



**FORM 1 MATHEMATICS  
CAT 1 TERM 2 2016  
TIME: 2½ HOURS**

<i>Date done</i>	
<i>Invigilator</i>	
<i>Date returned</i>	
<i>Date revised</i>	

**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 both sections.
- 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.

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

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**SECTION 1 (50 MARKS)**

**Answer all questions in this section.**

1. Write the following in figures. (3mks)

Sixty-eight billion, four hundred and thirty-two million, two hundred and forty-one thousand, five hundred and twenty six.

2. Round off 4948 to the nearest. (3mks)

(i) Thousands

(ii) Hundreds

(iii) Tens

3. In a by-election of a civic ward, Kamau polled 3,477 votes, Onyango 9,887 votes and Korir 7,762. Calculate the difference between the votes cast for the winner and votes cast for both losers. (3mks)

4. Without using a calculator evaluate: (3mks)

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

5. Given that  $a = 4$ ,  $b = -5$  and  $c = 2$ , find the value of: (3mks)

$$\frac{a^2 + b^2 + c^2}{a + b + c}$$

6. Arrange the following decimals in an ascending order. (3mks)

0.1, -0.09, 0.46, 0.13 and 0.132

7. Simplify: (3mks)

$$\frac{4(x + 1) - 3(x - 1)}{6}$$

8. A car travels at 70m/s. How far does it travel in 2 hours 40min? (3mks)

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

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9. A farmer has 3 containers of capacity 48 litres, 36 litres and 27 litres. Find the capacity of the smallest container that can be filled by each one of them an exact number of times. (3mks)

10. A piece of wire 200cm long is bent to form a rectangular shape. One side of the rectangle is 4cm longer than the other; find the dimensions of the rectangle. Hence find its area. (4mks)

11. Express 0.004675 in standard form. (2mks)

12. Work out: (3mks)

$$\frac{3}{4} \text{ of } \left(\frac{2}{3} + \frac{1}{2}\right) \times \frac{2}{6} \text{ of } \left(1\frac{4}{5} - 1\frac{2}{3}\right)$$

13. Use square tables to find the values of: (4mks)

$$0.00639 + 107.28^2$$

14. Find the GCD of the following group of numbers. Leave your answer in power form.

$$3^2 \times 3^2, 2^5 \times 3, 2^2 \times 3 \times 5^2$$
 (3mks)

15.  $20\text{cm}^3$  of a substance density  $0.32\text{g/cm}^3$  is mixed with  $20\text{cm}^3$  of another substance of density  $0.124\text{g/cm}^3$ . Determine the mass of  $80\text{cm}^3$  of the mixture. (4mks)

16. Work out:  $0.13 - 0.6 \times 0.25 - 0.003$  (3mks)

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

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**SECTION B: (50 MARKS)**

**Answer all the questions in this section**

17. A rectangular tank measuring 5m long, 4m wide and 3.36m high is initially  $\frac{1}{4}$  full of water.

(a) Calculate:-

(i) The capacity of the tank in litres. (3mks)

(ii) The volume of water in the tank in litres. (2mks)

(b) Starting at 9.30a.m, water is pumped into the tank above at the rate of 1.4 litres per second. Find the time when the tank will be full. (5mks)

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

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18. In a mixed school there are 360 pupils. There are twice as many girls as boys. If there are  $X$  boys:

(a) How many girls are in the school? (4mks)

(b) A hotel charges sh.100 on the first day and sh.50 for each extra day. The school went on a tour and was operating from the hotel. How many days did they stay if the bill for all pupils was Ksh.108,000? (6mks)

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19. (a) Find the perimeter of a rectangle whose diagonal is 26cm and other side 10cm. (5mks)

(b) The area of a right-angled triangle is  $24\text{cm}^2$ . The base is 8cm. Find the length of its hypotenuse. (5mks)

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20. (a) Express the numbers 1470 and 7056, each as a product of its prime factors, hence evaluate  $\frac{1470^2}{\sqrt{7056}}$  leaving the answer in prime factor form. (5mks)

- (b) Work out the following, giving the answer as a mixed number in its simplest form. (5mks)

$$\frac{\frac{2}{5} \div \frac{1}{2} \text{ of } \frac{4}{9} - 1\frac{1}{10}}{\frac{1}{8} - \frac{1}{6} \times \frac{3}{8}}$$

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

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21. (a) Factorize:

(i)  $6p + 4r + 2p + 2r$

(2mks)

(ii)  $\frac{1}{3}a^2 - \frac{1}{9}ac + \frac{2}{27}a$

(2mks)

(b) Juma spent half of January salary on school fees, one-eighth on farming and two-thirds of the remainder on food. Calculate his January salary if he spent sh.3200/= on food.

(3mks)

(c) Find the length of a square whose area is  $0.0084\text{m}^2$ .

(3mks)