JUNIOR LYCEUMS ANNUAL EXAMINATIONS 2002
Educational Assessment Unit – Education Division

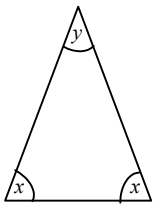
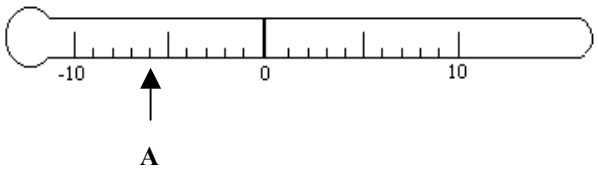
FORM 2 **MATHEMATICS (Non Calculator Paper)** **Time: 10 min**

Name: _____ **Class: _____**

Mark

- **ANSWER ALL QUESTIONS.**
- **EACH QUESTION CARRIES 1 MARK.**
- **CALCULATORS, RULERS, PROTRACTORS AND OTHER MATHEMATICAL INSTRUMENTS ARE NOT ALLOWED.**
- **WRITE DOWN YOUR ANSWER ONLY IN THE SPACE PROVIDED.**
- **THIS PAPER CONTAINS 10 QUESTIONS.**

DO NOT WRITE IN THIS SPACE

	Question	Space for Working (if required)
1	Use each of the figures 1, 5, 8 and 9 **once** to write the **largest** possible four-figure number. Ans: _____	
2	Estimate the size of the angle given.  Ans: _____	
3	Write $3^{-2} \times 3^{5}$ as a single number in **index form**. Ans: _____	
4	The crowd at a football match was 12,632. Give the attendance correct to the nearest 100. Ans: _____	
5	Complete the equation: ___$x + y = 180°$  	
6	Express 0.00341 in standard form. Ans: _____	
7	Find 15% of Lm300. Ans: _____	
8	The square root of 1.44 is: **A**: 12 **B**: 1.2 **C**: 120 Ans: _____	
9	 **A** What temperature does the arrow at **A** show? Ans: _____	
10	If $\frac{a}{4} = 3$, what is the value of a ? Ans: _____	

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FORM 2 **MATHEMATICS (MAIN)** **Time: 1 h 50 min**

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	NC	Main	Total

Name: _____ **Class:** _____

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

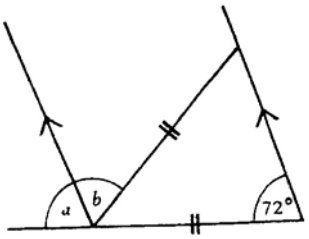
1. Work out the **range** and **median** of the following set of numbers.

   21, 16, 25, 21, 19, 32, 27.

Ans: Range = _____ Median = _____

(4 marks)

2. Work out the size of the angles marked a and b in the given diagram. Give reasons.



Ans: a = _____
b = _____

(4 marks)

3. Solve the equation $3p - 2(4 - 5p) = 5 - 3p$.

Ans: p = _____ (4 marks)

4. This question is about LOGO. Complete the following **Repeat** command so that the turtle draws a **rectangle with perimeter 400 turtle steps.**

REPEAT ____ [FD 120 RT ____ FD ____ RT ____]

(4 marks)

5. Mr. Borg weighed 110 kg when he decided to go on a diet. He lost 10% of his weight in the first month and a further 6% of his **original** weight in the second month. How much did he weigh after 2 months of dieting?

Ans: _____kg (4 marks)

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6. a) Share Lm26 amongst 3 boys in the ratio 7 : 2 : 4.

Ans: _____ _____ _____

b) A lorry travels 100 km on 20 litres of diesel. How far will this lorry travel on 55 litres of diesel?

Ans: _____ km (6 marks)

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7. a) Oranges cost 8 cents each and I buy *m* of them.
Apples cost 6 cents each and I buy *n* of them.

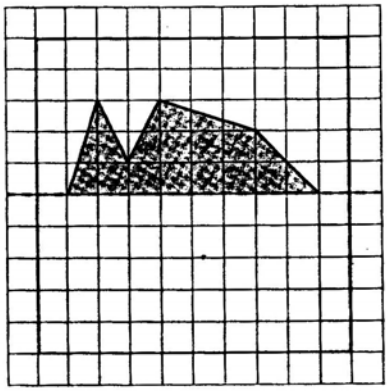
i) Write down a formula for the **total cost**, *T* cents, of the oranges and apples that I buy.

Ans: _____

ii) Use your formula to work out the total cost of 12 oranges and 15 apples.

Ans: Lm_____

b) The tile shown in the diagram has one axis of symmetry. Complete the diagram (including the shading) to show the full pattern.



(6 marks)

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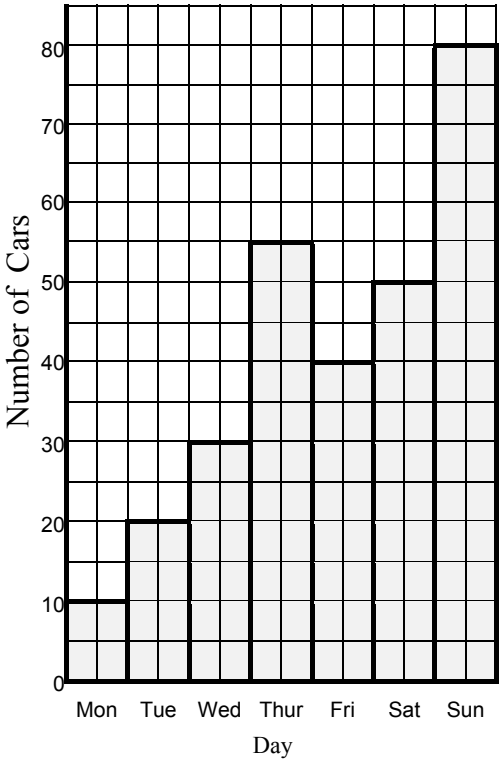
8. The bar chart shows the number of cars that used the Gozo ferry one week last February.



a) How many cars did the ferry carry on Wednesday?

Ans: _____

b) On which day of the week did the ferry carry most cars?

Ans: _____

c) What was the total number of cars carried during that week?

Ans: _____

d) What was the average number of cars carried per day during that week?

Ans: _____

(6 marks)

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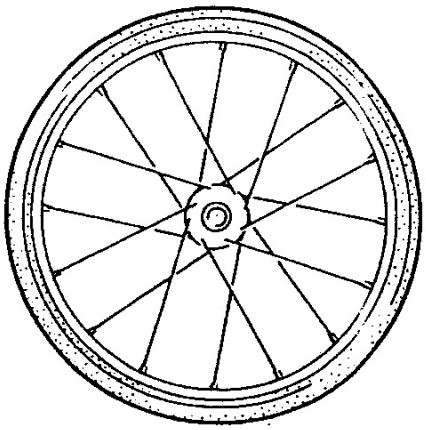
9. a) The wheel of a bicycle has a **diameter** of 42 cm.



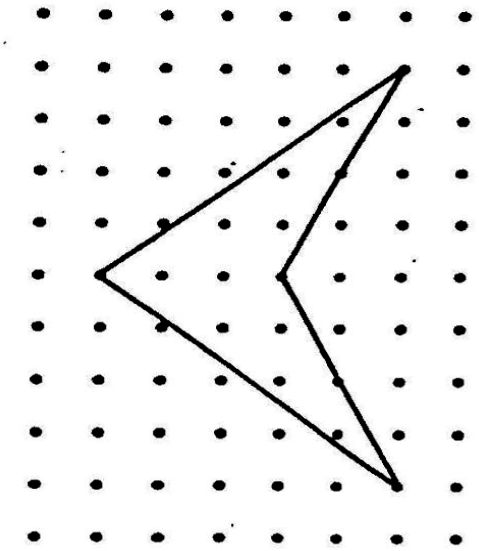
i) What is the **circumference** of this wheel correct to the **nearest centimetre**?

Ans: _____ cm

ii) How far, to the **nearest metre**, will the bicycle move forward if the wheel makes 100 complete turns?

Ans: _____ m

b) The dots are spaced 1cm apart.
Work out the area of the kite shown.



Ans: _____cm^2

(6 marks)

10. a) Ms. Said, the mathematics teacher, gave this task to the class:

Use the spreadsheet to create a Function Machine that:
DOUBLES A NUMBER AND SUBTRACTS 3

This is the spreadsheet Samuel created for the above task:

	A	B	C	D	E
1					
2		Input		Output	
3		2	→		
4					
5					

What formula must Samuel write in cell D3 Ans: _____

b) i) Samuel inputs 7 in cell B3. What is the result in cell D3?

Ans: _____

ii) If the result in cell D3 is –1 what number does Samuel input in cell B3?

Ans: _____

(6 marks)

11. i) Construct a triangle ABC in which AB = 7 cm, $\angle A = 60°$ and $\angle B = 90°$

ii) Measure the length of AC. Ans: AC = _____cm

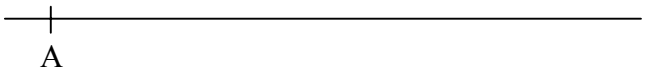
iii) Construct the perpendicular bisectors of AB and BC.

iv) These two perpendicular bisectors intersect at D. Where does D lie?

Ans: _____

v) Measure AD and DC. Ans: AD = _____cm

DC = _____cm



(8 marks)

12. Copy and complete the following table and use it to draw the graph of $y = 2x - 3$ on the graph paper provided.

x	– 3		4
y		– 3	

Use your graph to:

a) Work out the gradient of this line.

Ans: _____

b) Write down the y intercept of the line.

Ans: _____ (8 marks)

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13. One bag contains 1 white ball, 2 red balls and 1 blue ball. Another bag contains 2 white balls, 1 red ball and 1 blue ball.

a) Complete the following table.
b) i) How many outcomes are there? Ans: _____
ii) How many of these outcomes are **different**? Ans: _____

		Second bag			
		W	**W**	**R**	**B**
First bag	**W**	**(W,W)**		**(W,R)**	**(W,B)**
	R	**(R,W)**	**(R,W)**		**(R,B)**
	R	**(R,W)**			**(R,B)**
	B	**(B,W)**	**(B,W)**	**(B,R)**	**(B,B)**

c) If one ball is taken out of each bag, find the probability that:

i) they are both red, Ans: _____

ii) one is red and the other is white, Ans: _____

iii) they are both the same colour . Ans: _____

(8 marks)

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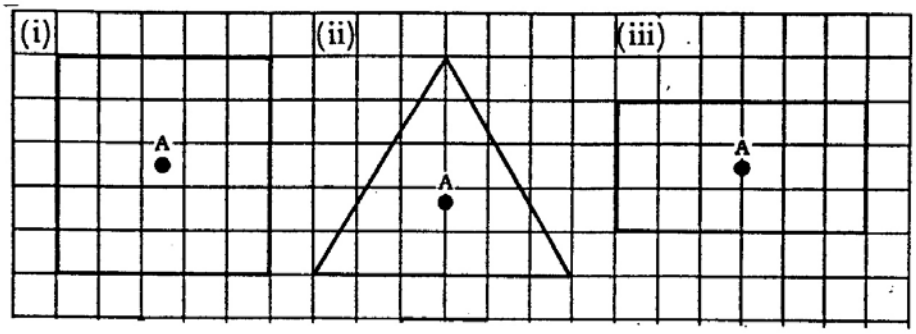
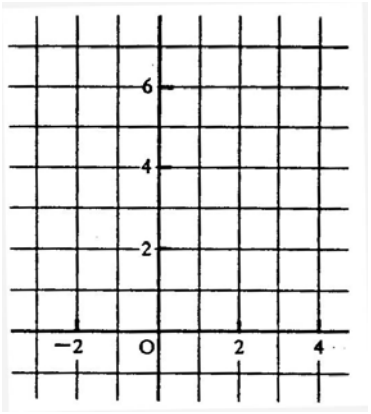
14. a) State the order of rotational symmetry about A for each of the shapes shown.



Ans: (i) _____ (ii) _____ (iii) _____

b) P is the point (2,3) Using the grid provided mark the image of P under the translation described by the vector $\begin{pmatrix} -3 \\ 2 \end{pmatrix}$.



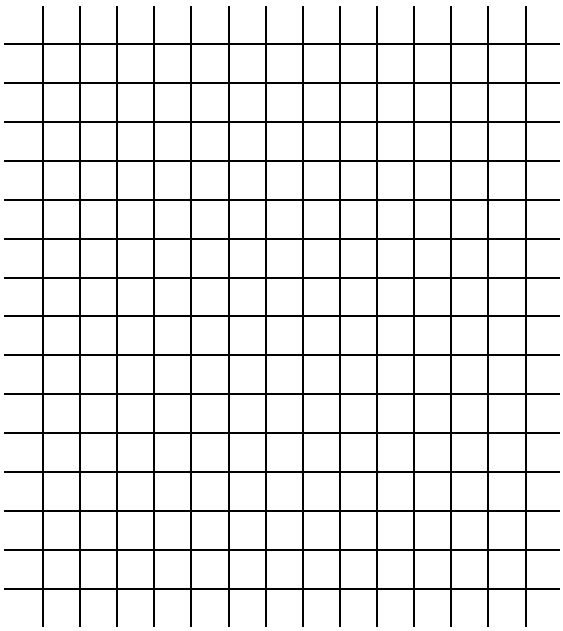
c) i) Draw triangle ABC on the grid provided:
A (– 2, 0) B (0,2) C (– 3,3).

ii) Draw also triangle PQR:
P(– 2,– 2) Q (– 3,– 5) R (0,– 4).

iii) Draw the mirror line so that triangle PQR is the reflection of triangle ABC.

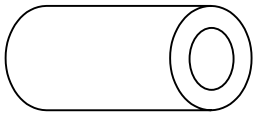
iv) Which point is the image of A?

Ans: _____



(8 marks)

15. a) A metal tube of length 50 cm has an inner radius of 3 cm and an outer radius of 5 cm. Work out the volume of metal in the tube giving your answer correct to **4 significant figures**.



Ans: _____cm^3

b) Philip, who works as a handyman, is paid Lm2.75 per hour for a basic week of 40 hours. Overtime is paid at **time and a half**. How much will he earn in a week during which he works 48 hours?

Ans: Lm_____

(8 marks)