

JUNIOR LYCEUM ANNUAL EXAMINATIONS 2007

Educational Assessment Unit - Education Division

FORM 2

MATHEMATICS
(NON-CALCULATOR PAPER)

TIME: 10 minutes

Name _____

Class _____

Mark



INSTRUCTIONS TO CANDIDATES:

- Answer all questions. There are 10 questions to answer.
- Each question carries 1 mark.
- Calculators and protractors are not allowed.
- You are not required to show your working. However space for working is provided if you need it.

QUESTION		Space for working if required
1.	Which letter of the alphabet will the LOGO turtle trace when given the following commands? PD LT 90 FD 50 RT 90 FD 100	_____
2.	Which is the next prime number after 19?	_____
3.	$\frac{78.2 \times 31.7}{98.1}$ is approximately equal to: 99 42 38 24	_____
4.	Which of the following is exactly divisible by 11? 1234 1342 4321	_____
5.	What is the mode of the following numbers? 7 10 4 9 7 8 7 9	_____
6.	If $\frac{r}{11} = \frac{11}{4}$, what is the value of r ?	_____
7.	Taking $\pi = 3$, calculate the circumference of a circle whose radius is $2\frac{1}{3}$ cm.	_____
8.	If Lm1 = £1.60 how many pounds sterling do I get for Lm400?	_____
9.	Three men take 4 days to complete a job. How many days will 6 men take to complete the same job?	_____
10.	In the equation $y = x - 7$, what is the value of y when $x = 7$?	_____

JUNIOR LYCEUM ANNUAL EXAMINATIONS 2007

Educational Assessment Unit - Education Division

FORM 2

MATHEMATICS
(MAIN PAPER)

TIME: 1h 50min

Question	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	Total Main	Non Cal	Global Mark
Mark																		

DO NOT WRITE ABOVE THIS LINE

Name _____

Class _____

CALCULATORS ARE ALLOWED

ANSWER ALL QUESTIONS.

1. a) Work out the value of: $\frac{6^5 \times 6^{-1}}{6^2}$. Give the answer in **index form**.

- b) Write down 1.763×10^2 as an **ordinary** number.

- c) Evaluate correct to 3 **decimal places**: $\sqrt{10.4} + (1.8)^2$

(4 marks)

2. a) John buys a scale model aeroplane. The distance from the nose of the aeroplane to the tail is 16.5 cm. The corresponding distance on the real aeroplane is 11.88 m. Write the **scale ratio** in the form 1 : n .

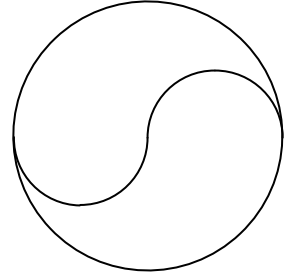
- b) Write 2007.5 correct to the **nearest 10**.

(4 marks)

3. The **average** Science mark of a group of 20 boys is 60. The **total** Science mark of 10 girls is 450. What is the **average mark** for the 30 students?

_____ (4 marks)

4. a) What is the **order** of rotational symmetry of the diagram about the centre of the circle?



- b) What number do I get when I increase 150 by 40%?

_____ (4 marks)

5. During an exercise on **Rectangles** the teacher draws the table shown using a **spreadsheet**.

	A	B	C	D	E	F
1		Length (cm)	Breadth (cm)	Perimeter (cm)	Area (cm ²)	Breadth/Length
2	Rectangle 1	18	2	40	36	0.11
3	Rectangle 2	16	4	40		
4	Rectangle 3	10	10	40		
5	Rectangle 4	8	12	40		1.5

- a) What formula does the teacher write in cell **F2**? = _____
- b) On the spreadsheet, fill in the cells **E3**, **E4**, and **E5**.
- c) Complete this statement:

All the rectangles have the **same** perimeter **but** a different **area**. The **maximum area** is cm², when Breadth/Length =

_____ (4 marks)

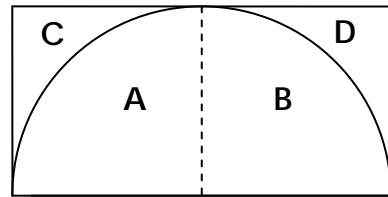
6. The diagram shows a rectangle that is 20 cm long and 10 cm wide. **A** and **B** are two **quadrants** of radius 10 cm.

- a) **Complete** the following statement:

The dotted line is a line of symmetry so that

Area **A** = Area _____

and Area _____ = Area **C**



- b) Show that the **total area** of **A + B = 157.08 cm²**.

- c) What is the area of **C**?

_____ cm²

(6 marks)

7. Jane wants to use **LOGO** to draw the **isosceles** triangle below.

- a) What is the value of x and y ?

$x =$ _____ $^{\circ}$ and $y =$ _____ $^{\circ}$

- b) Complete the following set of commands to draw the triangle:

PD RT _____

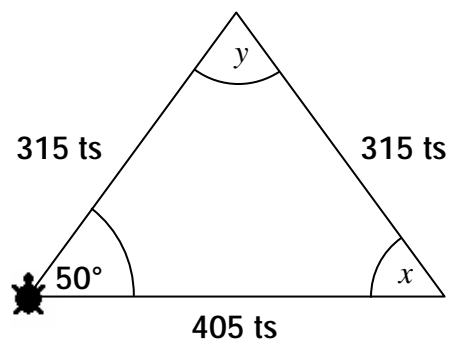
FD 315

RT 100

FD _____

RT _____

FD _____



(6 marks)

8. a) If $a = 2(b + c)$ find the value of c when $a = 10$ and $b = 2$.

$c =$ _____

b) Find x given that $\frac{3x}{5} + \frac{4}{9} = \frac{47}{45}$.

$x =$ _____

c) Make p **subject** of the formula given that $\frac{x}{y} = \frac{p}{q+r}$.

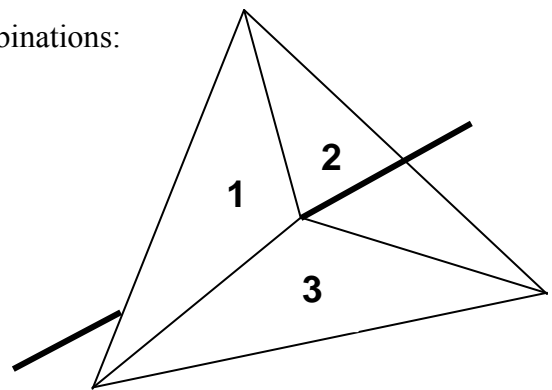
$p =$ _____

(6 marks)

9. The top shown in the diagram is spun **twice**.

a) Fill in the possibility space for **all** the possible combinations:

	1	2	3
1	(1, 1)		(3, 1)
2			
3		(2, 3)	



b) What is the probability that:

i) the **total score** will be **more** than 4?

ii) **less** than 2?

(6 marks)

10. The students of a particular class were asked how many pets they kept at home. This information is shown in the table below:

Number of pets	0	1	2	3	4	5
Number of children	2	4	5	10	3	1

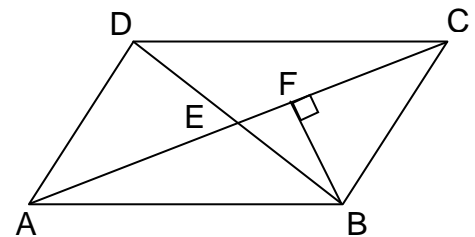
a) How **many** children were there in the class?

b) What was the **median** number of pets kept?

c) How many children had more than 3 pets?

(6 marks)

11. ABCD is a parallelogram in which $AB = 10$ cm, $BC = 8$ cm and BF is perpendicular to AC . The perimeter of $\triangle ABC$ is 32.91 cm.



a) What is the length of
i) AC ?

_____ cm

ii) AE ?

_____ cm

b) The area of $\triangle CEB$ is 18.63 cm^2 . Calculate the length of BF correct to the nearest whole number.

_____ cm

(8 marks)

12. The table refers to the graph of $y = 3x - 2$.

x	-2	-1	0		4
y	-8			1	

a) Fill in the empty spaces with the appropriate values of x or y .

b) Draw the graph of $y = 3x - 2$. Take 2 cm to represent 1 unit on the x -axis and 2 cm represent 2 units on the y -axis.

c) From your graph find:

i) the **gradient** of the line

gradient = _____

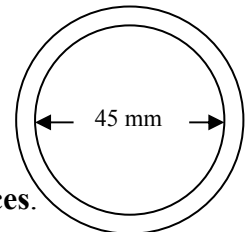
ii) the y intercept

(8 marks)

13. A plastic pipe is 1.5 m long. Its inside diameter is 45 mm, as shown in the diagram.

a) What is the **radius** of the smaller inner circle?

$r =$ _____ mm



b) Calculate the **area** of the smaller inner circle, correct to 2 **decimal places**.

area = _____ mm²

c) The **area** of the outer circle is 1810 mm². Calculate the cross sectional area of the pipe correct to 2 **decimal places**.

area = _____ mm²

d) What is the **volume** of plastic used to make the pipe? Give your answer to the nearest **whole number**.

volume = _____ mm³

(8 marks)

14. a) On the grid provided, plot the points P (10, 14) and Q (13, 16).
 b) Join PQ.

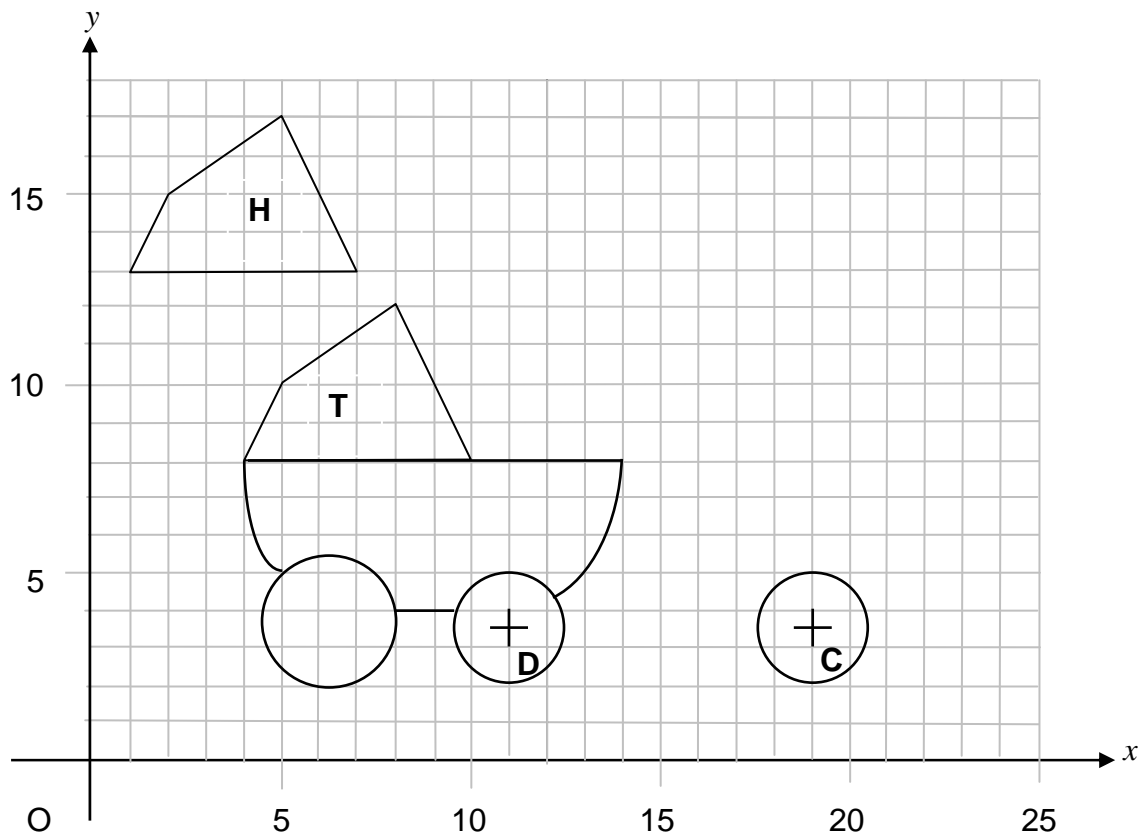
c) Translate PQ by the vector $\begin{pmatrix} 2 \\ -7 \end{pmatrix}$.

- d) In a Home Economics exercise, Josef wants to make a drawing of a baby's pram.
 What vector must he use to translate **shape H** to **shape T**?

$\left(\quad \right)$

e) Complete the following:

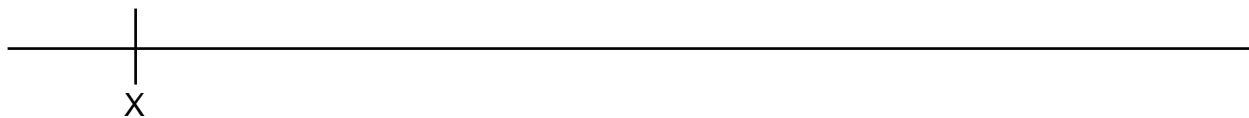
Circle C is the image of **circle D** after reflection about
 the line whose equation is _____.



(8 marks)

15. In this question, use a ruler and compasses only. All construction lines must be shown.

a) On the line drawn, mark a point Y such that $XY = 10$ cm.



b) Draw XZ such that $\angle X = 60^\circ$ and $XZ = 10$ cm. Join ZY .

c) Draw the bisector of $\angle X$ and let it cut ZY at P .

d) Measure $\angle XPY$.

$\angle XPY =$ _____

(8 marks)

END OF PAPER