KAPSABET HIGH SCHOOL

POST MOCK 2024

MATHEMATICS

121/1

PAPER 1

TIME: 2½ HOURS

NAME……………………………………………… SIGN……………………………

INDEX NO……………………………………… ADM NO……………………

Kenya Certificate of Secondary Education.

INSTRUCTIONS TO CANDIDATES

1. *Write your name, Admission number and class in the spaces provided.*
2. *Sign and write date of the examination in the spaces provided.*
3. *The paper contains TWO sections: Section A and B*
4. *Answer ALL questions in section I and **STRICTLY ANY FIVE** questions from section II.*

FOR EXAMINERS USE ONLY

SECTION A

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

SECTION B

17	18	19	20	21	22	23	24	25	26	27	TOTAL

1. Simplify $\dfrac{\left(1\frac{3}{7}-\frac{5}{8}\right)+\frac{2}{3}\ of\ 1\frac{1}{5}}{\frac{3}{4}+1\frac{5}{7}\div\frac{4}{7}\ of\ 2\frac{1}{3}}$ (4mks)

2. A straight line ax + by = 16 passes through A (2, 5) and B (3, 7). Find the values of a and b

(3mks)

3. Simplify $\dfrac{2-x-x^2}{3x^2-2x-1}$ (3mks)

4. Solve for X where $0 \leq x \leq = 90^0$

$\sin 2x - \cos(x - 30) = 0$ **(2mks)**

5. Solve for X in

$2x - 4 \leq 3x + 2 < 10 - x$

Hence represent your solution on a number line **(3mks)**

6. Two similar cylindrical solids have heights of 18 cm and 24 cm. The volume of the larger cylinder is 320cm³, find the volume of the smaller cylinder **(4mks)**

7. Solve for X   **(3mks)**

$$8^{3x-2} \times 16^{\frac{1}{2}X} = \frac{1}{4}$$

8. A quantity P varies jointly as Q and inversely as on the square root of R. If Q is increased by 10% and R is reduced by 19%, find the percentage change in P   **(3mks)**

9. Okedi sold goods whose marked price is sh. 340,000 at a discount of 2%. He was paid sh. 16660 as commission for the total sales. Calculate the percentage rate of commission

(3mks)

10. The interior angle of a regular polygon is three and a half times the exterior angle. Determine the sides of the polygon **(3mks)**

11. Give that A = $\begin{pmatrix} 2 & 3 \\ 1 & 4 \end{pmatrix}$, $B \begin{pmatrix} -1 & 3 \\ 2 & -1 \end{pmatrix}$;find matrix C where AC = B **(3mks)**

12. Amoit bought 2 pens and 5 exercise books at a cost of sh. 275. Allan bought 4 such pens and exercise books from the same shop at a cost of sh. 415 by letting sh. X and y to be the costs of a pen and a book respectively, find the cost of each item **(4mks)**

13. Okech left some money in his will to be shared amongst his wife, son and daughter in the ratio 4:3:2 respectively. If the daughter received sh. 120,000 less than the mother's share, find the total amount of money Okech left in his will. **(2mks)**

14. Use tables of reciprocals to find the reciprocal of 0.3758. Hence find the value $\frac{\sqrt[3]{0.125}}{0.3758}$ correct to 4.S.f **(4mks)**

15. A major sector of a circle subtends an angle of 150 at the centre. The radius of the circle is 7cm and the centre is at O as shown
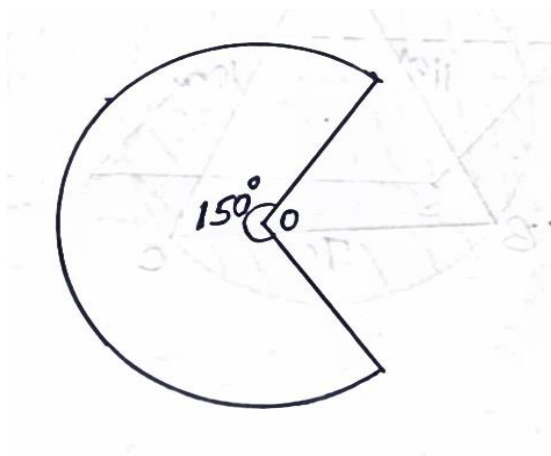
If the sector is folded into a conical shape, calculate the radius of the cone correct to 1 d.p

(3mks)

16. A Kenyan bank buys and sells currencies at the exchange rates below

Currency	Buying (ksh)	Selling (ksh)
1 euro	147.87	148.00
1 us dollar	74.22	74.50

An American tourist arrived in Kenya with 24,000 Euros. He converted all the euros to Kenya shillings at the bank. He spent a total sh. 200,000 while in Kenya and converted the rest into US dollars at the bank. Find the amount in dollars that he received. **(3mks)**

17. The diagonals of a rectangle P, Q, R, S intersect at (5, 3). Given that the equation of line PQ is 4y - 9x =13 and that of line PS is y -4x =5

a) The co-ordinators of P   **(3mks)**

b) The co-ordinates of R   **(2mks)**

c) The equation of line RQ   **(2mks)**

d) The equation of a perpendicular line drawn to meet PR at (5,3)   **(3mks)**

18. A bus left Malaba town at 6.00am and travelled at an average speed of 80km/h towards Nairobi which is 510km away. At 6.30am a salon car left Nairobi the same day following the same route and travelled at average speed of 100km/h towards Malaba. After 1 hour, the car had a puncture which took 15minutes to repair before proceeding with the journey;

Determine

a) The distance covered by the bus in 30minutes   (**1mks**)

b) The time of the day when car met the bus.   (**6mks**)

c) The distance from Nairobi to the point where the car met with the bus   (**2mks**)

d) The time of the day to the nearest minute when the bus got to Nairobi   (**1mk**)

19. Points P, Q and R are a straight line on a level ground. An electricity pole is erected at P with a point X and Y on it. From point X, the angle of depression of point Q is 48° while the angle of depression of R from Y which is 3m above X is 60°

a) Illustrate the position of X, Y, P and R by sketching.   **(1mk)**

b) Hence calculate to 1 d.p.

i) The length XP   **(3mks)**

ii) The distance YQ   **(2mks)**
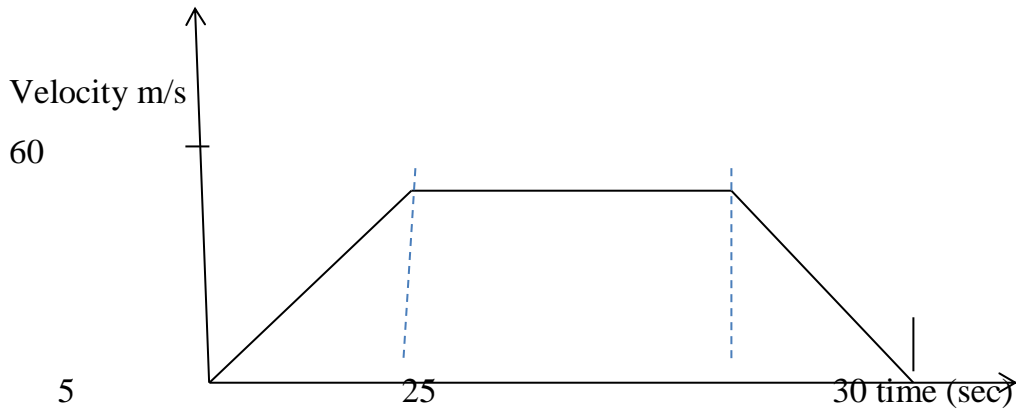
iii) The distance PQ   **(2mks)**

iv) The angle of elevation of Y from R given that PR = 8cm   **(2mks)**

20.a) The figure shows a velocity- time graph of a car

i) Find the total distance covered by the car in metres **(3mks)**

ii) Calculate the deceleration of the car **(3mks)**

b) A lorry left kisumu at 8.00am and travelled towards the Nakuru at an average speed of 72km/h.

At 8.30am a matatu left kisumu and followed the lorry at an average speed of 96km/h.

Determine the time of the day when the matatu caught up with the lorry **(4mks)**

21. The date below shows marks scored by 48 students in a geography exam.

Marks %	30-39	40-49	50-59	60-69	70-79	80-89
Students	6	10	x	9	12	2

a) Determine the value of x **(2mks)**

b) State the modal class **(1mk)**

c) Calculate the **(3mks)**
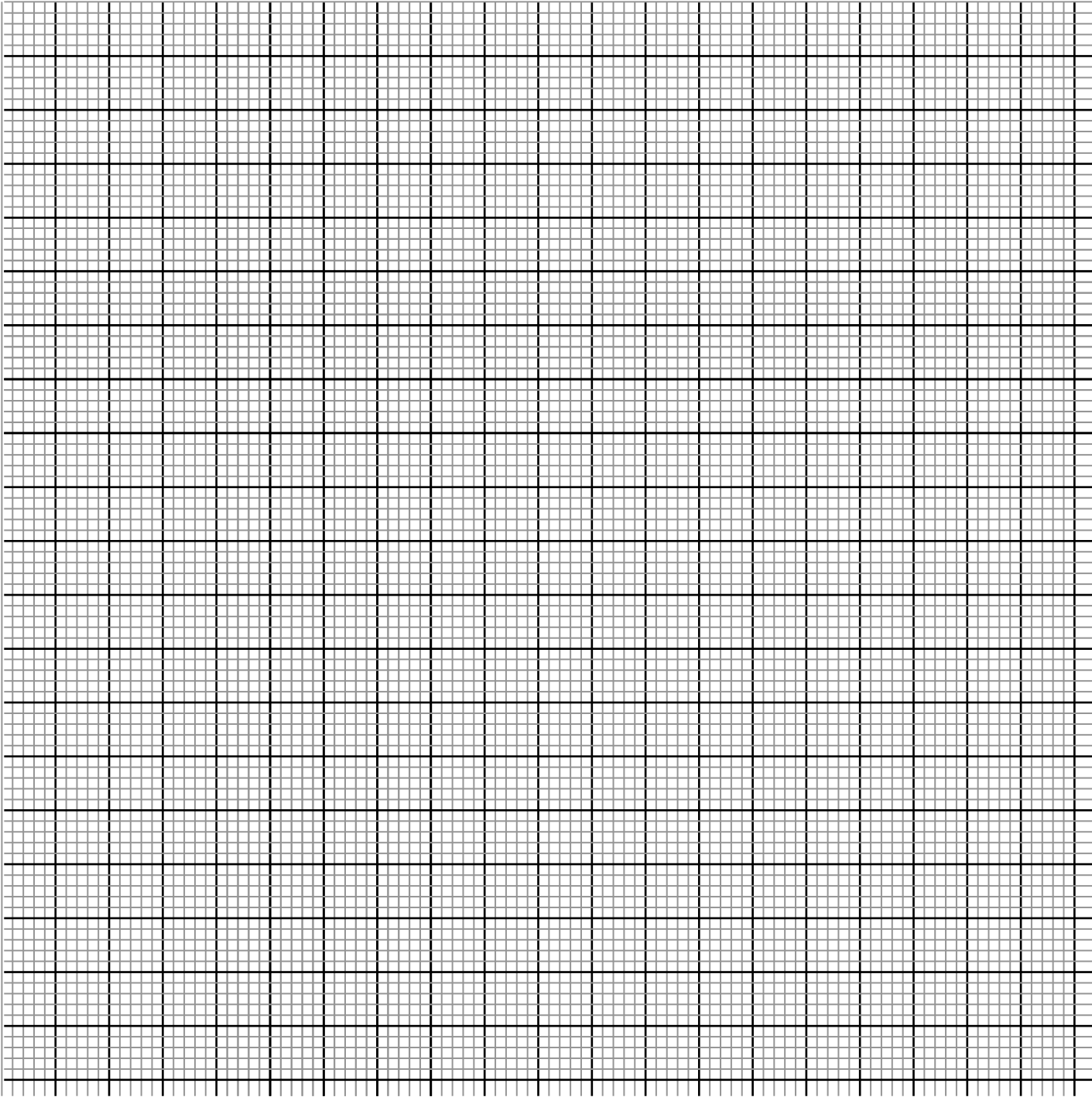
i) Mean mark

ii) Median mark **(4mks)**

22. a) Complete the table below for the equation $Y = x^2 + 3x - 6$ where $-7 \leq x \leq 4$

x	-7	-6	-5	-4	-3	-2	-1	0	1	2	3	4
y		4			6				-2			

(3mks)

b) Using the scale 1 cm to represent 1 unit on the X- axis and 1cm to represent 2 units on the Y - axis, draw the graph of $y = x^2 + 3x - 6$ for $-7 \leq x \leq 4$ **(4mks)**

c) Use your graph to solve for x in

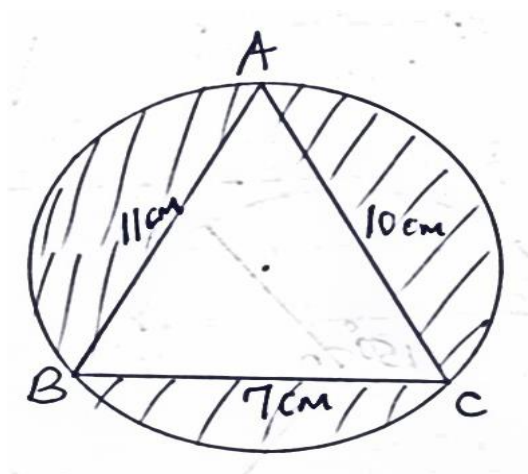$x^2 + 3x\text{-}6 =0$ **(2mks)**

d) State the;

i) Turning point of the curved **(1mk)**

ii) Equation of the line symmetry **(1mk)**

23. The figure shows triangle ABC inscribed in a circle where AC = 10cm, BC = 7cm and AB
=11cm
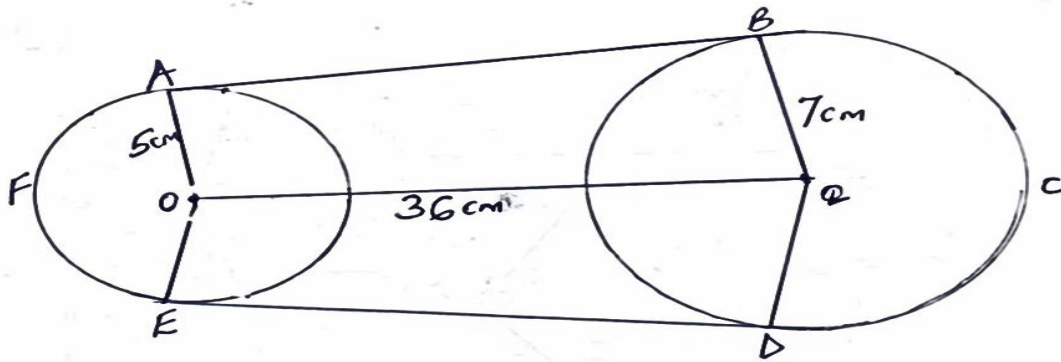

Calculate correct 1 d p ($use \ \pi \ = \frac{22}{7}$)

a) The size of the angle CAB   **(4mks)**

b) The radius of the circle   **(2mks)**

c) Hence, find the area of the shaded region   **(4mks)**

24. ABCDEFGA is a belt tied around two wheels whose centres are O and Q forming a pulley system. Given that Q =36cm, AO = 5cm BQ = 7cm. calculate correct 1 d.p $(Take \ \pi \ = \frac{22}{7})$

a) Angle AOQ   **(3mks)**

b) The length of the belt in contact with

i) The wheel whose centre is O   **(2mks)**

iii) The wheel whose centre is Q   **(2mks)**

c) The length of AB, hence the total length of the belt   **(3mks)**