Name ..... Adm No ..... Class ..... No..... Sign .....

NYABURURU GIRLS' NATIONAL SCHOOL

OUR LADY OF LOURDES

Date done	
Invigilator	
Date returned	
Date revised	

FORM 2 MATHEMATICS
MAKE UP CAT TERM 2 2016
TIME: 2½ HOURS

INSTRUCTIONS

- Write your name, stream and class number in the spaces provided at the top of this page.
- The paper contains two sections i.e. **I** and **II**.
- Answer **ALL** the questions in Section I and II.
- All answers and working must be written on the question paper in the spaces provided below each question.
- Marks may be awarded for correct workings even if the answer is wrong.
- Mathematical tables may be used where stated or otherwise BUT NOT calculators.

FOR EXAMINER'S USE ONLY.

SECTION I

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	TOTAL

SECTION II

17	18	19	20	21	TOTAL

GRAND TOTAL

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SECTION 1 (50 MARKS)

Answer all questions in this section.

1. Evaluate: (3mks)

$$\frac{-8 + (-5) \times (-8) - (-6)}{-3 + (-8) \div 2 \times 4}$$

2. Use substitution method to solve the simultaneous equations: (4mks)

$$x + 2y = 5$$
$$3x - 2y = 7$$

3. If $\tan\theta = {}^{8}/_{15}$, find the value of $\frac{\sin\theta - \cos\theta}{\cos\theta + \sin\theta}$ (3mks)

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4. Use tables to evaluate: $\sqrt[3]{\frac{38.32 \times 12.914}{86.37 \times 6.285}}$ (4mks)

5. A straight line passes through A(2,1) and (4,m) is perpendicular to the line $3y = 5 - 2x$, determine the value of m. (4mks)

6. The surface area of two similar bottles is $12cm^2$ and 108 respectively. If the larger one has a volume of $810cm^3$, find the volume of the smaller one. (3mks)

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7. The size of an interior angle of a regular polygon is 6 ½ times that of its exterior angle. Determine the number of sides of the polygon. (3mks)

8. (a) Simplify the expression: $\frac{x-1}{x} - \frac{2x+1}{3x}$ (2mks)

(b) Hence solve the equation: $\frac{x-1}{x} - \frac{2x+1}{3x} = {}^{2}/_{3}$ (3mks)

9. Convert $0.\dot{2}1\dot{3}$ to a fraction. (3mks)

10. The area of a rhombus is $60cm^2$. Given that one of its diagonals is 15cm long, calculate the perimeter of the rhombus. (3mks)

11. A manufacturer sells a bottle of juice to a trader at a profit of 40%. The trader sells it for Ksh.84 at a profit of 20%. Find:

    (i) The trader's buying prize (2mks)

    (ii) The cost of manufacturing one bottle of juice (2mks)

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12. Given that a:b = 4:5 and b:c = 6.7, find a:b:c (3mks)

13. A teacher had a certain number of books. She gave $^1/_3$ of the books to John and ¼ to Lucy. She gave $^1/_{10}$ of the remaining books to Juma. If the teacher was left with 18 books, how many books had she given to Lucy? (4mks)

14. A spherical ball is 15cm in diameter. What is its surface area? (2mks)

15. Solve $9^{4x} \div 32^{x} = 2187$ (2mks)

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16. A(2,1), B(4,1) and C(5,3) are vertices of a triangle ABC. State the coordinates of A1B1C1 under a reflection in x = 0. (3mks)

17. The sides of a triangular field are 170m, 190m and 210m. Find:

(a) The area of the field in hectares (5mks)

(b) The angles of the field (5mks)

18. A closed tool box has external length 18cm, breadth 15cm and height of 10cm. if the thickness of the material of the box is 1.5cm, calculate:

(a) The external surface area of the box. (5mks)

(b) The internal surface area of the box. (5mks)

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19. If 1 US Dollar = Ksh.103.68, express:-

(a) 8160 into Kenya shillings (1mk)

(b) Ksh.5000 into US dollars (2mks)

(c) Using suitable tables, draw the graphs of the following equations on the same axes. (7mks)

(i) $3x + 4y = 11$

(ii) $5x + y = 7$

(iii) Use the graphs in (c) above to solve the two equations simultaneously

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20. In the year 1998 the number of students in Amani Secondary School was 600. This was an increase of 25% over the number of students in the year 1997. The student's population dropped by 10% in 1999, but increased by 20% in the year 2000.

Determine; the student population:

(i) In the year 1997 (2mks)

(ii) In the year 1999 (2mks)

(iii) In the year 2000 (2mks)

(b) Express as a percentage increase in student population in the year 2000 over the population in the year 1998. (2mks)

(c) What was the percentage in student population between 1997 and 1999? (2mks)

21. A line L passes through points (-2,3) and (-1,6) and is perpendicular to a line P at (-1,6).

(a) Find the equation of L. (2mks)

(b) Find the equation of P in the form $ax + by + c = 0$, where a, b and c are integers. (2mks)

(c) Given that another line Q is parallel to P and passes through point (1,2), find the x and y intercepts at Q. (3mks)

(d) Find the point of intersection of lines P and Q. (3mks)