JUNIOR LYCEUM ANNUAL EXAMINATIONS 2006

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 of the numbers 167, 36, 911, 861, 333 is exactly divisible by 7 ? **Ans:** _____	
2.	A square of side x cm has the same area as a rectangle of length 50 cm and breadth 2 cm. Find the value of x. **Ans:** _____	
3.	Shade in 3/8 of the big rectangle (all of the small rectangles are equal):	
4.	Divide Lm240 in the ratio 1 : 3. **Ans:** _____	
5.	Evaluate $4^2 + 2^4$. **Ans:** _____	
6.	Any straight line passing through the centre of a circle is a line of symmetry. True or False? **Ans:** _____	
7.	Evaluate $\dfrac{1}{2} - \dfrac{1}{3} + \dfrac{1}{4}$. **Ans:** _____	
8.	A cyclist covers 700 metres in 1 minute. Calculate his average speed in km/h. **Ans:** _____km/h	
9.	Simplify: $5(x - 3) + 2(3 - 2x)$. **Ans:** _____	
10.	The graph of $y = 2x - 8$ cuts the x-axis at point P. The coordinates of P are: **Ans:** (, 0)	

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																	Total	Non	**Global**
FORM 2						**MATHEMATICS (Main Paper)**										**TIME: 1 h 50 min**			
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 _____

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CALCULATORS ARE ALLOWED

</div>

ANSWER ALL QUESTIONS.

1. a) Write down 543 correct to the nearest 10.

    _____

    b) Express 123.4 in standard form.

    _____

    c) Evaluate correct to 2 decimal places : $\sqrt{6.2^2 + 5.1^2}$
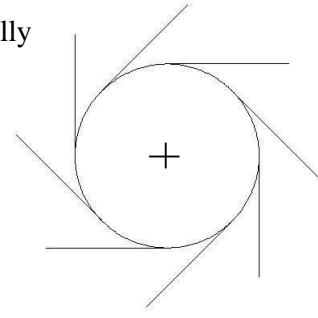
    _____

    (4 marks)

2. A Biology class consists of Alfred and his 4 friends. The average mark for the whole class was 61 and Alfred knows that his friends' marks were 45, 72, 59 and 74. What was Alfred's mark?

    _____

    (4 marks)

3. a)   The diagram represents a wheel with eight similar rays equally spaced around the circumference.

   i) Does the diagram have line symmetry? _____

   ii) What is the order of rotational symmetry of this diagram?

   _____

b) $X = \dfrac{82.57}{19.43 \times 3.89}$.

   i) Correct each number to 1 significant figure and give an estimate for the value of X.

   _____

   ii) Work out the exact value of X giving the answer correct to 3 significant figures.

   _____

(4 marks)

4. a)   On a drawing a swimming pool is represented by a circle of radius 2.5 cm. If the drawing has a scale ratio of 1 : 120, calculate the actual radius, in **metres**, of the swimming pool.

   $r =$ _____ m

b)   Mark scored 45, 64, 78, 55, and 76 in five different Mathematics tests. What was his median mark?

   _____

(4 marks)

5.   Maria measured the diameters and circumferences of three circles. The readings were entered into a spreadsheet as shown:

	A	B	C	D	E
1		Diameter (cm)	Circumference (cm)	Radius (cm)	Circumference ÷ diameter
2	Circle 1	8.5	26.7		
3	Circle 2	10.0	31.4		
4	Circle 3	12.6	39.6		

a)   What formula must Maria write in cell **D2** to find the radius of circle 1?

   = _____

b)   In cell **E2**, Maria types the formula = **C2/B2**. What number does she get? Give the answer correct to 3 significant figures.

   _____

c)   On the diagram above fill in the number in cells **E3** and **E4**. Give the answer correct to 3 significant figures.
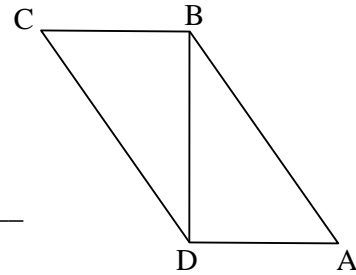
d)   What do you note about the answers in column **E**?

   _____

(4 marks)

6. ABCD is a parallelogram in which AD = 8 cm, ∠A = 53°, ∠ DBA = 37°.

a) Calculate ∠ BDA.

C   B

∠BDA = _____

D   A

b) The area of ΔDAB is 42.47 cm². Calculate the length of BD correct to three significant figures.

BD = _____ cm

c) Find the area of the parallelogram.

area = _____ cm²

(6 marks)

7. The following commands make the turtle travel along the arrow through A, B and C to point D.

The arrow has a horizontal line of symmetry through D and ∠CDE = 90°.

a) Complete these **LOGO** commands.

PD

FD 40

RT ___

FD 120

___ 90

FD 30

RT 135

FD 71

A   B   C

D

E
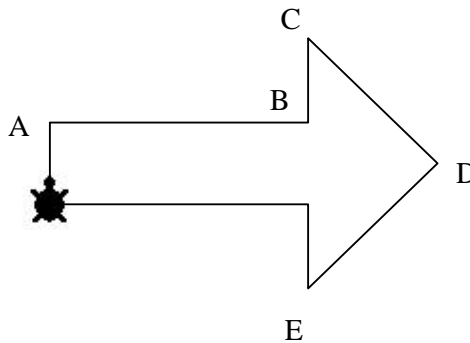
b) Write down the next two commands for the turtle to reach point E

___ ___

___ ___

c) What is the total distance travelled by the turtle to complete this diagram?

_____ turtle steps

(6 marks)

8. a) If $p = s\,(q+r)$ find the value of r when $p = 17.5$, $q = 6$ and $s = 2.5$.

$r =$ _____

b) If $\dfrac{s}{t} = \dfrac{(u+v)}{2}$, make s the subject of the formula.

$s =$ _____

c) Solve $5(x+2) = 7(x-2)$.

$x =$ _____

_____(6 marks)

9. In a car park there are 180 cars. 80 are red, 50 are white and the rest are either blue or black.
    One of the cars is selected at random.

a) Calculate the probability that the selected car will be white.

_____

b) What is the probability that the selected car will be green?

_____

c) The probability of choosing a blue car is $\dfrac{2}{9}$. How many cars are blue?

_____

d) How many cars are black?

_____

_____(6 marks)

10. During a survey on the number of children in different families, the following information was obtained:

No. of children	0	1	2	3	4
No. of families	10	30	40	15	5

a) How many families took part in the survey?

_____

b) How many families had 2 or more children?

_____

c) What was the **modal** number of children?

_____

(6 marks)

11. The table refers to the graph of $y = 2x + 3$.

x	-2	-1	0		3
y		1		5	

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

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

c) Use your graph to find the value of:
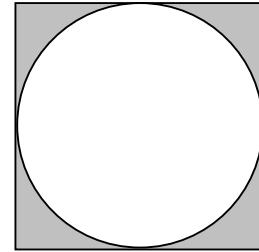(i) x when $y = 0$,

$x =$ _____

(ii) y when $x = 1.5$.

$y =$ _____

(6 marks)

12. The diagram shows a square of side 10 cm with a circle inside it.

    a) Calculate the area of the square.

                                area   = _____ cm^2

    b) What is the radius of the circle?

                                radius   = _____ cm

    c) Calculate the area of the circle giving the answer correct to 2 decimal places.

                                area   = _____ cm^2

    d) Find the area, correct to 3 significant figures, of **one** of the four shaded corners of the square.

                                area   = _____ cm^2

                                                                                    (8 marks)

13. John intends to paint the ceiling of the kitchen. The ceiling has the shape of a rectangle 4 m long and 3.5 m wide. The paint comes in cylindrical tins 10 cm in diameter, 15 cm high, but each tin is only 85% full.

    a) Calculate the total volume (in cm^3) of each tin of paint, correct to 2 decimal places.

                                volume = _____ cm^3

    b) Calculate the volume of paint (in cm^3) in each tin, correct to the nearest whole number.

                                volume = _____ cm^3

    c) What is the area of the ceiling?

                                area   = _____ m^2

    d) Each tin of paint covers an area of 5 m^2 . How many tins of paint will John have to buy ? (Give the answer correct to the nearest whole number of tins.)

                                          = _____ tins

                                                                                    (8 marks)

14. a) On the grid provided, plot the points A (– 4 , 1) ; B (6 , 1) and C (1 , 6).

b) Join A and B.

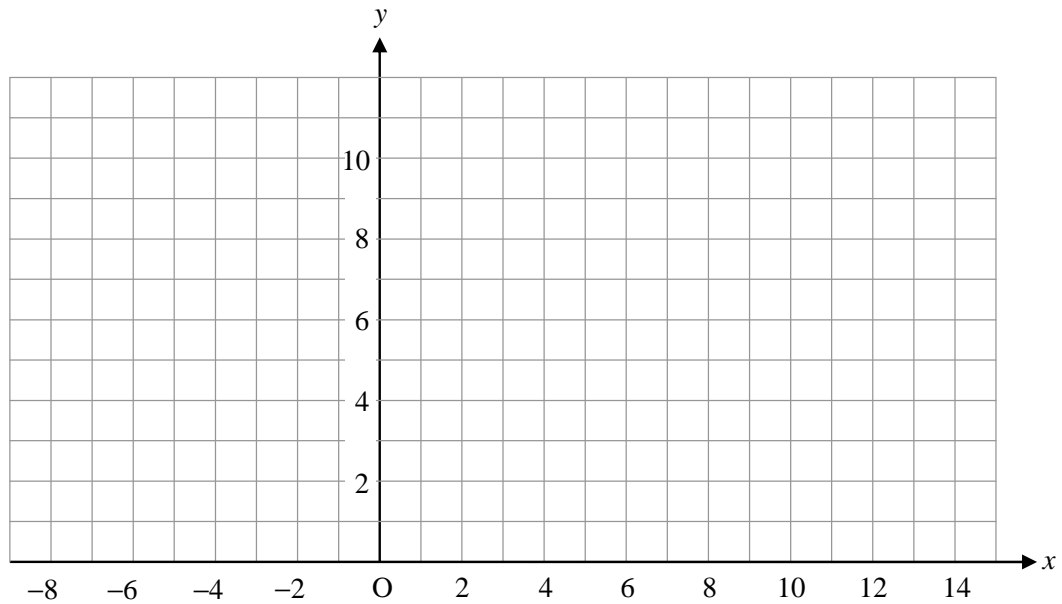c) Taking AB as the diameter, draw a semicircle which passes through point C.

d) Translate the semicircle ABC by the vector $\begin{pmatrix} 5 \\ 6 \end{pmatrix}$. Label this semicircle A'B'C'.

e) Write down the coordinates of the mid-point of A'B' .

Mid-point: (,   )

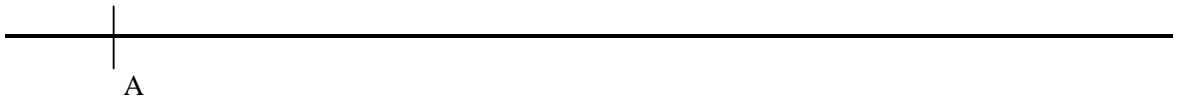f) What is the radius of the semicircle A'B'C'?

$r =$ _____ units

(8 marks)

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

a) On the line drawn, mark point B such that AB = 10 cm.

A

b) Draw ΔABC such that AC = 7 cm and BC = 8 cm.

c) Through C construct a line perpendicular to AB.

d) This perpendicular cuts AB at D. Measure AD.

AD = _____ cm

(8 marks)

END OF PAPER