

MATHEMATICS FORM 1

OPENER EXAM TERM 2 2023

 NAME:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_STREAM\_\_\_\_\_\_DATE:\_\_\_\_\_\_\_\_\_\_

 **TIME: 2 ½ HOURS**

**Instructions to candidates**

1. *Write your name, admission no. and class in the spaces provided.*
2. *Sign and write the date of examination in the spaces provided above*
3. *The paper contains two sections; Section I and II.*
4. *Answer all questions in Section I and II*
5. *All answers and working must be written on the question paper in the spaces provided below each question.*
6. ***Show all the steps in your calculations, giving your answers at each stage in the spaces provided below each question***
7. *KNEC Mathematical tables may be used, except where stated otherwise*
8. *Silent or non-programmable calculators* ***SHOULD NOT*** *be used*

**FOR EXAMINER’S USE ONLY**

**SECTION I**

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | **TOTAL** |
|  |  |  |  |  |  |  |  |  |  |  |

1. (i) Evaluate without using mathematical tables or calculator. (3 marks)

$$\frac{36-8x-4-15 ÷ -3 }{3x-3+ -8 (6-\left(-2\right))}$$

(ii) Evaluate $\frac{-10-\left( -6\right)x \left(-6\right)÷ -2+(-18)}{-8+\left(-6\right)÷\left(-2\right) x 2}$ (3 marks)

(iii) Work out (4 marks)

1. - 6 x 9 + 8 – 20
2. 4 x 5 – 18 ÷ 3
3. All prime numbers less than ten are arranged in descending order to form a number.
4. Write down the number formed. ( 1 mark)
5. State the total value of the second digit in the number formed in (a) above. ( 1 mark)
6. Write in figures and give the place value and total value of the third digit in the number; three million, seventy nine thousand, seven hundred and fifty nine. (3 marks)
7. In a certain meeting, there were 95men in attendance. There were 50 more women than men and twice as many children as men.
8. Determine the number of people in attendance. (3 marks)
9. Find the percentage of children in attendance, correct to 3 significant figures. (2 marks)
10. (a) Three bells ring at regular interval of 9 min, 15 min and 21 min. The bells ring at 5.45 p.m. By 10.00 a.m next day, how many times will they have rung together? ( 3 marks)
11. Three automatic electric bells A B and C ring at intervals of 20 minutes, 30 minutes and 50 minutes respectively. If the bells ring together at 8.20 am, at what time will they ring simultaneously again for the first time? (3 marks)
12. A number k is such that when it is divided by 27, 30 or 45, the remainder is always 7. Find the smallest possible value of k. (4 marks)
13. (a) A farmer has a piece of land measuring 840m by 396m. He divides it into square plots of equal size. Find the maximum area of one plot. (3 marks)

 (b) Find the greatest number which when used to divide 126, 181, and 236, the remainder is always 5. (4 marks)

 (c) What is the greatest mass that can be taken in an exact number of times from 144g, 216g and 126g. (3 marks)

1. (a) Convert 2.$\dot{4}\dot{5}$ into a fraction in its simplest form. (3 marks)

(b) Convert 1.4$\dot{2}\dot{3}$ into an improper fraction. (4 marks)

(c) The total mass of 2 sheep and 12 goats is 241.64kg. The mass of each sheep is 69.4kg. Find the average mass of each goat to the nearest kg. (3 marks)

1. (i) Evaluate: $\frac{\frac{5}{6}of\left(4\frac{1}{3}-3\frac{5}{6}\right)}{\frac{5}{12}×\frac{3}{25}+1\frac{5}{9}÷2\frac{1}{3}}$ **(**4marks**)**

(ii) Evaluate $^{1}/\_{3}$ of $\left(2^{3}/\_{4}- 5^{1}/\_{2}\right)$ x 3$^{6}/\_{7}$ $÷ ^{9}/\_{4}$ (3 marks)

(iii) Two boys and a girl shared some money. The elder boy got $\frac{4}{9}$ of it, the younger boy got $\frac{2}{5}$ of the remainder and the girl got the rest. Find the percentage share of the younger boy to the girl’s share. (3 marks)

1. (a) Show that 8260439 is exactly divisible by 11, using test of divisibility. (3 marks)

(b) With reasons state whether the following numbers are divisible by 6. (4 marks)

 (i) 522

 (ii) 1023

 (c) Show whether 4012 is divisible by 8. (3 marks)

1. (a) A mother is three and a half times as old as her daughter now. Five years ago, the sum of their ages was equal to the mother’s age four years from now. Taking the daughter’s present age as d years, find the mother’s actual age in 15 years. (4 marks)

(b) Annette has some money in two denominations only. Fifty shillings notes and twenty shilling coins. She has three times as many fifty shilling notes as twenty shilling coins. If altogether she has sh. 3,400, find the number of fifty shilling notes and 20 shilling coin. (3 marks)

(c) The mean of five numbers is 20. The mean of the first three numbers is 16. The fifth number is greater than the fourth by 8. Find the fifth number. (3 marks)

1. Write the following numbers in terms of their prime factors (10 marks)
2. 20
3. 128
4. 216
5. 2025
6. 2401
7. (i) Evaluate using squares and square root tables: (0.072)2 + $\sqrt{4451}$ (4 marks)

(ii) Use factor method to find √784 (3 marks)

1. The surface area of a sphere of radius r is given by the formula A=4пr2. What is the radius of a sphere whose surface area is 200cm2? (3 marks)