GOLDEN ELITE EXAMINATIONS

TERM 2-2021
MATHEMATICS
FORM 2
TIME **2½** HOURS

Name……………………………………………………………… Adm No………………………………….
School……………………………………………………………. Class……………………………………….
Signature…………………………………………………… Date……………………………………………

INSTRUCTIONS:

1. Write your name, Index number in the space provided at the top of the page.
2. Sign and write the date of examination in the spaces provided above.
3. This paper consists of **Two** sections 1 and II.
4. Answer all the questions in section I and only **five** questions from section 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 calculation, giving your answers at each stage in the space provided.
7. Marks may be given for correct working even if the answer is wrong.
8. Non programmable silent electronic calculator and KNEC Mathematical table may be used, except when stated otherwise.

FOR EXAMINER'S USE ONLY

SECTION 1

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

SECTION 2

17	18	19	20	21	22	23	24	Total

GRAND TOTAL

This paper consists of 14 printed pages

1. Evaluate: $\dfrac{-8 \times -8 + 6}{-3 + (-8) \div 2 \times 4}$

                                                   (3 marks)

2. A number k is formed by writing all the prime numbers between 0 and 10 in ascending order. Another whole number p is formed by writing all the square numbers between 0 and 10 in ascending order. Find k-p. (3 marks)

3. Use tables of cubes, square roots and reciprocals to evaluate: (4 marks)

$$\frac{6}{(3.6446)^3 - \sqrt{709.85}}$$

4. A tourist arrived in Kenya with US Dollars 3000 which he exchanged into Kenya shillings. He spent Ksh.100, 000 on hotel accommodation and Ksh.80, 000 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£)

(3 marks)

	Buying(Kshs)	Selling (Kshs)
1 US dollar($)	100.00	101.00
1 Sterling pound(£)	120.27	120.00

5. Evaluate: $\dfrac{\frac{5}{6}of\left(4\frac{1}{3}-3\frac{5}{6}\right)}{\frac{5}{12}\times\frac{3}{25}+1\frac{5}{9}\div2\frac{1}{3}}$ (3 marks)
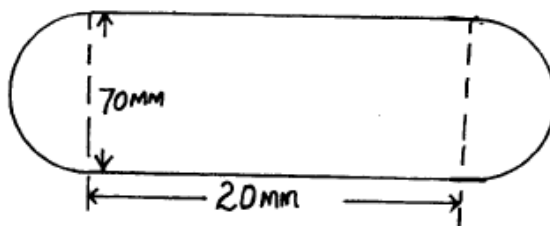
6. A camera which is marked at Ksh 2400 is sold to a consumer after allowing him a 10% discount. By so doing the trader still makes a profit of 20% on the cost of the camera. Determine the cost price of the camera. (3 marks)

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

8. Show that 8260439 is exactly divisible by 11, using test of divisibility. (2 marks)

9. Find the possible values of x in the equation $9^{2X} = 27^{(2X + 12)}$ (3 marks)

10. 2000 cm^3 of milk of density 0.9g/cm^3 were added to 1200 cm^3 of water of density 1g/cm^3. Calculate the density of the mixture. (4 marks)

11. 18 men take 15 days to dig 6 hectares of land. Find how many men are required to dig 8 hectares in 12 days. (3 marks)

12. The figure below (not drawn to scale) shows the cross-section of a metal bar of length 3 metres. They are equal semi circles.

Determine the mass of the metal bar in kilograms if the density of the metal is 8.87g/cm^3. (4 marks)

13. Four light signals are programmed at intervals of 40 seconds, 50 seconds, 60seconds and 75 seconds. What is the earliest time they will give out light signals simultaneously if the last time they did this was at 8.15a.m? (3 marks).

14. Given that x is an acute angle and cos x° = $^5/_{13}$ find, without using mathematical tables or a calculator, tan (90 — x) °. (2 marks)

15. Find the equation of the line perpendicular to $3x - 7y - 20 = 0$, and passes through the point (5,2). (3 marks)

16. Two similar containers have capacities of 540cm^3 and 160cm^3. The small one has a base area of 25cm^2. Find the height of the larger one. Leave your answer to (4sf). (4 marks)

SECTION II (50 marks)

17. A train left Mombasa on Monday evening and travelled to Kisumu according to the travel time table below. The train arrived in Kisumu on Wednesday morning of the same week.

Mombasa	dep.	1930 h
Mtito Andei	arr.	0250 h
	dep.	0335 h
Nairobi	arr.	1050 h
	dep.	1240 h
Nakuru	arr.	1900 h
	dep.	2015 h
Kisumu	arr.	0900 h

(a) Determine the time the train took to travel between. (4 marks)

(i) Mombasa and Mtito Andei

(ii) Mtito Andei and Nairobi

(iii) Nairobi and Nakuru

(iv) Nakuru and Kisumu

(b) Calculate the total time for the whole journey. (4 marks)

(c) Given that the railway road distance between Mombasa and Kisumu is 1 200 km, calculate the average speed of the train (2 marks)

18. Copy and complete the tables (i) and (ii) below for the functions y = 7 – 3x and y = 2x – 8 respectively
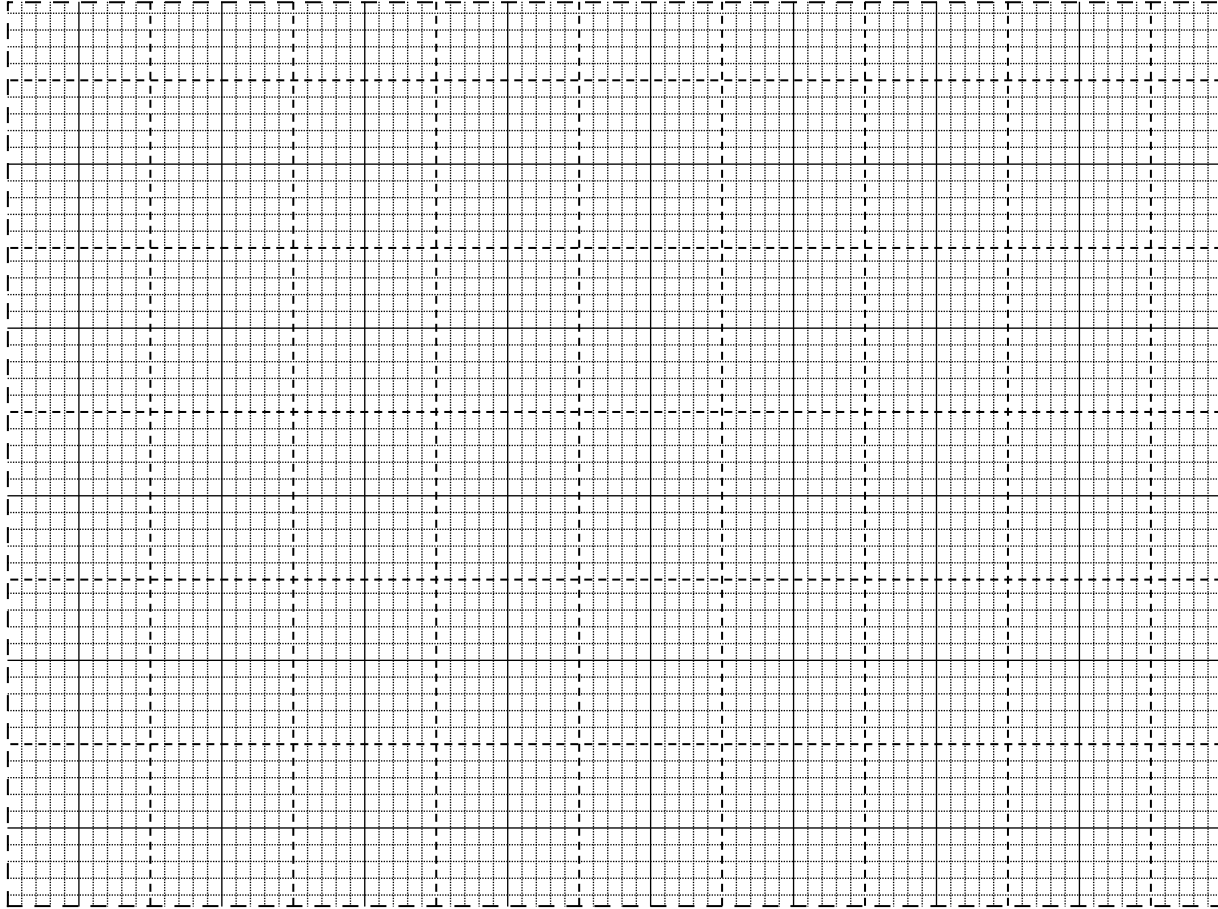
(a)   (i)   *y = 7 – 3x* (2 marks)

x	-2	-1	0	1	2	3	4	5
y	13		7					-8

(ii) $y = 2x - 8$

(2 marks)

x	-4	-2	0	2	4	6	8	10
y	-16		-8		4			

(b) On squared paper and on the same grid draw the graph of $y = 7 - 3x$ and $y = 2x - 8$ (4marks)

(c) . What is the nature of the two graphs you have drawn?

(1 mark)

(d) . State the coordinates of point of intersection of the graph drawn above   (1 mark)

19. Tom and Joseph decided to start a business. Tom contributed sh 40000 and Joseph contributed sh 64000. The two men agreed that in any year 20% of the profit shall be divided equally between them and 30% of the remaining profit will be used to meet the

cost for running the business the following year. They also agreed to share the rest of the profit in the ratio of their contributions. The profit made after first year was sh 86400.
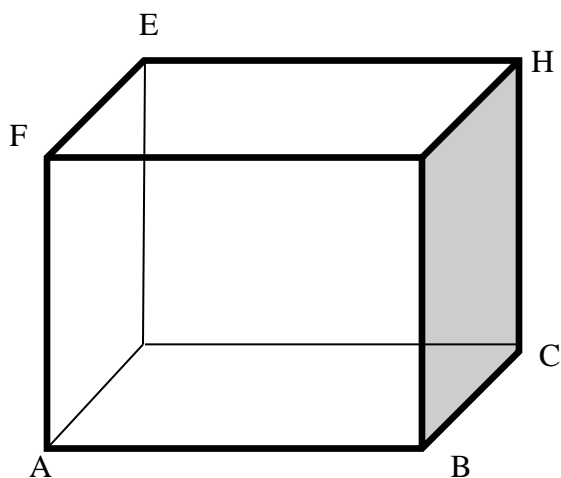
a) How much money did they set aside towards the cost of running the business for the second year? (2 marks)

b) How much did Joseph receive at the end of the first year? (4 marks)

c) Tom bought goats with his share of the profit. If each goat costs sh 1850, how many goats did he buy? (4 marks)

20. (a). The volume of a closed cylinder of radius 7cm is $1540cm^3$. Take $\pi = \frac{22}{7}$ .calculate its height and total surface area. (5 marks).

b). The figure below represents a closed cuboid ABCDEFGH with a rectangular base. AB = 12cm, BC = 5cm and CH = 15cm.Calculate the surface area of the cuboid. (5 marks)

E

H

F

C

A

B

21. Four towns P, R, T and S are such that R is 80km directly to the north of P and T is on a bearing of 290° from P at a distance of 65km. S is on a bearing of 330° from T and a distance of 30 km. Using a scale of 1cm to represent 10km, make an accurate scale drawing to show the relative position of the towns. (4 marks)

Find:
(a)   The distance and the bearing of R from T.   (3 marks)

(b)   The distance and the bearing of S from R.   (2 marks)

(c)   The bearing of P from S   (1 mark)

22. Use ruler and a pair of compasses only in this question.
    (a) Construct triangle ABC in which AB = 7 cm, BC = 8 cm and $\angle ABC = 60^0$.

(b) Measure
   (i) Side AC
   (ii) ∠ ACB
(c) Construct a circle passing through the three points A, B and C. Measure the radius of the circle.

(d) Construct Δ PBC such that P is on the same side of BC as point A and ∠ PCB = ½ ∠ ACB, ∠ BPC = ∠ BAC measure ∠ PBC.

23. Lines L_1 is given by equation y = -2x +4 and L_2 is 3x- y=1 intersect at T.

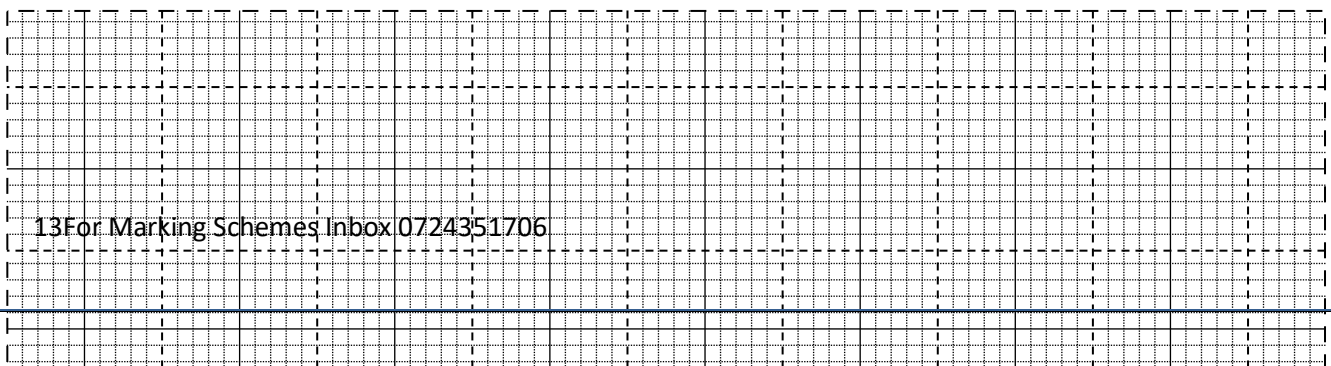(a) Determine the co-ordinates of T.   (2 marks)

(b) Another line, L_3 is perpendicular to line L_2 and passes through point N (5,8). Determine its equation and leave the answer in the form of ax + by=c where a, b, and c are integers. (4 marks)

(c) Determine the equation of a perpendicular bisector of a line segment passing through points T and N. (4 marks)

24. (a) On a graph paper, plot the points A (1,2), B (2,2), C(2,1), D(3,3) and join them to form a quadrilateral ABCD (3 marks)

(b)(i) On the same grid, draw a quadrilateral A'B'C'D' which is the image of ABCD under enlargement center P (1, 1) and scale factor 3. (3 marks)

(ii) On the same axes, draw a quadrilateral A''B''C''D'' with vertices A'' (-2,1) B''(-2,2) C''(-1,2) and D''(-3,3) (2 marks)

(d) Describe fully transformation T which maps ABCD onto A'' B'' C'' D''. (2 marks)

For Marking Schemes Inbox 0724351706