SECONDARY SCHOOL ANNUAL EXAMINATIONS 2010

Directorate for Quality and Standards in Education
Educational Assessment Unit

FORM 3 MATHEMATICS (Non-Calculator Paper) TIME: 30 minutes

1	2	3	4	5	6	7	8	9	10	Total

DO NOT WRITE ABOVE THIS LINE

Name: _____ **Class: _____**

INSTRUCTIONS TO CANDIDATES

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

_____

1. The cost of a shirt is €15. The price increases by 10%. Work out the new price.

Ans:_____

_____ (2 marks)

2. Work out:

a) $-1-8$ b) $\frac{-7}{-14}$

Ans:a) _____;b) _____

_____ (2 marks)

3. I think of a number, multiply it by 4 and add 5. The answer is 57. What is the **numbe**r?

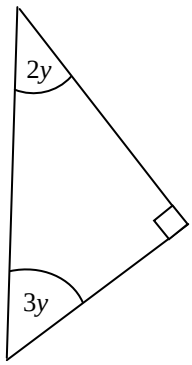
Ans: _____

_____ (2 marks)

4. a) **Solve** the equation $4x + 8 = 29 + x$.

Ans: x = _____

b) Find the **value** of y.



Ans: y = _____

_____(4 marks)

5. Tommy wants to draw a regular octagon using LOGO.
   a) Complete the following procedure that will help him to draw it:

```
TO OCTAGON
REPEAT _____  [FD  80 RT _____ ]
END
```

   b) Work out the total distance travelled by the LOGO turtle.

Ans: _____ts

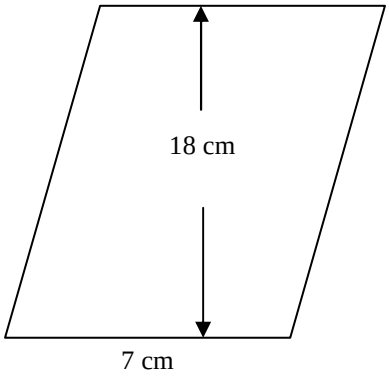
_____ (3 marks)

6. Choose the correct symbol from ($<$, $=$ and $>$) and put it in the right box below:

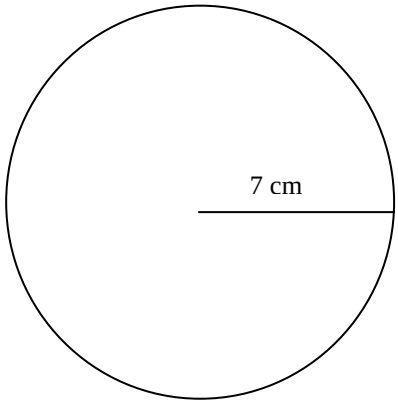
40% ☐ $\frac{2}{5}$ π ☐ 3 $\sqrt{9}$ ☐ 4

_____ (3 marks)

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



Parallelogram



Circle (**Take π = $22/7$**)

Ans: _____; _____

_____ (3 marks)

8. Each exterior angle of a regular polygon is 10º. How **many sides** does this polygon ha

Ans: _____

_____ (1 mark)

9. AB is a straight line joining the points A (1,4) and B (3,6). What is the **gradient** of line AB?

Ans: _____

_____ (2 marks)

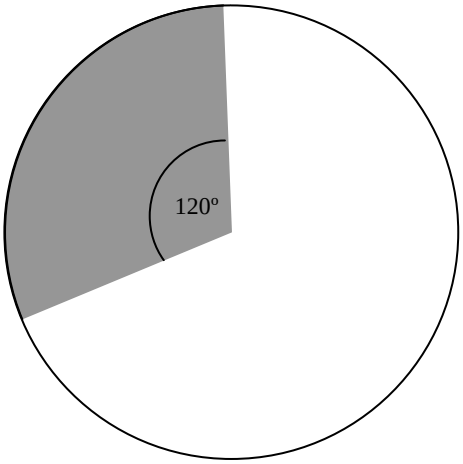
10. a) Work out : i) 4% of 150 m

Ans: _____

ii) $\frac{3}{10}$ of 850 kg

Ans: _____

b) What **fraction** of the pie chart is shaded ?
(Give the answer in the lowest terms.)



Ans: _____

_____ (3 marks)

END OF PAPER

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FORM 3 **MATHEMATICS (Main Paper)** **TIME: 1h 30min**

1	2	3	4	5	6	7	8	9	10	11	12	13	Total Main	Non Calculator	GLOBAL MARK

DO NOT WRITE ABOVE THIS LINE

Name: _____ **Class:** _____

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

1. a) The mass of an elephant is 20,000 kg. Write this number in **standard form**.

Ans: _____

b) Write 8.3×10^{-5} as an **ordinary number**.

Ans: _____

_____(2 marks)

2. a) **Factorise**: $8a - 4b + 16c$ b) **Expand**: $3(x - 5)$

Ans: _____ **Ans:** _____

c) The formula for the n^{th} term of a sequence is $4n - 3$.
Write down the first 4 terms of the sequence.

Ans: _____, _____, _____, _____

_____ (3 marks)

3. a) **Draw** a circle of radius 3 cm. Construct a regular hexagon of side 3 cm inside this

b) Use your protractor to **measure** one of the interior angles. **Ans**: _____

c) Show how you can check your answer by using the formula for the sum of the interior angles.

_____ (5 marks)

4. Gail and Thomas start a business. Gail invests €9,000 and Thomas €15,000.

a) Write the ratio €9,000 : €15,000 in its **simplest form**.

Ans: ___: ____

Each month Gail and Thomas share profits in the same ratio of their investment.

b) In May the total profit is €800. How much does **each** get?

Ans: Gail _____; Thomas_____

c) In June Gail gets €480. What is the **total** profit?

Ans: _____

_____(6 marks)

Name: _____ **Class:** _____

5. The heights, in metres, of a group of people are:

1.62, 1.75, 1.90, 1.78, 1.60, 1.65, 1.54, 1.85, 1.65, 1.76.

a) What is the **mode**?

Ans: _____

b) What is the **median** ?

Ans: _____

c) Show that the **mean** height is 1.71 m.

d) When a new member joins the group, the mean height becomes 1.7 m.
Is this new member **taller or shorter** than the mean height? **Why**?

Ans: _____
_____ (6 marks)

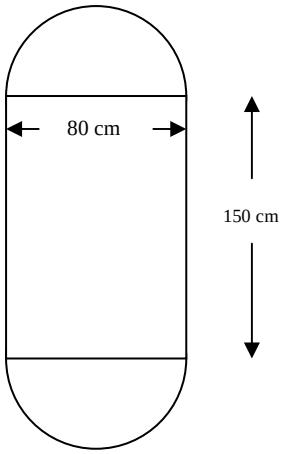
6. a) (i) The radius of Alan's bicycle wheel is 50 cm. What is the circumference of the wheel correct to 2 decimal places?

Ans: _____

(ii) How many times must Alan turn the wheel to cover a distance of 1 km ? Give your answer correct to the nearest whole number.

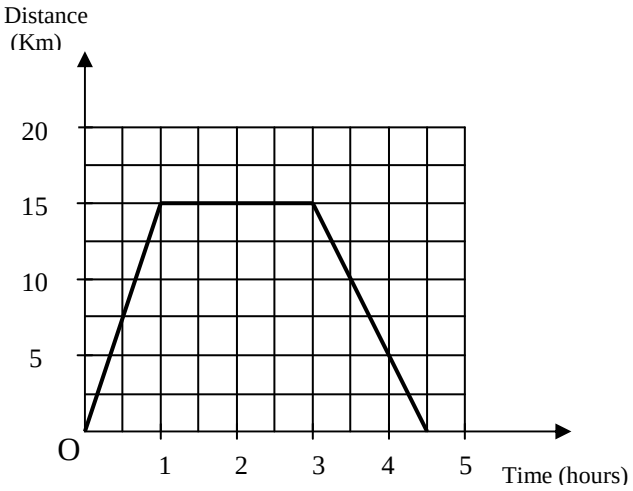
Ans: _____

b) A window is in the shape of a rectangle with a semicircle at each of the shorter ends. Calculate:
(i) the area of the rectangle.
(ii) the area of one semicircle (correct to 2 decimal places).
(iii) the total area of the window (correct to 1 decimal place).



Ans: b) (i)_____; (ii)_____; (iii)_____
_____(10 marks)

7. Claire leaves home at 12 noon. She goes for a bicycle ride. The graph shows her je



a) How far from home does Claire cycle? **Ans**:_____

b) After cycling for 1 hour she stops for a rest.
For how long does she stop? **Ans**:_____

c) At what time does she arrive back home? **Ans**:_____

d) What is the total distance cycled? **Ans**:_____

e) At what speed does she cycle back home?

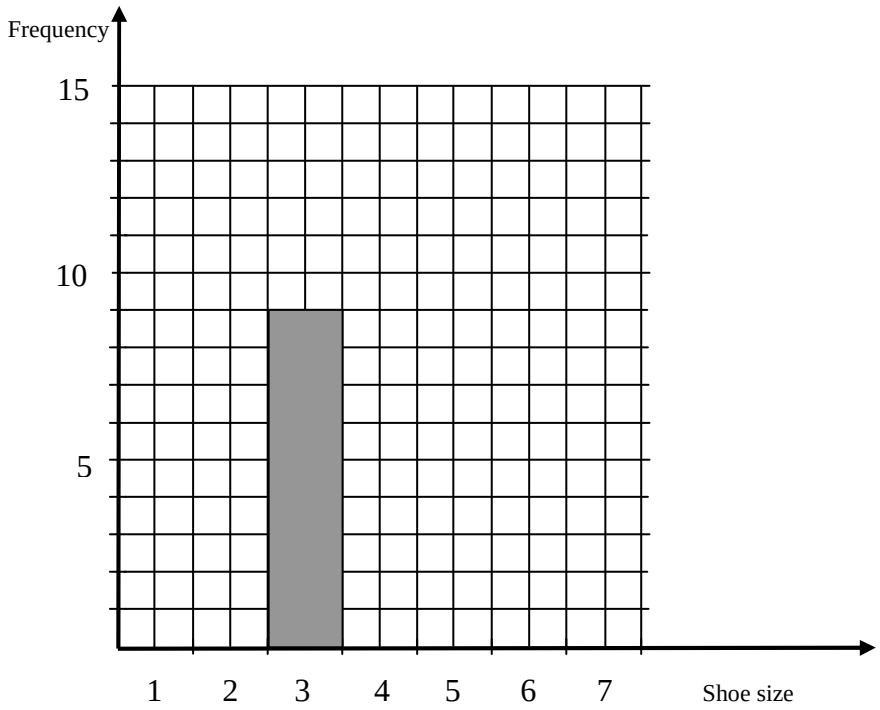
Ans: _____

_____ (6 marks)

8. The frequency table below shows the shoe sizes of a group of 50 persons.

Shoe Size	2	3	4	5	6	7
Frequency (number of persons)	3		10		13	4

This information must be shown on the bar chart below.



a) Complete the frequency table.

b) Complete the bar chart.

c) What fraction of the group has a shoe size greater than 5?

Ans: c)_____

.

_____ (6 marks)

9. The equation of a straight line is $y = 2x + 9$.

a) **Complete** this table of values.

x	0	1	2	3	4	5	6
$2x$	0	2		6		10	
+ 9	+9	+9	+9				+9
y			13		17	19	21

b) On the graph paper provided, draw the graph $y = 2x + 9$. Use a scale of 2 cm for 1 unit on the x axis and 1 cm for 1 unit on the y axis.

c) What is the **gradient** of the line? **Ans**: _____

d) What is the value of the intercept on the y axis? **Ans**: _____

_____(7 marks)

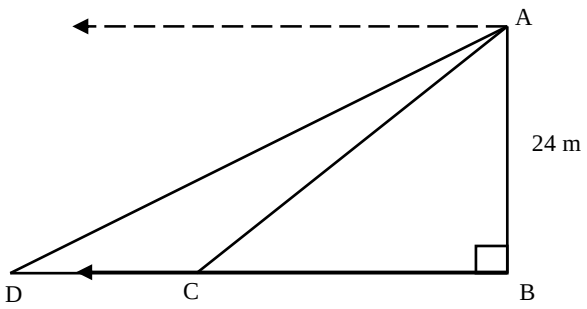
10. B, C and D are 3 points on level ground. Point A is 24 m vertically above point B. The angle of depression of C from A is 54º and that of D from A is 39º.

a) Mark **these** angles on the given diagram.

b) Use a scale of 1 cm to represent 6 m and draw, to scale, the diagram shown.

c) Measure the distance between C and D.

d) What is the actual distance between these 2 points? Give your answers to (c) and (d) correct to 1 decimal place.

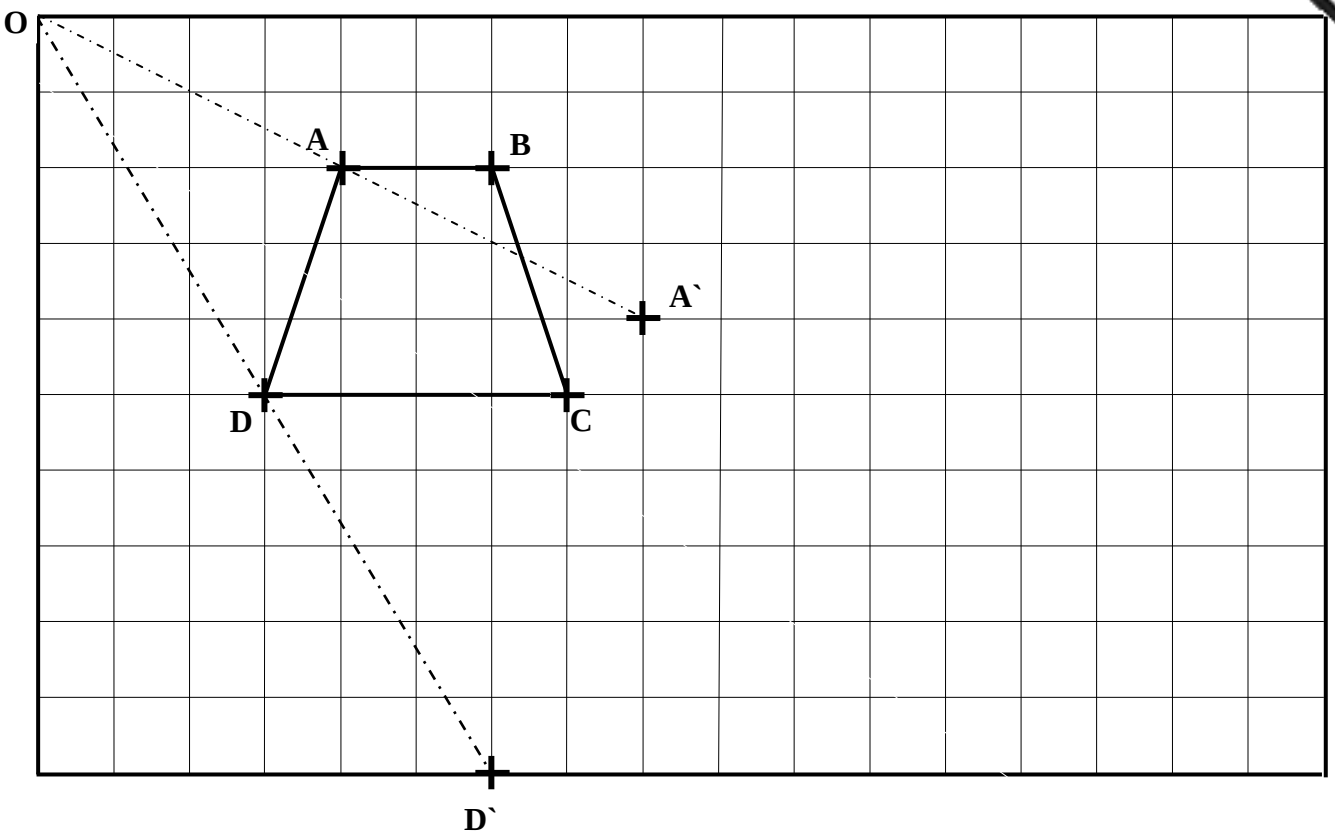


NOT TO SCALE

Ans: c) _____ d) _____

_____ (8 marks)

11. Using O as the centre of enlargement and a scale factor of 2, **complete** the enlarg
quadrilateral ABCD. The images A` of vertex A and D` of vertex D have been plot
you. Label the other vertices B` and C`.



_____ (4 marks)

12. a) Use the equation $P = 3Q - R$ to find the value of P when $Q = 4$ and $R = -1$.

.

Ans: P = _____

b) Make R the subject of the above equation.

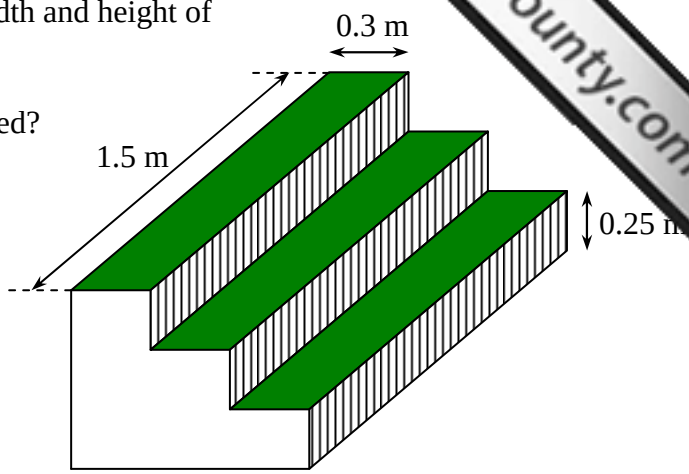
Ans: R =_____

c) Use your answer to (b) to find the value of R when $P = 5$ and $Q = -1$.

Ans: R = _____

_____ (6 marks)

13.a) The diagram shows 3 steps of a staircase. The 6 shaded surfaces are rectangles.
They are to be covered with a carpet. The width and height of each step are 0.3 m and 0.25 m respectively.
The length is 1.5 m.



i) What is the total surface area to be covered?
(Give your answer in m^2)

Ans: _____

ii) The cost of 1 m^2 of carpet is €80.
What is the total cost?

Ans: _____

b) A bag contains one 5c coin and two 10c coins. A second bag contains two 5c coins, one 10c coin and one 20c coin. One coin is taken at random from each bag. The possibility space below shows the total value of the two coins taken.

2nd bag \ 1st bag	5c	10c	10c
5c	**10c**	**15c**	
5c	**10c**		
10c	**15c**		**20c**
20c		**30c**	

(i) **Complete** this possibility space to show all the possible outcomes.

(ii) **Find** the probability that the total value of the two coins is 25c. **Ans**:_____

_____ (6 marks)

END OF PAPER