

Name-----stream-----Date-----

MATHEMATICS ALT A

FORM TWO

FEBRUARY/MARCH 2020

2 ½ HOURS

GIANCHERE FRIENDS SECONDARY SCHOOL

INSTRUCTIONS TO CANDIDATES

1. Write your name in the spaces provided above.
2. Sign and write the date of examination in the spaces provided.
3. The paper contains two sections: Section **I** and **II**.
4. Answer all 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 calculations, giving your answers at each stage in the spaces below each question.
7. Marks may be given for correct working even if the answer is wrong.
8. Non-programmable silent electronic calculators and KNEC mathematical tables may be used except where stated otherwise.
9. Candidates should check the questions paper to ascertain that all the pages are printed and that no questions are missing

FOR EXAMINER'S USE ONLY

SECTION I

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

SECTION II

17	18	19	20	21	22	23	24	Total

GRAND TOTAL

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SECTION I (50 MARKS)

Answer all the questions in this section.

1. Simplify the following expressions by reducing it to a single fraction

$$\frac{2x - 5}{4} - \frac{1 - x}{3} = \frac{x - 4}{2}$$

(3mks)

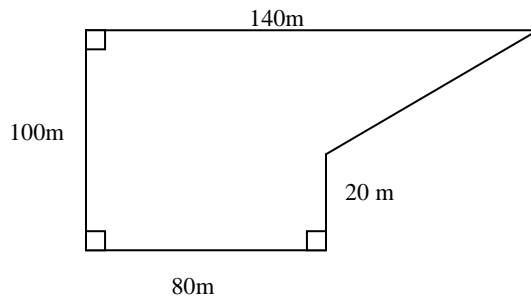
2. Mutua bought 160 trays of 8 eggs each at shs.150 per tray. On transportation 12 eggs broke. He later discovered that 20 eggs were rotten. If he sold the rest at shs.180 per tray, how much profit did he make?

(4mks)

3. A farmer made a loss of 28% by selling a goat for Sh.1440. What percentage profit would he have made if he had sold the goat for Sh.2100?

(3mks)

4. The figure below shows the shape of Kamau's farm with dimensions shown in meters. Find the area of Kamau's farm in hectares (3mks)



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

6. Evaluate $\frac{3}{8}$ of $\left\{ 7\frac{3}{5} - \frac{1}{3} \left(1\frac{1}{4} + 3\frac{1}{3} \right) \times 2\frac{2}{5} \right\}$ (3mks)

7. Convert the recurring decimal $12.\dot{1}\dot{8}$ into fraction (3 mks)

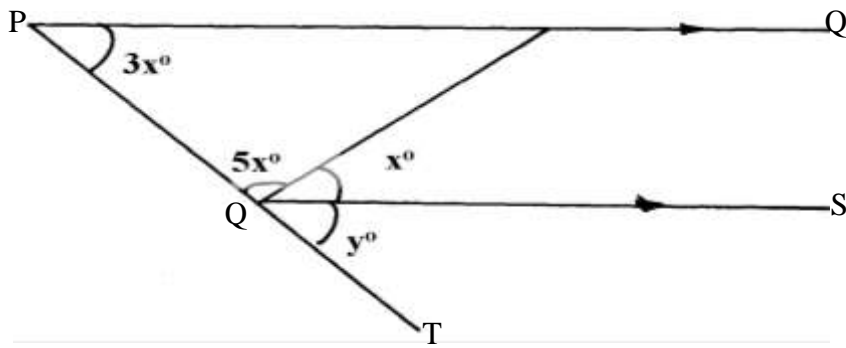
8. Evaluate $\frac{-8 \div 2 + 12 \times 9 - 4 \times 6}{56 \div 7 \times 2}$ (3mks)

9. 2.5 litres of water density 1g/cm^3 is added to 8 litres of alcohol density 0.8g/cm^3 . Calculate the density of the mixture (4mks)

10. Rotich bought 4 pencils and 6 pens for kshs. 184 and Kamau bought 3 pencils and 8 pens of the same type at kshs 222. Find the price of each item. (3 mks)

11. Sixteen men working at the rate of 9hrs a day can complete a piece of work in 14 days. How many more men working at the rate of 7 hours a day would complete the same job in 12 days (3mks)

12. In the figure below PQ is parallel to RS. Calculate the value of x and y (3mks)



13. The size of an interior angle of a regular polygon is $4x^\circ$, while its exterior angle is $(x - 30)^\circ$. Find the number of sides of the polygon (3mks)

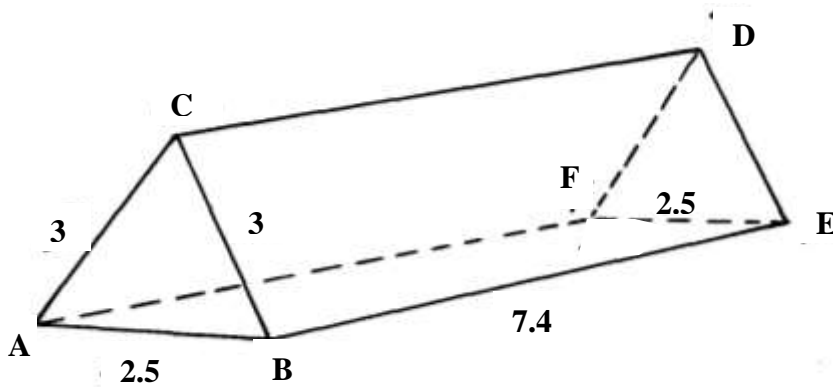
14..a) Given that $a:b = 1:2$ and $b:c = 3:4$. Find $a:b:c$ (3mks)

b) Convert a speed of 60km/h to m/s

(2mks)

15. Sketch the net of the solid shown in the figure below, measurements are in centimeters

(3mks)



16. If $a = 3, b = 4.7$ and $c = 6.4$, find the value of $\frac{a^2b^2}{c}$ to 2 decimal places (3mks)

SECTION II (50 MARKS)

Answer only five questions in this section

17. Using a pair of compasses and ruler only;

(a) Construct triangle ABC such that $AB = 8\text{cm}$, $BC = 6\text{cm}$ and angle $ABC = 30^\circ$. (3 marks)

(b) Measure the length of AC (1 mark)

(c) Draw a circle that touches the vertices A,B and C. (2 marks)

(d) Measure the radius of the circle (1 mark)

(e) Hence or otherwise, calculate the area of the circle outside the triangle. (3 marks)

18. Wekesa bought a laptop in Uganda for Ush.1, 050,000. He then paid 60 US dollars as transportation charges to Kenya. On arrival in Kenya he paid duty and sales tax amounting to 55% of the cost in Uganda. He then gave it to a friend in Tanzania tax free. If the exchange rates were

1 US dollar = Ush 1016, 1Ksh = Ush 24.83 and Tsh 1 = Ksh 0.0714

- (a) Calculate the total expenses in Kenya shillings incurred by Wekesa (3 mks)
- (b) Find the expenditure on transportation and taxes as a percentage of the total expenditure (2 mks)
- (c) What is the total value of the laptop in Tanzanian shillings (2 mks)
- (d) Find the overall increase in value of the laptop as percentage of the buying price (3 mks)

19. The floor of a room is in the shape of a rectangle 10.5 m long by 6 m wide. Square tiles of length 30 cm are to be fitted onto the floor.

(a) Calculate the number of tiles needed for the floor. (3mks)

(b) A dealer wishes to buy enough tiles for fifteen such rooms. The tiles are packed in cartons each containing 20 tiles. The cost of each carton is Kshs. 800. Calculate

(i) the total cost of the tiles. (3mks)

(ii) If in addition, the dealer spends Kshs. 2,000 and Kshs. 600 on transport and subsistence respectively, at what price should he sell each carton in order to make a profit of 12.5% (Give your answer to the nearest Kshs.) (4mks)

20. Four telephone posts PQR and S stand on a level ground such that Q is 28m on a bearing of 060° from P. R is 20m to the south of Q and S is 16m on a bearing of 140° from P.

(a) Using a scale of 1cm represent 4m show the relative positions of the posts. (4mks)

(b) Find the distance and bearing of R from S. (3mks)

(c) If the height of post P is 15.6m., draw the height of p and determine the angle of depression of post R from the top of post P. (Same scale as above) (3mks)

21. A field was surveyed and its measurements recorded in a field book as shown below.

	F	
	100	
E 40	80	
	60	D 50
C 40	40	
	20	B 30
	A	

Using a scale of 1cm to represent 10m,

a) draw a map of the field.

(4mks)

(b) Calculate the area of the field

(i) in square metres.

(4mks)

(ii) in hectares.

(2mks)

22. Telephone bills consist of a fixed standing charge and an amount which depends on the number of calls made. The table below shows the total amount payable by a subscriber for different number of calls:

Number of calls	10	20	30	40	50	60
Amount payable in shillings	90	110	130	150	170	190

a) By a suitable scale, draw the graph of amount payable against number of calls made(5mks)

b) From the charges for;

i) 6 calls (1mk)

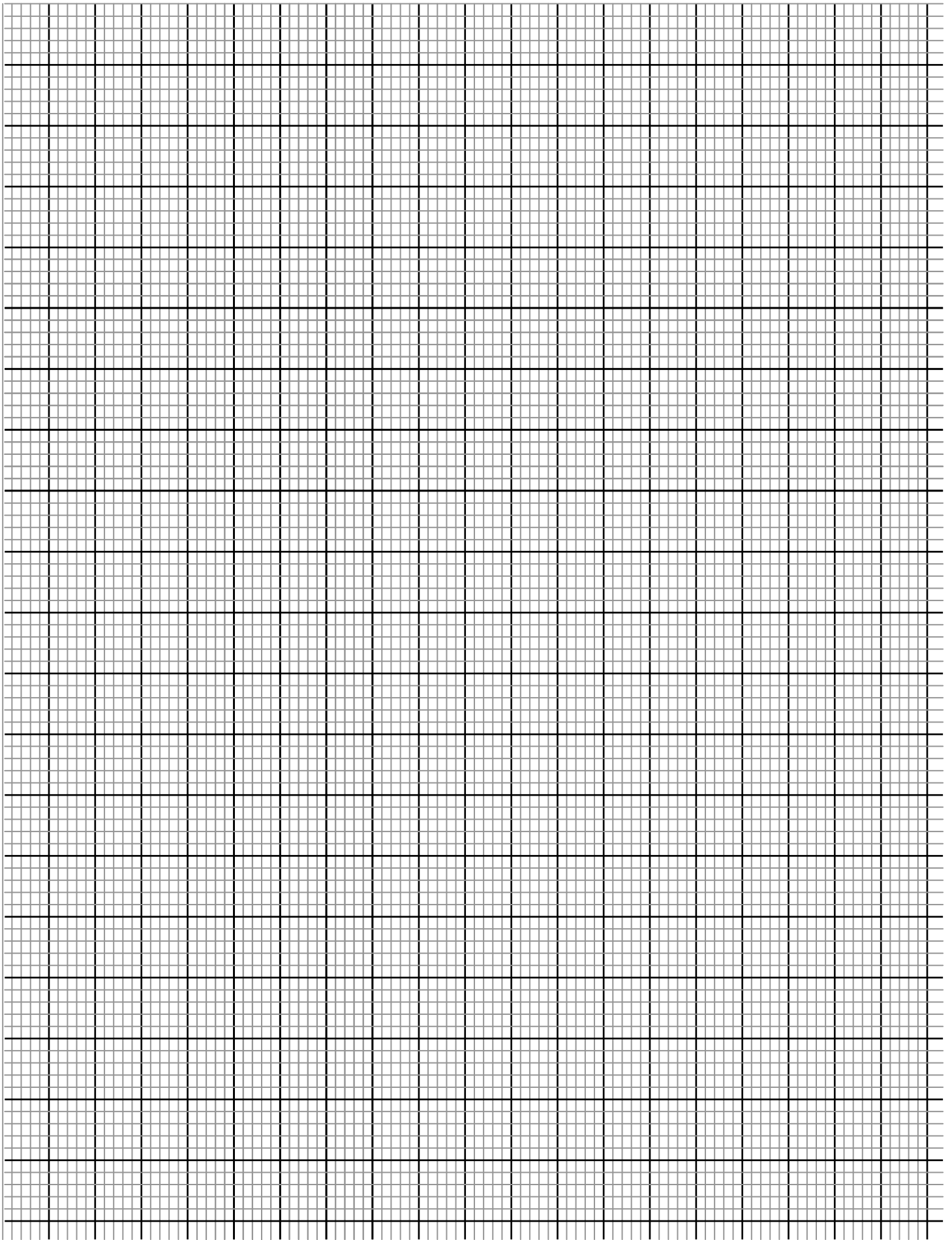
ii) 53 call (1mk)

c)How many calls did the subscriber make if he paid

i) 72shillings (1mk)

ii) 195shillings (1mk)

d)What is the standing charge? (1mk)



23. a) Use reciprocal tables to find the value of:

(4mks)

$$\frac{1}{3} \left\{ \frac{2}{0.6638} + \frac{5}{0.833} \right\}$$

b) A solid metal cuboid measuring 4cm by 5cm by 9cm was melted down and recast as a cube. Find the length of the cube obtained (2mks)

c) Find the value of the following using tables

i) $(4.5)^3 - (3.9)^3$ (2mks)

ii) $(0.0184)^3 - (0.01692)^3$ (2mks)

24.

a) A matatu charges shs.120 as fare from town A to town B. It has a capacity of 18 passengers. It can however carry 5 more passengers, but will have to pay a penalty of shs. 100 at each of 8 check points. The distance between A and B is 84km and the cost of petrol is shs.58 per liter. If the matatu consumes 1 liter for every 7 km .Calculate:

i) how much is gained if the matatu does not overload (3mks)

ii) how much is lost if the matatu over loads (4mks)

b) A rectangular tank whose internal dimensions are 2.2m by 1.4m by 1.7m is three fifth full of milk. Calculate the volume of milk in litres (3mks)