Name: …… Class: …… Adm.No. ……

School: …… Date: ……

Sign: ……..

121
MATHEMATICS
Time: 2½ Hours

GIDEONS ELITE BOYS CENTRE OF EXCELLENCE
DECEMBER SELF-ASSESSMENT EXAMINATIONS
FORM ONE
Mathematics
TIME: 2½ HOURS

Instructions

- *Write your name, class and admission number in spaces provided above.*
- *The paper contains **two** sections **A** and **B**.*
- *Answer **ALL** questions in section **A** and **ALL** questions from section **B** in the spaces provided below each question.*
- *Marks may be given for correct working even if the answer is wrong.*
- *Non-programmable silent electronic calculator and KNEC mathematical tables may be used, except where stated or otherwise.*

For Examiner's Use Only

SECTION A

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

SECTION B

17	18	19	20	21	**TOTAL**

GRAND TOTAL

SECTION A (50 MARKS)

*Answer **all** questions in this section in the spaces provided*

1. State the place values of the following digits in the number 201.70089.

   a) 1 (1 mark)

   b) 8 (1 mark)

   c) 7 (1 mark)

2. Use factor-tree to decompose 12544 into prime factors. (3 marks)

3. Evaluate $\left\{\left(1\frac{1}{4}-\frac{3}{8}\right)\div 2\frac{1}{2}+1\frac{3}{4}\div 1\frac{1}{4}\right\}$ (3 marks)

4. Four men can dig 2 acres of land in 3 days working 4 hour a day. How many men are required to dig 5 acres of land in 4 days working 3 hours a day at the same rate.
(3 marks)

5. A fruit dealer blends the fruit juice in a common container to the brim before choosing the quantities in which to distribute them. She can pack them in either 20 litres, 24 litres or 36 litres can before selling them. If she chooses 20 litres cans she remains with 13 liters while when she uses 24 litres 17 litres remain in a container and 29 litres remain when distributed in 36 litres cans. Determine the least capacity of her container in litres.
(4 marks)

6. In 2023, the cost of processing a bag of wheat was Ksh 250, and this was divided between electricity costs and labour in the ratio 2:3. In the year 2024, the cost of electricity doubled, while the cost of labour increased by x%. Calculate the value of x given that the cost of processing a bag of wheat in 2024 is 425. **(3 marks)**

7. A family spent $\frac{2}{5}$ of their income on food, $\frac{1}{3}$ of the remainder on water bill and saved the rest. If sh. 1200 more is spent on food than water bill. Find how much they saved? **(3 marks)**

8. During a certain month, the exchange rates in a bank were as follows;

	Buying (Ksh.)	Selling (Ksh.)
1 US $	91.65	91.80
1 Euro	103.75	103.93

A tourist left Kenya to the United States with Ksh. 1,000,000. On the airport he exchanged all the money to dollars and spent 190 dollars on air ticket. While in US he spent 4500 dollars for upkeep and proceeded to Europe. While in Europe he spent a total of 2000 Euros. How many Euros did he remain with? **(3 marks)**

9. The sum of three consecutive even numbers is 102, find the numbers.**(4 marks)**

10. Three bells ring at intervals of 60 minutes,50 minutes and 40 minutes. If they rang first at 9.15 a.m, find when they will ring for the second time. **(3 marks)**

11. Use a number line to perform the following operations.

a) (-10) - (-3) **(1 mark)**

b) (-3) - (-4) **(1 mark)**

c) (+1) - (-8) **(1 mark)**

12. Without using mathematical tables or calculator evaluate. **(3 marks)**

$$\frac{3.45+0.195}{45x0.0002}$$

13. Find the ratio a:c given that a:b=1:2, b:d=4:5, d:c=3:1 **(3 marks)**

14. Given that $a = 2,\ b = -1\ and\ c = 3$, find the value of **(3 marks)**

$$\frac{3a^2-2b^2c+4b}{2ac+2b^3-3c}$$

15. Use tables of squares and square root tables to evaluate **(4 marks)**

$$\sqrt{0.60786} + 3.479^2$$

16. A two digit number is such that its value equals four times the sum of its digits. If 27 is added to the number the result is equal to the value of the number obtained when the digits are interchanged. What is the number? **(3 marks)**

SECTION II (50MKS)

Answer ALL Questions in this section

17. A salesman received a basic salary of sh. 50,000 a year together with a commission of 6 % on the value of goods sold and a car allowance of sh. 2.50 per km.

a) Find the total amount he received in a year in which he sells goods worth sh. 625,000 and travels 10,000km. **(4 marks)**

b) The next year he travels 12,000km and receives a total of shs. 134,000

i) Calculate the value of goods sold. **(4 marks)**

ii) Calculate the percentage increase in the value of the goods sold. **(2 marks)**

18. A metal R is an alloy of two metals X and Y. Metal X has a mass of 70g and a density of 16g/cm^3. Metal Y has a mass of 19g and a density of 4g/cm^3.

(a) Calculate the density of the metal R. **(4 marks)**

(b) If metal R is divided into two equal parts and each half reinforced by adding metal X to get to initial volume. Find the density of the new alloy. **(4 marks)**

(c) The two metals are mixed in a ratio of 4:1 respectively. What is the density of the alloy? **(2 marks)**

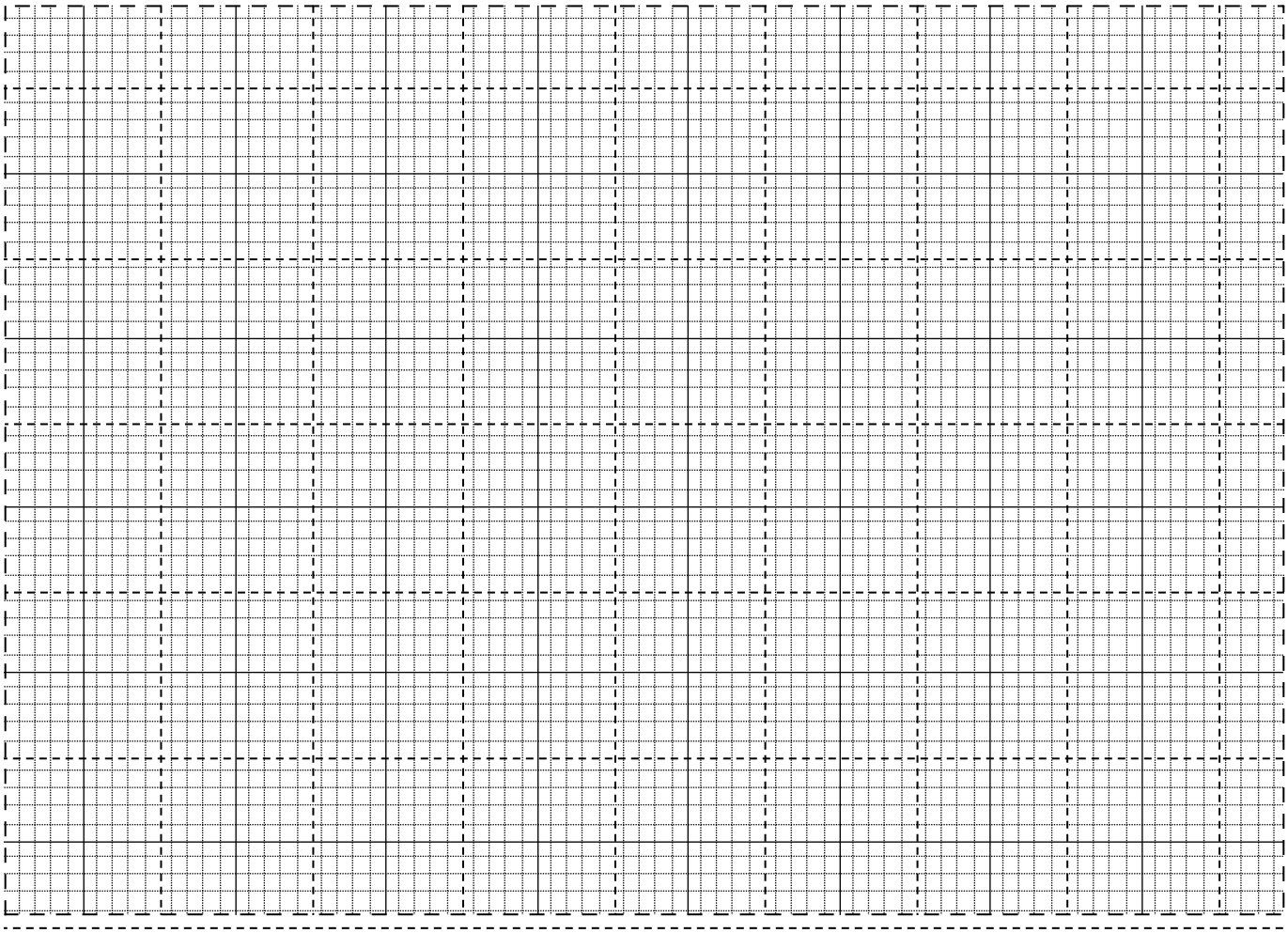
19. Odete and Akala entered into a business partnership in which they contributed ksh. 120,000 and ksh. 150,000 every year respectively. After one year Chelang'a joined the business and contributed ksh. 90,000.

(a) Calculate the ratio of their investment after 3 years of business. **(3 marks)**

(b) It was agreed that 30% of the profits after 3 years be used to cater for the cost of running the business, while the remaining would be shared proportionally. Calculate each person's share, if the profit made after three years has ksh. 187,000. **(4 marks)**

(c) If each of them invested their shares back in the business, find their new individual investments at the beginning of the fourth year. **(3 marks)**

20. a) Plot the graphs of the equations $y=2x + 3$ and $y=-\frac{1}{2}x +3$. (4 marks)



Use your graph to find the coordinates of the point of intersection of the two lines. (2 marks)

Hence, state the solutions to the equations $y = 2x + 3$ and $y = -\frac{1}{2}x +3$. (2 marks)

Find the angle made by the line $y = 2x+3$ and the x-axis. (2 marks)

21. A rectangular plot has a length of 15m more than the width. A lady walks around the entire perimeter making a total of 3000 strides of equal lengths of 6 cm. Determine

a) The length and width of the plot in meters. (4 marks)

b) The perimeter of the plot in meters. (2 marks)

c) The area of the plot in hectares. (2 marks)

d) The diagonal length (2 marks)