

SECONDARY SCHOOL EVALUATION

END OF TERM 2, 2025 EXAMINATIONS

MATHEMATICS FORM 3

NAME.....AD/NO:.....CLASS.....

INSTRUCTIONS:

- (i) The paper consists of two sections. **Section A** and **Section B**.
- (ii) Answer **all** the questions in **Section A** and **ONLY 5 Questions** in **section B**.

SECTION A(50MARKS)

1. Without using mathematical tables or a calculator, evaluate. (3mk)

$$\frac{0.0368 \times 0.25}{0.092 \times 2.0}$$

2. Factorize completely the expression. $75x^2 - 27y^2$ (3mk)

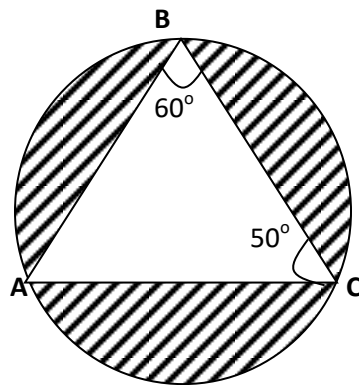
3. Shs. 6000 is deposited at compound interest rate of 13%. The same amount is deposited at 15% simple interest. Find which amount is more and by how much after 2 years in the bank (3mks)

4. The cost of 3 plates and 4 cups is Shs. 380. 4 plates and 5 cups cost Shs. 110 more than this. Find the cost of each item. (3mks)

5. A rectangle measures 3.6 cm by 2.8 cm. Find the percentage error in calculating its perimeter. (3mks)

6. If 5 men can erect 2 cottages in 21 days, how many more men, working at the same rate will be needed to erect 6 cottages in the same period? (3mks)

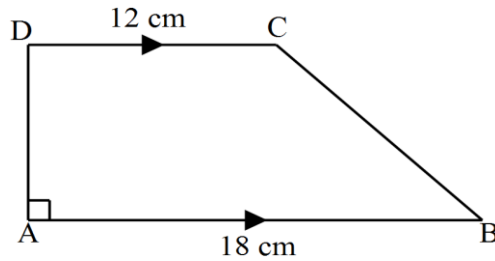
7. The figure below is a circle of radius 5 cm. Points **A**, **B** and **C** are the vertices of the triangle ABC in which $\angle ABC = 60^\circ$ and $\angle ACB = 50^\circ$ which is in the circle. Calculate the area of $\triangle ABC$ (4mk)



8. Construct triangle PQR with $PQ = 5.8$ cm, $QR = 3.4$ cm and $PR = 4.1$ cm. Construct a circle passing through P, Q and R. Measure its radius. (4 marks)

10. Otieno bought a shirt and paid sh 320 after getting a discount of 10%. The shopkeeper made a profit of 20% on the sale. Find the percentage profit the shopkeeper would have made if no discount was allowed? (3mks)

9. ABCD is a trapezium in which AB is parallel to DC and angle $DAB = 90^\circ$. $AB = 18 \text{ cm}$, $DC = 12 \text{ cm}$ and the area of the trapezium is 120 cm^2 .



Calculate the perimeter of the trapezium. (3 marks)

11. Given that $\sin(2x+15)^\circ = \cos(3x-10)^\circ$, find $\tan(2x-4)^\circ$ without using a calculator or mathematical tables. (3 marks)

12 Find the value of x $2^{(x-3)} \times 8^{(x+2)} = 128$ (3mk)

13. Two buildings are on a flat horizontal ground. The angle of elevation from the top of the shorter building to the top of the taller is 20° and the angle of depression from the top of the shorter building to the bottom of the taller is 30° . If the taller building is 80m, how far apart are they. (4mk)

14. The timetable below shows the departure and arrival time for a bus plying between two towns **M** and **R**, 300km apart

Town	Arrival	Departure
M		0830h
N	1000h	1020h
P	1310h	1340h
Q	1510h	1520h
R	1600h	

(a) How long does the bus take to travel from town **M** to **R**? (2mk)

(b) What is the average speed for the whole journey? (2mk)

15. Find the value of **x** that satisfies the equation $\log (x+5) = \log 4 - \log(x+2)$ (3mk)

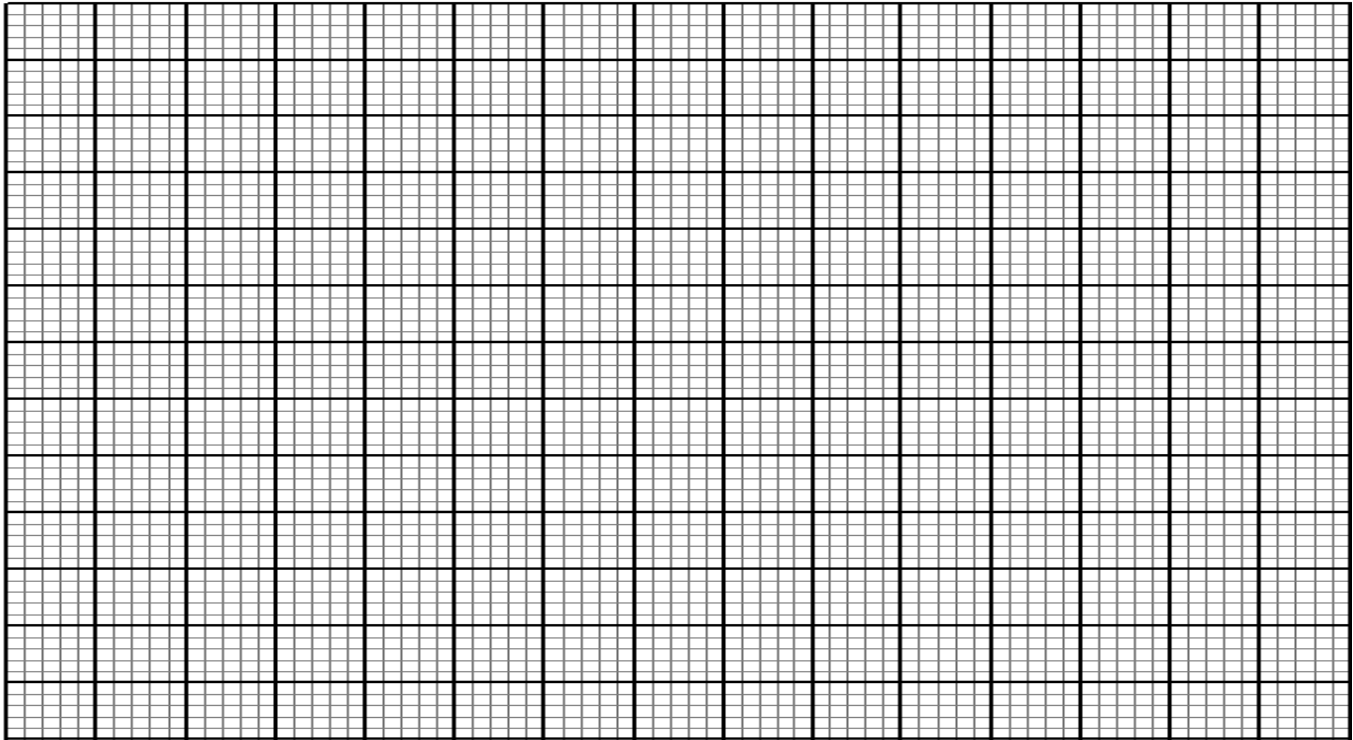
16. Rationalise the denominator in $\frac{\sqrt{3}}{1-\sqrt{3}}$ (2mk)

SECTION B(50MARKS)ANSWER ONLY FIVE QUESTIONS ONLY

17. (a) Complete the table below for the functions $y = 3 \sin(2x - 30)$ and $y = \cos(x + 60)$ in the domain $-180^\circ \leq x \leq 180^\circ$ (2 marks)

x°	-180°	-150°	-120°	-90°	-60°	-30°	0°	30°	60°	90°	120°	150°	180°
$y = 3\sin(2x - 30)$	-1.5			1.5	-1.5			1.5	3			-3	
$y = \cos(x + 60)$	-0.5			0.87	1			0	-0.5			-0.87	

- (b) On the same axes draw the graphs of $y = 3 \sin(2x - 30)$ and $y = \cos(x + 60)$. Use the scale: 1cm rep 30° on the x-axis and 1cm rep 1 unit on the y- axis. (5 marks)



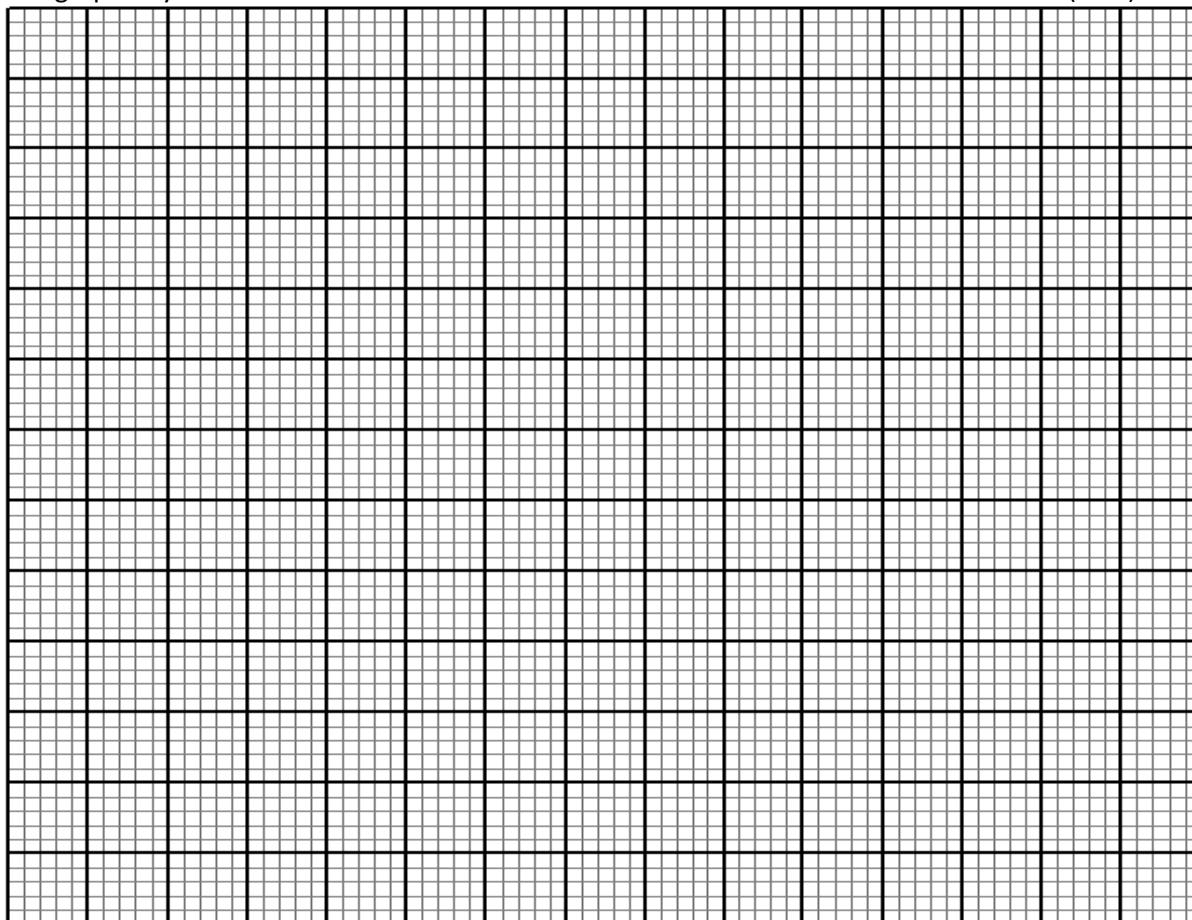
- 18.Kori and Mue decided to start a business. Korir contributed shs.40,000 and Mue shs.64000. The two men agreed that in any year, 15% of the profit shall be divided equally between them and 20% of the profit will be used to meet the cost of running the business the following year. They also agreed to share the rest of the profit in the ratio of their contributions.The profit made after the first year was shs.43200.

(a) How much did they set aside towards the cost of running the business for the second year?
(2mk)

b) How much did Mue receive at the end of the first year? (4mk)

(c) Korir bought cows with his share of the profit. If each cow cost shs.1800, how many cows did he buy?
(4mk)

19. Draw the graph of $y = -x^2 + 3x + 2$ for $-4 \leq x \leq 4$. (4mk)



Use your graph to solve the equations:

(i) $3x + 2 - x^2 = 0$

(3mk)

(ii) $-x^2 - x = -2$

(3mk)

20. Two tanks are similar in shape. The capacity of the tanks are 1,000,000 litres and 512, 000 litres respectively.

(a) Find the height of the smallest tank if the larger is 300cm tall

(4 marks)

(b) Calculate the surface area of the larger tank if the smaller tank has a surface area of 1200m^2

(3mk)

(c) Estimate the mass of the smaller tank if the mass of the larger one is 800kg

(3 marks)

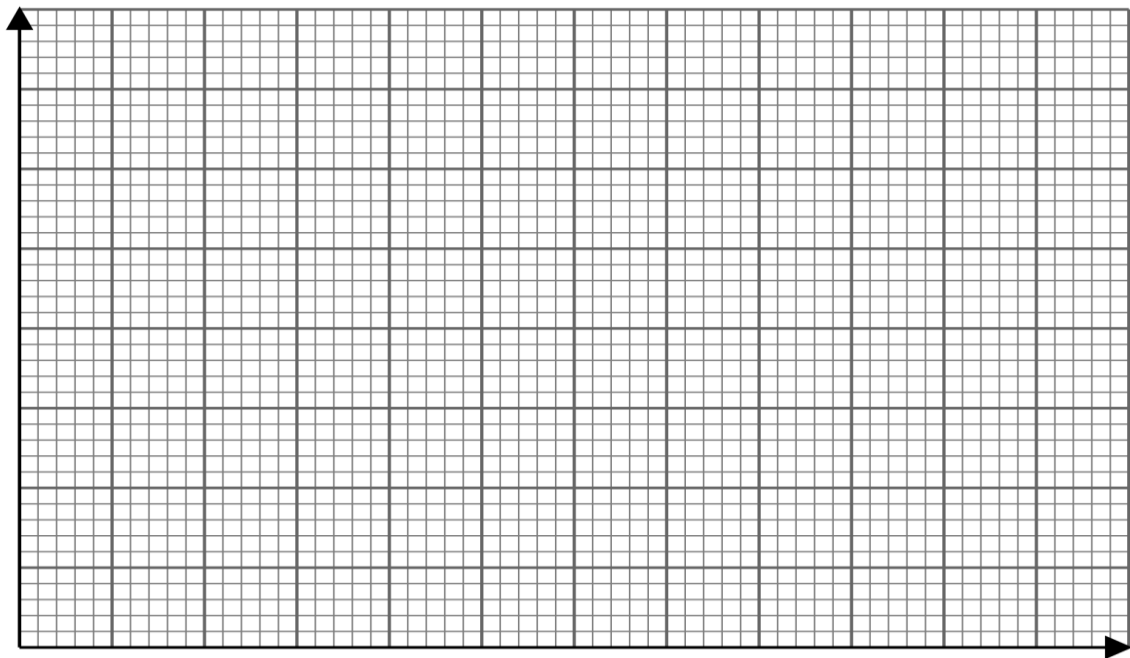
21. The data below are marks scored by 45 students in a Mathematics test.

32	82	79	52	41	40	46	80	60
81	74	83	65	53	43	50	42	31
38	80	81	43	76	45	70	51	54
84	39	42	80	46	71	54	72	45
35	83	41	84	70	50	78	53	55

(a) Using the data above, complete the frequency distribution table below. (2 marks)

Marks	30 – 39	40 – 44	45 – 54	55 – 69	70 – 79	80 – 84
Frequency						

(b) Draw a histogram to represent the data above. (3 marks)

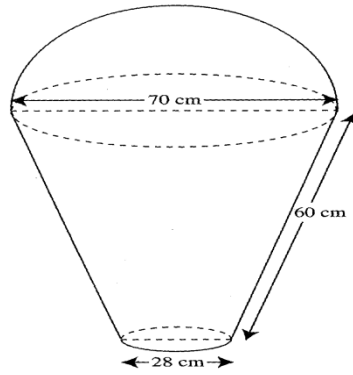


(c) Using the histogram in (b) above, determine:

(i) The median mark. (3 marks)

(ii) The number of students that failed if the pass mark was 49.5. (2 marks)

22. The figure below represents a model of a solid structure in the shape of frustum of a cone with a hemisphere top. The diameter of the hemispherical part is 70cm and is equal to the diameter of the top of the frustum. The frustum has a base diameter of 28cm and slant height of 60cm.



Calculate :

- (a) the area of the hemispherical surface . (2mk)

- (b) the slant height of cone from which the frustum was cut. (2mk)

- (c) the surface area of frustum. (2mk)

- (d) the area of the base. (2mk)

- (e) the total surface area of the model. (2mk)

22. Four towns P, Q, R and S are such that town Q is 120km due East of town P, Town R is 160km due North of Town Q, Town S is on a bearing of 330° from P and on a bearing of 300° from R

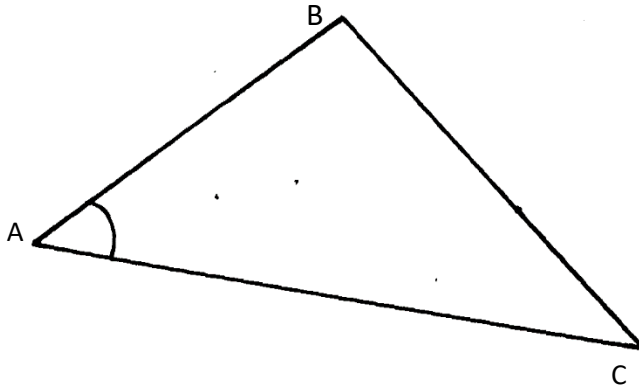
a) i) Draw a sketch to show the relative positions of the town. (1 mark)

ii) Using a ruler and a pair of compasses only, show the relative positions of towns P, Q R and S. Take a scale of 1 cm rep 50km. (5 marks)

Determine: (i) the distance SP in km (2 marks)

i) the bearing of S from Q (2 marks)

24. The figure below represents a triangular plot ABC. The lengths of $AB = 50\text{m}$, $AC = 80\text{m}$ and angle $BAC = 30^\circ$



(a) Find the length of BC to 2 s.f (3mk)

(b) Find the area of the plot in hectares (2mk)

(c) The plot is fenced using 4 strands of barbed wire. The length of one roll of barbed wire is 60m and it costs shs.4000. Calculate;

(i) The length of fencing wire required (2mk)

(ii) The number of complete rolls to be bought (2mk)

(iii) The cost of the rolls (1mk)