cm and $b = 35$ cm.

$c =$ _____ cm

b) Make a the subject of the formula.

$a =$ _____

5 marks

6 A surveyor is 125 metres from the foot of a building. He measures the angle of elevation of the top of the building as 15°. The sighting device is 1.8 metres above ground.
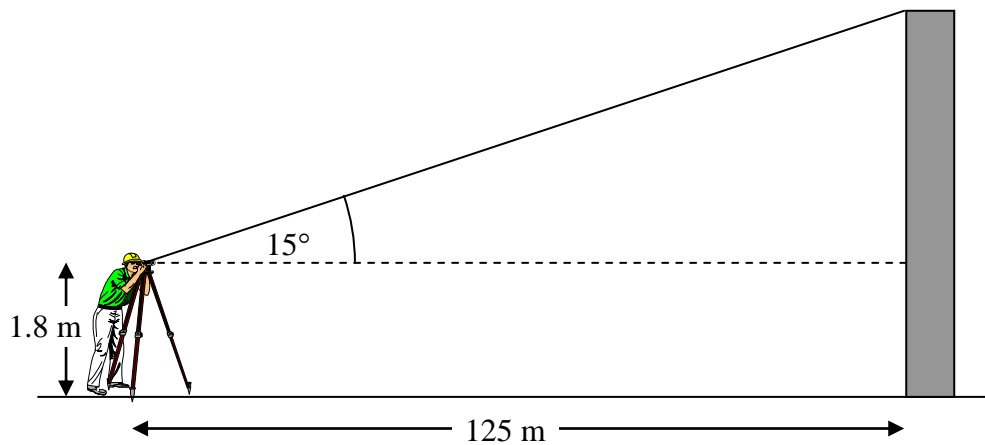
(i) Work out the **height** of the building, correct to **1 decimal place**.

height = _____ metres

(ii) The surveyor moves 30 metres closer to the building. Work out the new **angle of elevation**, correct to the **nearest degree**.

Angle of elevation = _____ °

6 marks

Name: _____   Class: _____

7 (i) Solve the simultaneous equations $\begin{aligned}3x+2y&=12\\4x-y&=5\end{aligned}$

$x =$ _____, $y =$ _____

(ii) The equations of two straight lines are $3x+2y=12$ and $y=4x-5$. Write down the coordinates of the **point of intersection** of the two lines.

(,   )

5 marks

8 In 2005, 9600 people voted in the election for Ħal Melħ Local Council. Mr Borg obtained 3456 votes, Ms Sammut obtained 39% of the votes and Ms Vella obtained a quarter of the votes.

(i) What **percentage** of the votes did Mr Borg get?

_____%

(ii) The mayor is the candidate with the highest number of votes. Who was elected mayor of Ħal Melħ and how many votes did the candidate obtain?

_____ mayor   _____ votes

8 (iii) In 2008, Mr Borg increased the number of votes by 12.5%. Work out t⟍
of **votes** obtained by Mr Borg in 2008.

_____ votes

6 marks
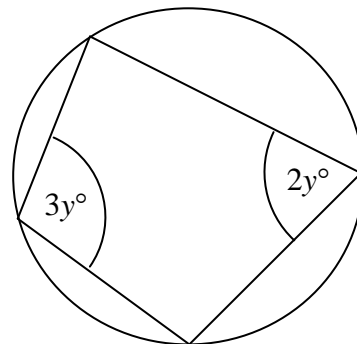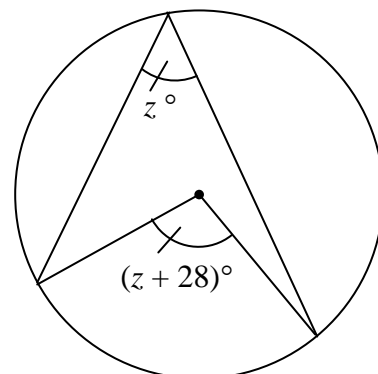
9 (i) Work out the values of *w* and *x*.
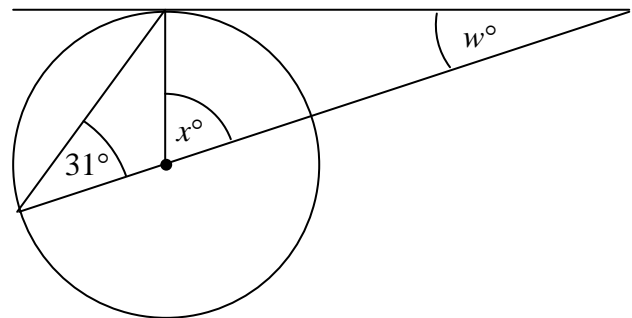
w = _____, *x* = _____

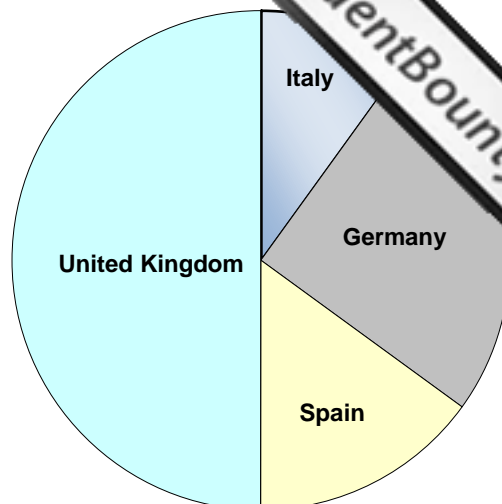(ii) Work out the value of *y*.

y = _____

(iii) Work out the value of *z*.

z = _____

8 marks

10 A firm making calculators exports its products to four countries. The **pie chart** shows the exports in 2010.

(i) What **percentage** of the calculators was exported to the United Kingdom?

_____%

(ii) What **fraction** of the calculators was exported to Germany?

_____

(iii) The firm exported 13 725 calculators to Germany. Work out the total number of calculators exported by the firm.

_____ calculators

The table below shows the exports of the firm in 2011, totalling 53800 calculators.

Country	United Kingdom	Italy	Germany	Spain
Percentage	45	10	20	25

(iv) On the grid below draw a **bar chart** to illustrate this data.
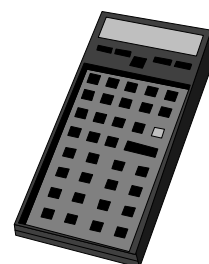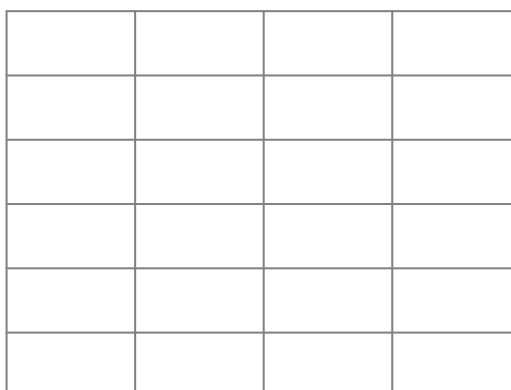
(v) Was there an increase or decrease in the exports to Spain from 2010 to 2011? Give a reason for your answer.
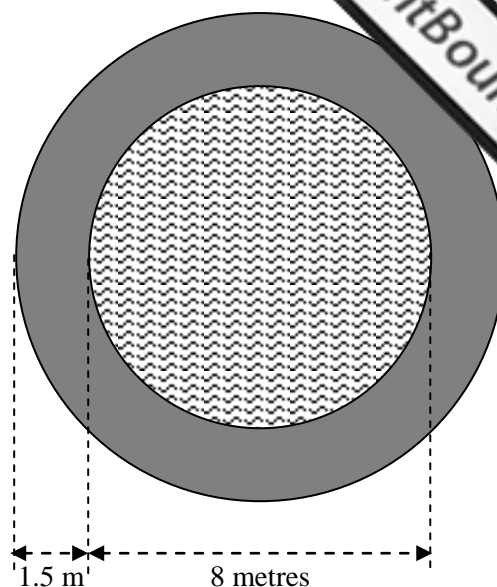
_____

8 marks

11 The diameter of a circular pond is 8 metres.
The pond is surrounded by a path of width
1.5 metres.

Work out, correct to **2 decimal places**

(i) the **area** of the pond

1.5 m   8 metres

Area of pond = _____ m^2

(ii) the **area** of the path

Area of path = _____ m^2

The path is to be surfaced with turf which is bought in bags each covering 7 m^2.

(iii) How many **bags** are required?

_____ bags

8 marks

12 State whether these statements are **TRUE** or **FALSE**. Give **reasons** for you

(i)   A triangle can have two obtuse angles.

_____

_____

_____

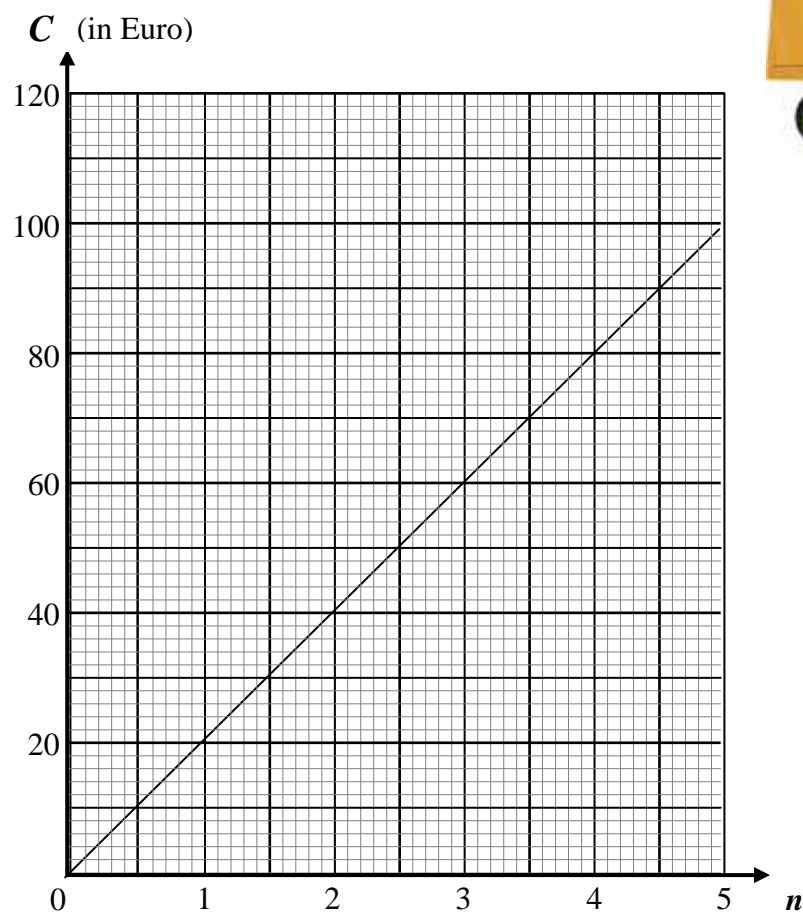(ii) If two rectangles both have an area of 24 cm^2, they must also have the same perimeter.

_____

_____

_____

(iii) A rhombus is a parallelogram.

_____

_____

_____

(iv) Cutting a parallelogram along the diagonal produces two congruent triangles.

_____

_____

_____

8 marks

13 ABC HARDWARE hires a concrete mixer. The graph below shows
the cost, *C*, charged for hiring the concrete mixer for *n* days.

(i) Work out the cost of hiring a concrete mixer for 3 days.

Cost = €_____

(ii) Write down the **equation** of the straight line.

C = _____

The cost of hiring a concrete mixer from XYZ HARDWARE is given by a fixed
charge of €20, and €10 for each day for which it is hired.

(iii) Work out the **total cost** of hiring the mixer for 5 days.

Total cost = €_____

13 (iv) Complete the table to show the cost of hiring the mixer from XYZ HARDWARE.

Number of Days, n	1	2	3	4	5
Cost, €C					

(v) On the grid (page 10) draw a graph to represent this data.

(vi) Write down the **equation** of the line passing through these points.

$C = $ _____

(vii) Karmenu wants to hire a concrete mixer for 4 days. Which hardware store gives him the best deal? Give a reason for your answer.

_____

_____

10 marks

END OF PAPER