END OF TERM III 2021 EXAM

INSRUCTIONS; ATTEMPT ALL QUESTIONS

FORM 1 MATHEMATICS TIME 2HRS

NAME.....ADM/NO.....CLASS...

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

$$\frac{\frac{3}{4} + \frac{2}{5} \div \frac{3}{5} \text{ of } 1\frac{2}{3}}{(1\frac{3}{4} - \frac{5}{8}) \times \frac{2}{9}}$$

Numerator

$\frac{3}{4} + \frac{2}{5} \div 1 = \frac{15+8}{20}$

$= \frac{23}{20}$

Denominator

$\frac{7}{4} - \frac{5}{8} = \frac{14-5}{8}$

$\Rightarrow \frac{9}{8} \times \frac{2}{9}$

$= \frac{1}{4}$

$\frac{\frac{23}{20}}{\frac{1}{4}} = 4\frac{3}{5}$

2. A number n is such that when it is divided by 27 and 30 or 45, the remainder is always 3. Find the smallest value of n. (3 mks)

3	27	30	45
3	9	10	15
3	3	10	5
5	1	10	5
	2	1	2	1

$3 \times 3 \times 3 \times 5 \times 2$

$= 270$

$270 + 3$

$= 273$

3. A tourist arrived in Kenya with US Dollars 3000 which he exchanged into Kenya shillings. He spent Ksh. 75000 on hotel accommodation and Ksh.42500 on travel and other expenses. He changed the remaining money into sterling pounds. Calculate how much money in sterling pounds that he remained with using the following rates. (Leave your answer to the nearest 1£) [3mks]

	Buying(Kshs)	Selling(Kshs)
1 US dollar($)	78.45	78.95
1 Sterling pound(£)	120.27	121.04

US dollar $= Sh\ 78.45$

$3000 =$

$\frac{3000 \times 78.45}{1}$

$= Sh\ 235350$

$235350 - 117500$

$= Sh\ 117850$

$1£ = Sh\ 121.04$

$? = Sh\ 117850$

$\frac{117850}{121.04}$

$= £973.65$

4.Given the ratios A;B is 3;4 and B;C Is 2;3 express the ratio A;B;C in the simplest form. [3mks]

A : B : C
3 4
2 3

A B C
6 : 8 :
8 : 12

A ; B ; C
6 : 8 : 12
3 : 4 : 6

5. Three cisterns flush after intervals of 24 minutes, 30minutes and 40 minutes respectively. The cisterns flash together at 10.00pm.what time will they flush together again [3mks]

2	24	30	40
3	12	15	20
5	4	5	20
4	4	1	4

$2 \times 3 \times 5 \times 4 = 120$

$\frac{120}{60} = 2 hrs$

10.00 + 2

= 12.00 pm

6. Convert 0.375 into a decimal (3mks)

$\frac{375}{1000}$

$\frac{75}{500}$

$\frac{3}{20}$

7. Use tables of squares to evaluate; (4mks)

$6250^2 \div 0.1750^2$

$(6.250 \times 10^3)^2$

$6.25^2 \times 10^6$

39.063×10^6

0.1750^2

$(1.750 \times 10^{-1})^2$

$1.750^2 \times 10^{-2}$

3.0625×10^{-2}

$\frac{39.063 \times 10^6}{3.0625 \times 10^{-2}}$

12.76×10^8

1.276×10^9

8. Find the length of a square whose area is $0.0081m^2$. (3mks)

$\sqrt{81 \times 10^{-4}}$

$81^{\frac{1}{2}} \times 10^{-2}$

9×10^{-2}

$= 0.09$

9. A foreign government donated sh. 67.9 billion while the Kenya Government contributed sh. 200 million towards the project. Of the total amount sh. 10.8 million was used to pay experts, sh. 670,000 for the purchase of stationery and sh. 12.8 million for the acquisition of machinery. How much money remained unused ? (Express your answer in words). (4mks)

679×10^8

$200\,000\,000$

681×10^8

$10 \cdot 8$
$12 \cdot 8$
$23 \cdot 6$

$23 \cdot 6 \times 10^6$
$0 \cdot 6$
$24 \cdot 2 \times 10^6$

$681 \times 10^8 - 24 \cdot 2 \times 10^6$

$(681 \cdot 000 - 0 \cdot 242) \times 10^6$

$680 \cdot 758$

Sh 680758000

10. Solve the following simultaneous equations. [4mks]

$3x + y = 10$

$x + 6y = 5$

$x = 5 - 6y$

$3x + y = 10$

$3(5 - 6y) + y = 10$

$15 - 18y + y = 10$

$15 - 17y = 10$

$-17y = -5$

$y = \frac{5}{17}$

$x = 5 - 6\left(\frac{5}{17}\right)$

$= 5 - \frac{30}{17}$

$\Rightarrow 5 - 1\frac{13}{17}$

$= 4\frac{13}{17}$

11 . Simon earned sh. 400 as a commission for a sale of goods worth sh. 16,000. What would be his earnings for a total sale of sh. 7,000? (4mks)

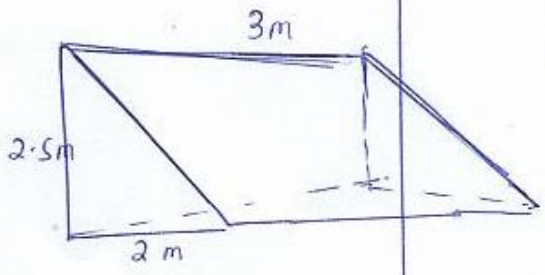
$400 = 16000$

$? = 7000$

$\frac{400 \times 7000}{16000}$

$= Sh\ 175$

12. A right-angled triangular prism has length 3m, breadth 2m and height 2.5m. If the mass of the prism is 3.4kg, find its density. (4mks)



$V = \frac{1}{2} \times 2 \times 2.5 \times 3$

$= 7.5\ m^3$

$D = \frac{m}{V} = \frac{3.4\ kg}{7.5\ m^3}$

$= 0.4533\ kg/m^3$

13. The ratio of John's earnings to Musa's earning is 5:3. If John's earnings increase by 12%, his new figure becomes sh. 5600. Find the corresponding percentage change in Musa's earnings if the sum of the new earnings is sh. 9600. (3mks)

$5600 = 112$

$= 100$

$\frac{5600 \times 100}{112}$

$\Rightarrow 5000$

John : Musa

5 : 3

5000 : 3000

$\frac{5000 \times 3}{5}$

$= Sh\ 3000$

$9600 - 5600$

$= Sh\ 4000$

Increase

$\frac{1000}{3000} \times 100$

$= 33.38$

14. A man earns x shillings while his wife earns $^1/_3$ of this. After spending a third of their combined income, they have sh. 2,400 left. How much money does the man earn? (4mks)

$x + \frac{1}{3}x = \frac{4}{3}x$

$\frac{1}{3}\left(\frac{4}{3}x\right) = \frac{4}{9}x$

$\frac{5}{9}x = 2400$

$x = \frac{2400 \times 9}{5}$

$= Sh\ 4320$

15. Below is a travel timetable for a vehicle operating between towns A and D seventy kilometers apart. (5mks)

Town	Arrival	Departure
A	.....	10.10 a.m
B	10.30 a.m	10.40 a.m
C	11.00 a.m	11.05 a.m
D	11.20 a.m	.....

(a) At what time does the vehicle depart from town A ? 10.00 am

(b) How long does it take to travel from town A to town B. 10.30am - 10.10am

= 20 minutes

(c) For how long does it stay in town B ?

10.40am - 10.30am = 10 minutes

(d) At what time does it arrive in town D ?

11.20am.

(e) What is the average speed for the whole journey ?

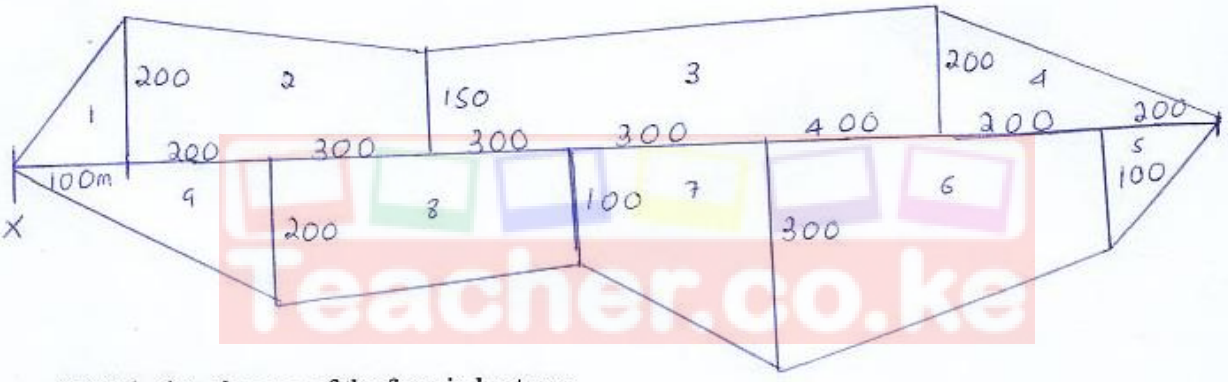
$\frac{TD}{T.T} = \frac{70}{1\frac{1}{6}} = 70 \div \frac{7}{6} = 60 km/hr$

16. The table below shows measurements of a farm in a field's book. **XY**=2000m

	Y	
	1800	G 100
F 200	1600	
	1200	E 300
	900	D 100
C 150	600	
	300	B 200
A 200	100	
	X	

(a) Using a scale 1cm rep 100m. Sketch the map of the farm

(2mks)



(b) Calculate the area of the farm in hectares

(8mks)

1. $\frac{1}{2} \times 100 \times 200$
$= 10000$

2. $\frac{1}{2}(200+150)\times 500$
$= 87500$

3. $\frac{1}{2}(150+200)1000$
$= 175000$

4. $\frac{1}{2}(400)\times 200$
400000

5. $\frac{1}{2}(300\times 200)$
30000

6. $\frac{1}{2}(200+100)\times 600$
90000

7. $\frac{1}{2}(300+100)\times 300$
60000

8. $\frac{1}{2}(100+300)\times 600$
120000

9. $\frac{1}{2}(200)\times 100$

10000
87500
175000
400000
300000
90000
60000
120000
10000
622500

$\Rightarrow 62.25\,ha$

17. Four towns **R,T,K** and **G** are such that **T** is 84km directly to the north of **R** and **K** is on bearing of 295° from **R** at a distance of 60km. **G** is on a bearing of 340° from **K** and at a distance of 30km.

(a) Using the scale of 1cm to represent 10km make an accurate scale drawing to show the relative positions of the towns. (3mks)

(b)Find:-

(i) The distance and the bearing of **T** from **K**

(2mks)

(ii) The distance and the bearing of **G** from **T.**

(2mks)