SECONDARY SCHOOL
ANNUAL EXAMINATIONS 2008
Educational Assessment Unit – Education Division

B

FORM 5 MATHEMATICS – SCHEME B (Non-Calculator Paper) TIME: 20 minutes

Name: _____ **Class:** _____

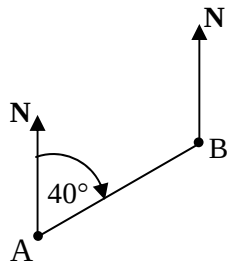
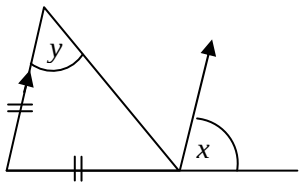
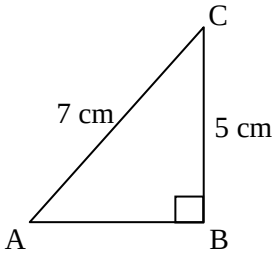
Mark

INSTRUCTIONS TO CANDIDATES

- **Answer all questions. There are 20 questions to answer.**
- **Each question carries 1 mark.**
- **Calculators, 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 Working
1	**Write down the value of $1-\frac{2}{3}\times\frac{3}{4}$.** **Answer: _____**	
2	**Write <u>thirty thousand and three</u> in figures.** **Answer: _____**	
3	**One of the angles of an <u>isosceles</u> triangle is 100°. What is the size of <u>each</u> of the other angles?** **Answer: _____**	
4	**Write down the <u>largest prime number</u> less than 40.** **Answer: _____**	
5	**A television programme starts at ten minutes to eight. It lasts twenty-five minutes. At what time does the programme finish?** **Answer: _____**	
6	The sum of **all** the **factors** of 6 is: **A**. 5 **B**. 6 **C**. 11 **D**. 12 **Answer**: _____	
7	How many **minutes** are there in a whole day? **Answer: _____**	
8	**Subtract** 25 cm from 2 metres, giving your answer in **centimetres**. **Answer**: _____cm	

No.	Question	Space for Working
9	In an examination 60% of the maximum mark is required for a pass. The maximum mark is 200. What is the **pass mark**? **Answer: _____**	
10	A committee is made up of four men and a number of women. A chairperson is selected at random. The probability that the chairperson is a man is $\frac{2}{3}$. How many women are there in the committee? **Answer: _____**	
11	A car was bought for €10 000. After two years it was sold for €7 000. What is the **percentage loss**? **Answer: _____**	
12	Which **one** of the following is **not equal** to $\frac{1}{2}ab$? **A**. $\frac{ab}{2}$ **B**. $a \times \frac{b}{2}$ **C**. $b \times \frac{a}{2}$ **D**. $\frac{1}{2a} \times b$ **Answer**: _____	
13	**Simplify**: $\frac{6x^2}{5} \times \frac{15}{12xy}$ **Answer: _____**	
14	Given that $x = pr + q$, which **one** of the following is true? **A**. $r = \frac{x-q}{p}$ **B**. $r = x - q - p$ **C**. $r = \frac{x}{p+q}$ **D**. $r = \frac{x-p}{q}$ **Answer**: _____	

No.	Question	Space for Working
15	The value of $\left(\frac{1}{3}\right)^{-2}$ is **A**. $\frac{1}{9}$ **B**. $\frac{1}{6}$ **C**. 6 **D**. 9 **Answer**: _____	
16	The straight line $y = 2x - 3$ passes through **one** of the following points. Which one? **A**. (1, 1) **B**. (2, 1) **C**. (2, –1) **D**. (1, 2) **Answer**: _____	
17	The bearing of B from A is 040°. What is the **bearing** of **A from B**?  **Answer: _____**	
18	Which **one** of the following is **true**? **A**. $x + y = 180°$ **B**. $x + y = 90°$ **C**. $x + 2y = 180°$ **D**. $x + 2y = 90°$  **Answer: _____**	
19	Given that AB = $\sqrt{x}$ cm, find the value of x.  **Answer**: x = _____	
20	Write the **missing number**: **2, 100%, 0.5,** _____	

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B

FORM 5 **MATHEMATICS – SCHEME B (Main Paper B)** **TIME: 1h 40min**

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

Name: _____ **Class:** _____

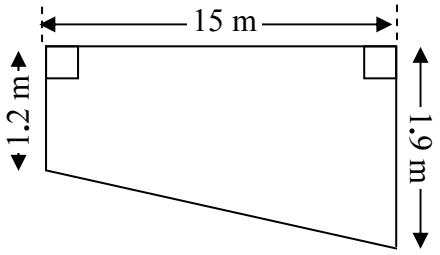
Calculators are allowed but the necessary working must be shown.
Answer all questions.

1. 675 students attend Ħal Ballut Secondary School.
56% of these students are girls.
Two-thirds of the boys passed the mathematics examination.
(i) What **percentage** of pupils attending the school are boys?
(ii) How many **boys passed** the mathematics examination?

Answer: (i) _____, (ii) _____

(3 marks)

2. The diagram shows the cross-section of a swimming pool.



(i) Work out the **area** of the cross-section.

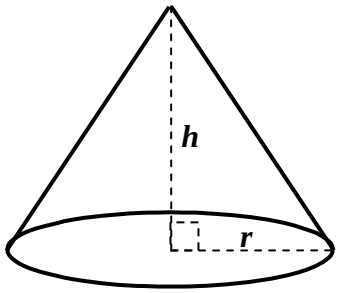
Area = _____ m^2

The length of the pool is 12 metres.
(ii) Work out the **capacity**, in litres, of the pool. (1 m^3 = 1000 litres)

Capacity = _____ litres

(4 marks)

3. The volume of a cone is given by the formula $V = \frac{\pi r^2 h}{3}$.



(i) Make *r* the **subject of the formula**.

r = _____

(ii) The volume of a cone is 124 cm^3 and its height is 6.7 cm.
Work out the value of *r*, correct to **1 decimal place**.

r = _____ cm

(4 marks)

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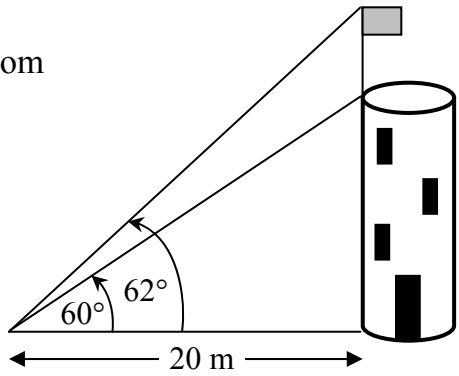
4. A man stands 20 metres away from a tower. He observes the angles of elevation of the top and bottom of a flagstaff standing on the tower as 62° and 60° respectively.
Work out, correct to **2 decimal places**:
(i) the **height of the tower**,
(ii) the **height of the flagstaff**.



Answer: (i) _____ m, (ii) _____ m

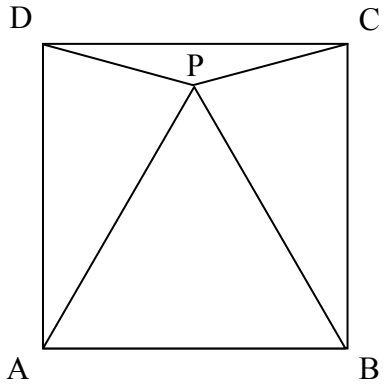
(5 marks)

Name: _____ **Class:** _____

B

5. ABCD is a **square** and ABP is an **equilateral triangle**.

(a) Prove that triangles ADP and BCP are **congruent**.



(b) Write down the size of ∠DPC.

∠DPC = _____

_____(5 marks)

6. The LOGO statement draws a **regular polygon**.

PD REPEAT 6 [FD 50 RT 60]

(i) **Fill in**:

(a) The polygon is a regular _____.

(b) The **perimeter** of this polygon is _____ turtle steps.

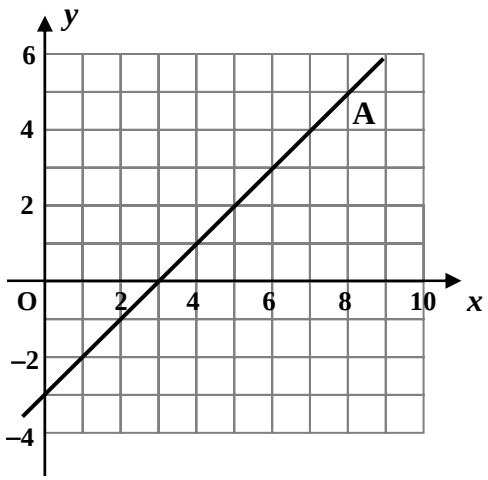
(c) The **order of rotational symmetry** of the polygon is _____.

(ii) Complete the LOGO statement that will draw a **regular octagon** having a perimeter of 480 turtle steps.

PD REPEAT _____ [FD _____ RT _____]

(5 marks)

7. (i) Work out the **gradient** of line A.



gradient = _____

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

_____

(iii) **On the same graph**, draw line B, whose equation is $x + y = 5$.

(iv) Write down the **coordinates** of the **point of intersection** of line A and line B.

_____

(v) Write down the **equation** of line C that is **parallel** to line A and passes through (0, 0).

_____

(6 marks)

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8. (a) **Factorise** the numerator and denominator and simplify: $\dfrac{3p - 6q}{5p - 10q}$

Answer: _____

(b) **Solve** the simultaneous equations: $\begin{aligned} 4a + 5b &= 4 \\ 3a + 2b &= 10 \end{aligned}$

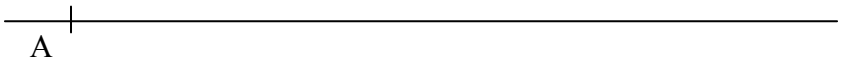
a = _____, b = _____

(7 marks)

Name: _____ **Class:** _____

B

9. (a) Using ruler, compasses and pencil only **construct**
   (i) a triangle ABC with AB = 7.2 cm, BC = 6.5 cm and AC = 5.5 cm,
   (ii) the **perpendicular bisectors** of AB and BC.



(b) Mark the **point of intersection** of the two perpendicular bisectors as P. Measure and write down the **length of AP**.

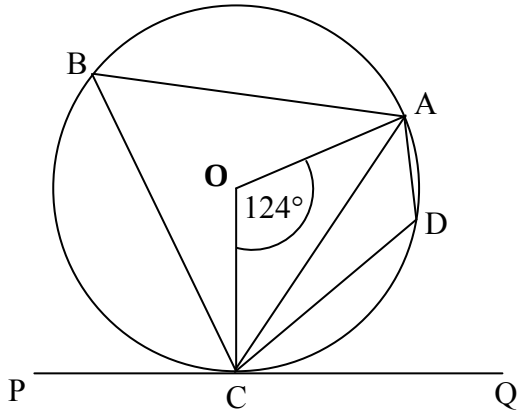
AP = _____ cm

(c) Draw a **circle** with **centre P** and **radius AP**. What do you notice about this circle?

_____

(7 marks)

10. O is the centre of a circle passing through A, B, C and D. PCQ is a **tangent** to the circle at C.



Write down the size of the following angles, **giving reasons for your answers**.

(i) ∠ABC

∠ABC = _____ reason:

_____

(ii) ∠OCA

∠OCA = _____ reason:

_____

(iii) ∠ACQ

∠ACQ = _____ reason:

_____

(iv) ∠ADC

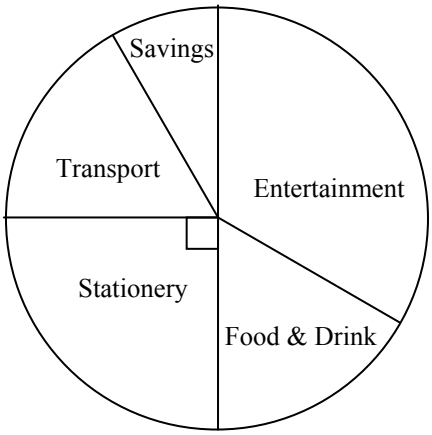
∠ADC = _____ reason:

_____

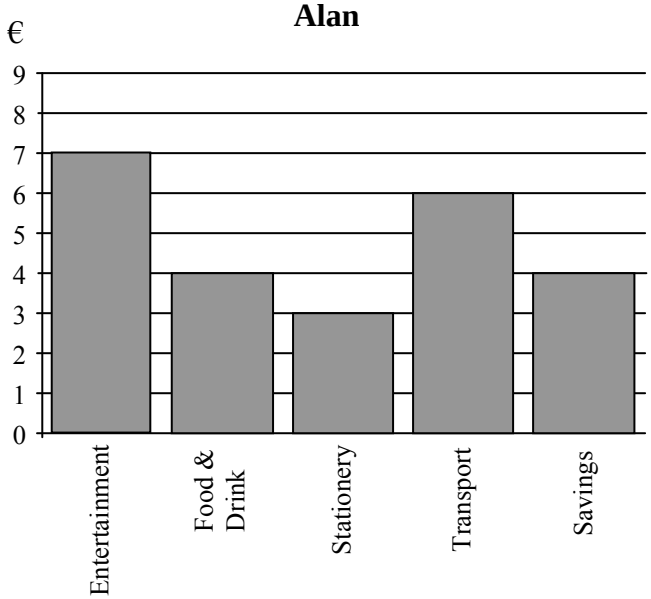
(8 marks)

11. (a) Christine and Alan **each** receive a weekly allowance of €24.
The pie chart shows how Christine spends her allowance.
The bar chart shows how Alan spends his allowance.

Christine



Alan



(i) How much does Christine spend on stationery? _____

(ii) On which item does Alan spend €6? _____

(iii) Who saves more money, Alan or Christine? Explain your answer.

_____

_____

(iv) On which item do Alan and Christine spend the **same** amount of money?
State how much they spend.

_____

(b) The data shows the birth weights, in kilograms, of 10 babies.

3.5 4.1 2.6 3.5 3.7 4.2 4.2 2.7 3.5 4.1

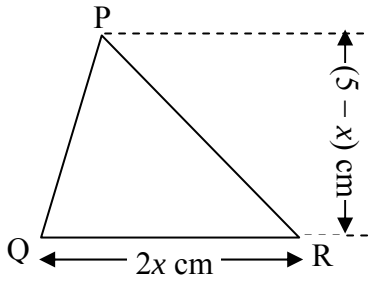
Work out the **modal** and **median** weight.

Mode = _____ kg, **Median** = _____ kg

(8 marks)

12. (a) The base of triangle PQR is $2x$ cm and the height is $(5 - x)$ cm.

(i) Show that the area, A, of the triangle is given by $A = 5x - x^2$.



(ii) Explain why x can never be equal to 0.

_____

(b) (i) Complete the table for $A = 5x - x^2$ for values of x from 0.5 to 4.5.

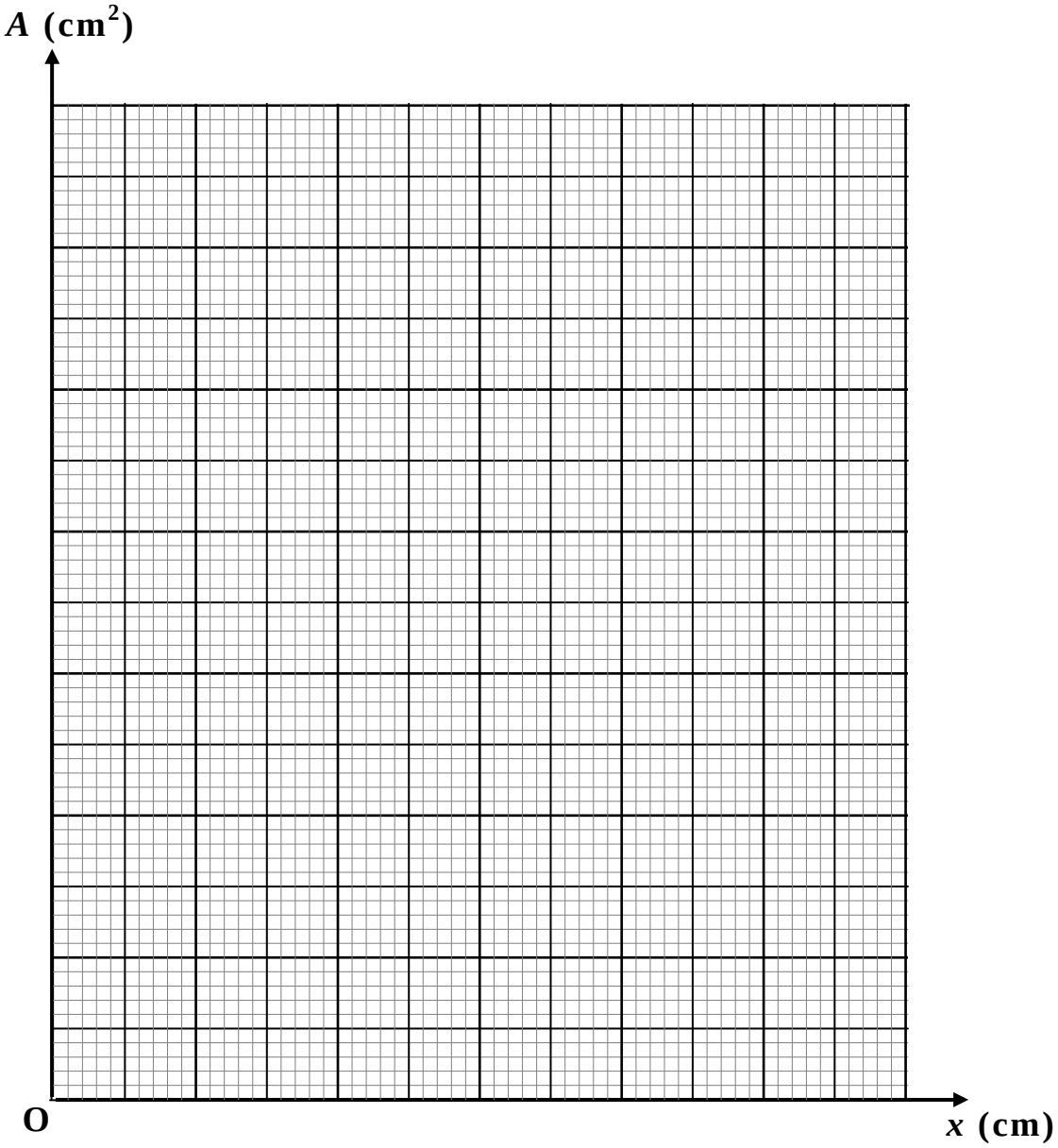
x	0.5	1	2	2.5	3	4	4.5
$5x$	2.5		10			20	
$-x^2$	–0.25		–4			–16	
A	2.25		6			4	

(ii) On the graph paper provided, draw the graph of $A = 5x - x^2$ for values of x from 0.5 to 4.5. Use 2 cm for 1 unit on both axes.

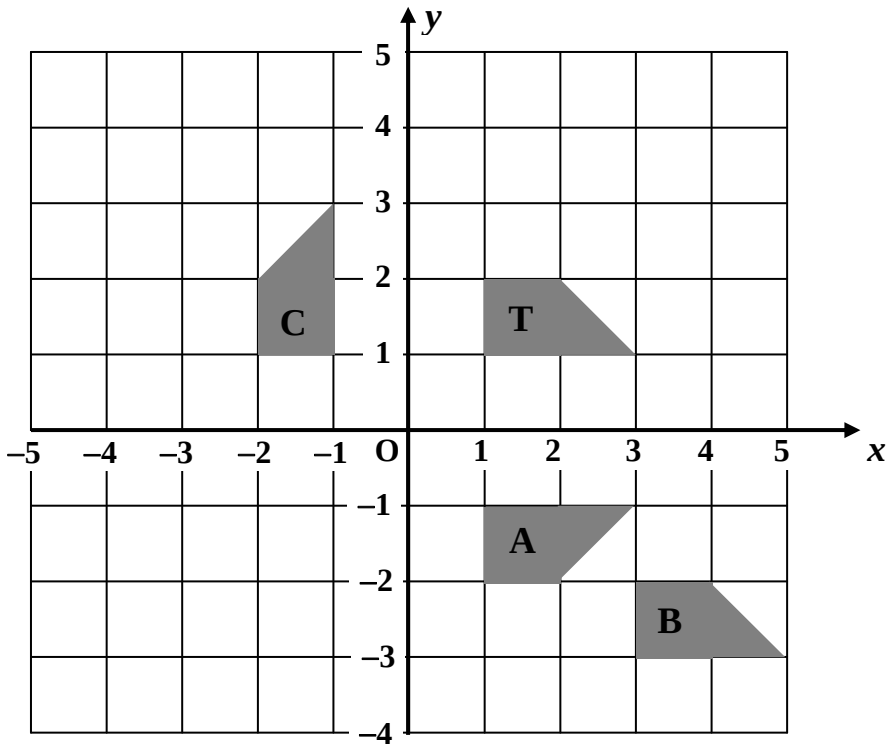
(iii) Use your graph to find the **maximum area** of triangle PQR.

Maximum area = _____ cm^2

(10 marks)


A (cm²)
O
x (cm)

13.



(a) Describe the transformation that maps shape T to shape A.

_____

(b) Describe the transformation that maps shape T to shape B.

_____

(c) Describe the transformation that maps shape T to shape C.

_____

(d) Shape T is enlarged by a scale factor of 2, through the point (5, 5). Draw the image of shape T.

(8 marks)