KULLEĠĠ SAN BENEDITTU

Boys Secondary School, Kirkop

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HALF-YEARLY EXAMINATIONS – FEBRUARY 2012

FORM 3	**MATHEMATICS**	TIME: 30 mins

Non Calculator Paper

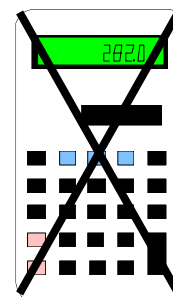| Question	1	2	3	4	5	6	7	8	9	Total
Max. Mark	3	2	4	2	5	2	2	2	3	25
Mark										

DO NOT WRITE ABOVE THIS LINE

NAME AND SURNAME: _____ CLASS:_____

<u>INSTRUCTIONS TO CANDIDATES</u>:

Read all the questions carefully before you start answering.

- Answer all questions.

- This paper carries 25 marks.

- **Calculators, protractors** and other mathematical instruments are **NOT ALLOWED.**

- On your desk you should have nothing except for **pen, pencil** and the **examination paper**.

- You are not required to show your working. However, space for working is provided if you need it.

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

Ans: _____

_____ (3 marks)

2. Work out the following:

   a) $2^5 =$ _____

   b) $\left(\dfrac{1}{4}\right)^0$ _____

_____ (2 marks)

3. **Simplify**:

   i. $4b - c + 2(b + c)$

   iii. $10ab^2 \times 4a^2b$

   ii. $\dfrac{xy}{xy + yz}$

_____ (4 marks)

4. A house is bought for €70 000 and sold at a profit of 5%. Find the selling price.

Ans: _____

_____ (2 marks)

5. Nine counters numbered **2 to 10** are put in a bag. One counter is selected at **random**. What is the **probability** of getting a counter with:

    a) A number 7   _____

    b) An even number   _____

    c) A multiple of 4   _____

    d) A prime number   _____

    e) A square number   _____

_____ (5 marks)

6. Graziella wishes to draw a **square** using LOGO. Complete the following to help her draw the square with sides 60 turtle steps long.

<div align="center">

REPEAT ___ [___ 60 RT ___]

</div>

_____ (2 marks)

7. The ratio of the amount of money in David's pocket to that of Mary's pocket is 5:2. Mary has 24c. How much has David got?
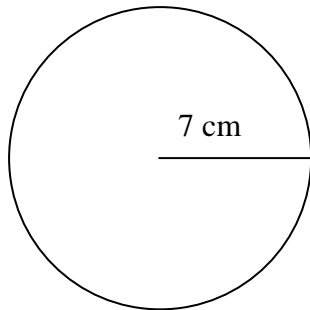
Ans: _____
_____ (2 marks)

8. Work out the **average speed** of a plane that flies 210m in 70 seconds.

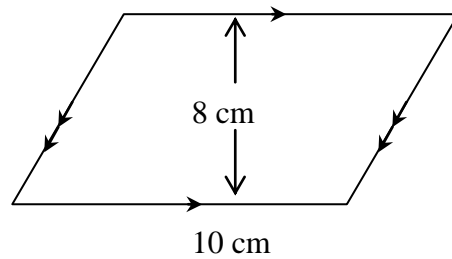**Ans**: _____

_____ (2 marks)

9. Which of the two shapes below has the **larger area**, and by how **much**?
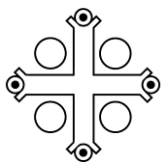   (The diagrams are **not** to scale.)

7 cm

8 cm

10 cm

Circle (Take $\pi = \frac{22}{7}$)

Parallelogram

Ans: _____

_____ (3 marks)

HALF-YEARLY EXAMINATIONS – FEBRUARY 2012

FORM 3   **MATHEMATICS** Scheme A   TIME: 1hr 30mins

Main Paper

Question	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	Main	NC	Global Mark
Max. Mark	5	5	6	6	4	7	6	2	6	5	6	3	2	3	9	75	25	100
Mark																		

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NAME AND SURNAME:_____   CLASS: _____

INSTRUCTIONS TO CANDIDATES:

Read all the questions carefully before you start answering.

- Answer all questions.
- This paper carries 75 marks.
- Calculators and mathematical instruments are allowed but all necessary working must be shown.

1.   A sequence starts 8 , 11 , 14 , 17

   a)   Write the **next 3 terms** of this sequence _____, _____, _____

   b)   Give the **nth term** of the sequence.
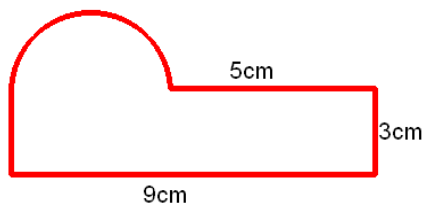
   _____

   c)   Which term has a value of 65?

   _____

   (5 marks)

2. a) A circle has a circumference of 56.5m. Find its **radius**. Give your answer
       correct to **the nearest unit**.

_____ m

   b) Find the **perimeter** of this shape. Give your answer correct to **2 decimal
       places.**

_____ cm

(5 marks)

3. **Solve** these equations:

   a) $3(2k - 5) = 195$

   b) $2(x + 1) - 3(x - 5) = 5(x + 7)$

   Ans $k =$ _____

   Ans $x =$ _____

(6 marks)

4.   a) The purchase price of a hairdryer is €13.80. If this includes
           VAT at 15%, find the price **before VAT was added**.

                                                    Ans €_____

        b) Mike is given €500 for his birthday. He puts the money in a bank with
           interest rate of 6.5% p.a. What is the **total amount** of money that he has in
           his account after 3 years?

                                                    Ans €_____

                                                    (6 marks)

5.   A fruit cake contains flour, sugar, butter and dried fruit. The ratio of the weights
        of these ingredients is 4 : 2 : 1 : 3. If the cake mixture weighs 1.76 kg, what is
        the **weight**, **in grams**, of each ingredient?

        Ans: Flour _____g Sugar _____g Butter _____g Dried fruit _____g
                                                    (4 marks)

6. **Simplify**:

   a) $(x + 9)(x - 7)$

   b) $\dfrac{(x^3 y)^2}{x^5}$

   c) $\dfrac{3x^2 + 6xy}{15x + 30y}$

   _____ (7 marks)

7. a) Work out the **sum** of the interior angles of a **pentagon**.

   Ans : _____°

   b) The four interior angles of a pentagon are 95°, 106°, 100° and 140°.
      Calculate the **fifth** angle of the pentagon.

   Ans : _____°

   c) Find the **number of sides** of a regular polygon if each exterior angle is 40°

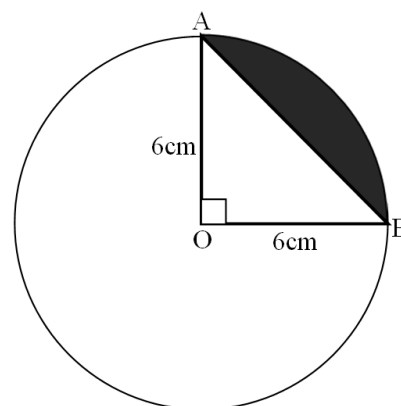   Ans : _____ sides

   _____ (6 marks)

8. a) **Underline** the point which **does not lie** on the line with equation $y = 5x + 2$?

(-2 , -8)   (3 , 17)   (4 , 25)

b) Write down the **equation** of the line that is **parallel** to the line with equation $y = 4 + \dfrac{1}{2}x$ and which **passes** through the point (0, -7).

Equation of line is _____

(2 marks)

9. The figure shows a circle centre O and radius 6cm. Angle AOB is a right angle. Giving all your answers **correct to the nearest whole**, calculate:

a)   the **area** of the **sector OAB** of the circle.

_____ cm^2

b)   the **area** of the **triangle OAB**.

_____ cm^2

c)   the **shaded area**.

_____ cm^2

(6 marks)

10. A shopkeeper buys 150 textbooks for €525.

a) What is **the cost price** of 1 textbook?

€_____

She marks the selling price for each textbook as €5.

b) What is the **percentage increase** from cost price to selling price? Give your answer correct to **2 decimal places**.

_____ %
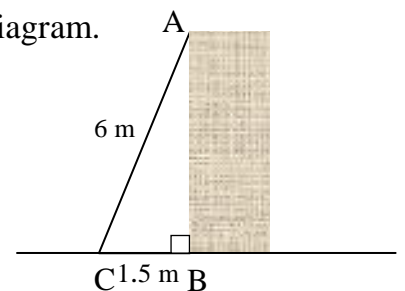
c) The shopkeeper sells all the textbooks. What **profit** does she make?

€_____

(5 marks)

11. George's ladder leans against a vertical wall as shown in the diagram.

a) Calculate how **high** up the ladder will it reach.
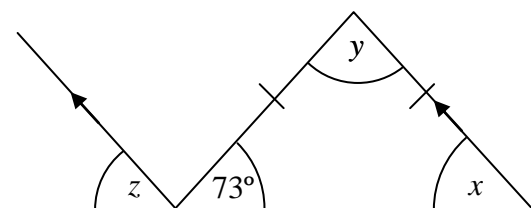Give your answer correct to the **nearest centimetre**.

_____

b) George needs to use another ladder to climb a vertical wall which is 9m high. For safety reasons, the foot of the ladder must be 1.8 m away from the wall. Calculate the **length** of the **ladder** required. Give your answer correct to the **nearest centimetre**.

_____

(6 marks)

12. Calculate the **value** of each lettered angle.

$x =$ _____

$y =$ _____

$z =$ _____

(3 marks)

13. **Factorise** completely:

   a) $18x - 12y =$ _____

   b) $10x^2 + 35x =$ _____

(2 marks)

14. In a school, there are 30 classrooms with 24 pupils each. If the classrooms are **reduced** to have **20 pupils in each**, how **many classrooms** are required?

Ans: _____

(3 marks)

15. a) **Complete** the table of value for the graph with equation $y = 1 - 2x$

x	-3	-2	-1	0	1	2	3
1	1				1		
$-2x$	6	4				-4	
$y = 1 - 2x$	7		3			-3	

b) **Plot** the graph of $y = 1 - 2x$. Use a scale of 1cm to represent 1 unit on the y- axis and 2cm to represent 1 unit on the x-axis.
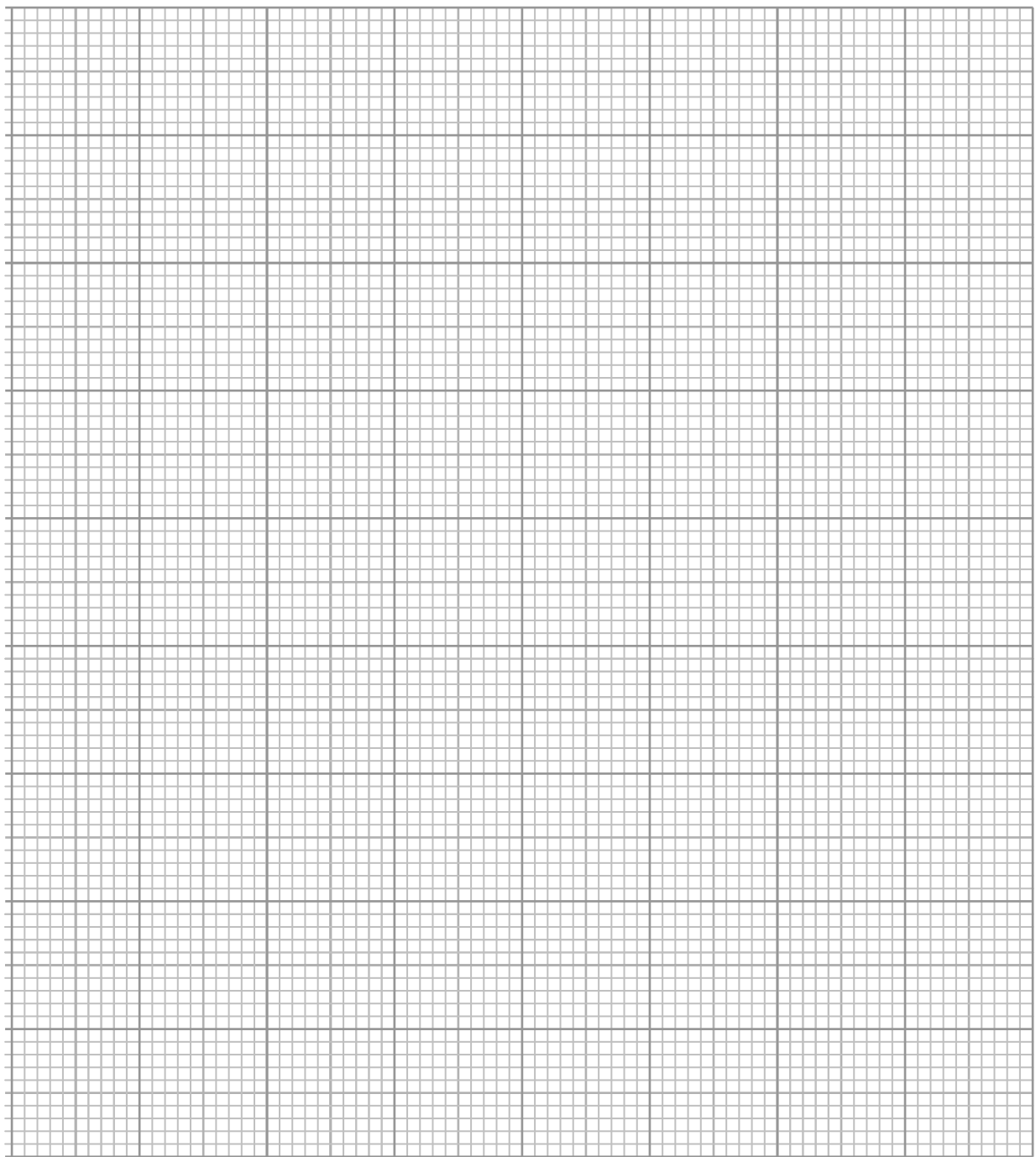
c) Use your graph to find the **value** of:

(i) x when $y = 6.5$ _____

(ii) y when $x = 1.5$ _____

d) Write down the **value** of :

(i) the gradient _____

(ii) the y-intercept. _____

(9 marks)

END OF EXAM