**NAM: ……………………………….….. ADM NO: ……… CLASS: …………..**

**FORM 2 MATHEMATICS**

**END OF TERM 2 EXAM – 2021 /2022 ACADEMIC YEAR 2021**

**TIME: 2 HOURS**

1. If X:Y = 4:7 and Y:Z = 5:3, find the ratio X:Y:Z (2mks)

2. Find the equation of a line perpendicular to 2x + 4y = 8, which meet at point (0; 2) (3mks)

3. An American tourist arrived in Kenya with 1000 US $ and converted the whole amount in Kenyashillings. He spent sh 40,000 and changed the balance to sterling pound before leaving for United Kingdom. A Kenyan bank buys and sells foreign currencies as shown.

 **Buying (in Kshs)** **Selling (in Kshs)**

 1 US dollar 84.2083 84.3806

 1 Sterling Pound 134.7941 135.1294

 Calculate the amount he received to the nearest sterling pound. (3mks)

4. a)Draw the sketch of the information given using a suitable scale. (3mks)

 **D**

 170

 TO E 50 140

 110 60 TO C

 TO F 80 100

 30 50 TO B

b)Find the area in hectares of a field book whose measurements is recorded in metres as follows. (3mks)

5. Solve the following pair of inequalities and represent the solution on the number line. (3 mks)

 4 – 3x < 7

 8 – 6 ≥ - 16

6. A soft drink manufacturing company makes a giant model battle 2m long as the factory symbol. If the real bottle from the factory is 20cm long and has a volume of 300cm3, find the volume of the model in cm3. (3mks)

7. The GCD and LCM of three numbers are 3 and 1008 respectively. If two of the numbers are 48 and 72, find a possible value of the third number. (3 marks)

8. Mutua bought 8 pairs of trousers and six shirts at Sh. 4160. Had he bought twice as many shirts and half as many trousers, he would have saved Sh. 160. Find the cost of each item. (3 marks)

9. Simplify the following expression. (3 marks)

 $\frac{x-3}{x+3}$ - $\frac{3x-9}{x^{2}-9}$

10. Evaluate. (2marks)



11. Momanyi spent one eight of his February Salary on farming, half on school fees and two thirds of the remainder on food. Calculate his February salary and the amount he spend on school fees if he spent sh. 3200 on food. (3marks)

12. Use squares square roots and reciprocal tables to evaluate (3marks)



13. A square based brass plate is 2mm high and has a mass of 1.05kg. The density of the brass is 8.4g/cm3. Calculate the length of the plate in centimeters. (3 marks)

**SECTION B:**

**Answer any three questions from this section.**

14. A group of people planned to contribute equally towards a water project which needed Ksh2, 000,000 to complete. However, 40 members of the group withdrew from the project. As a result, each of the remaining members were to contribute Ksh 2500 more.

a) Write the expression of (i) The former contribution per person (1mk)

ii) New contribution per person (2mks)

 (b) Write down an expression combining the two expressions in (a) to represent the above information (3mks)

 (c) Find the original number of members in the group (4mks)

15. In the figure below, O is the centre of the circle of radius 3cm and AB is a chord such that its shortest distance from O is 1cm.

O

A

B

Calculate:-(a) The length of the chord AB. (2 mks)

(b) The angle AOB (3 mks)

(c) The area of the minor sector OAB. (2 mks)

(d) The area of the shaded segment. (3 mks)

16. A country bus left Emali at 11.45 a.m. and travelled towards Mombasa at an average speed of 80km/hr. A Nissan matatu left Emali at 1.15 p.m on the same day and travelled along the same road at an average speed of 120km/hr. The distance between Emali and Mombasa is 400km.

1. Find
2. Time covered by bus before Nissan started (1mk)

( ii)Distance bus had covered before Nissan started (1mk)

(iii)Find the relative (2mks)

(iv)Time taken for Nissan to overtake the bus (2mks)

1. Both vehicles continue towards Mombasa at their original speeds. Find how long the matatu had to wait at Mombasa before the bus arrived. (4 marks)

17. Every Sunday Alex drives a distance of 80km on a bearing of 0740 to pick up his brother John to go to church. The church is 75km from John’s house on a bearing of **S**500**E**. After church they drive a distance of 100km on a bearing of 2600 to check on their father before Alex drives to John’s home to drop him off then proceeds to his house.

(a)Using a scale of 1cm to represent 10km, show the relative positions of these places. (4mrks)

(b) Use your diagram to determine:

(i) The true bearing of Alex’s home from their father’s house. (1 mark)

(ii) The compass bearing of the father’s home from John’s home. (1 mark)

(iii) The distance between John’s home and the father’s home. (2 marks)

(iv) The total distance Alex travels every Sunday. (2 marks)

18. The figure shows a frustum of a right pyramid open container for storing water.

 20cm

 40cm

 60cm

 10cm

 20cm

Calculate:

a) The height of the pyramid from which the frustum was cut from. (2mks)

b) The capacity of the frustum in litres. (4mks)

c) The surface area of the frustum. (4mks)