

Post Mock
K1202 P2
M/SCHEM4E

SECTION I (50 marks)

Answer all the questions in this section in the spaces provided:

1. Calculate the percentage error in estimating $5.7\bar{2}$ as 5.72. [3 marks]

$$r = 5.72222...$$

$$10r = 57.2222...$$

$$100r = 572.2222...$$

$$90r = 515$$

$$r = \frac{515}{90}$$

$\sqrt{M_1}$

$$\% \text{ Error} = \left| \frac{515}{90} - \frac{572}{100} \right| \times 100\%$$

$$= 0.038834951\%$$

$$\text{or } \frac{4}{103}\%$$

$\sqrt{A_1}$

2. If $\frac{2\sqrt{6}}{\sqrt{3}-\sqrt{2}} = x^2\sqrt{3} - k\sqrt{2}$, where k and x are rational numbers, find the values of k and x . [3 marks]

$$\frac{2\sqrt{6}(\sqrt{3}+\sqrt{2})}{(\sqrt{3}-\sqrt{2})(\sqrt{3}+\sqrt{2})} \sqrt{M_1}$$

$$= \frac{2\sqrt{18} + 2\sqrt{12}}{3-2}$$

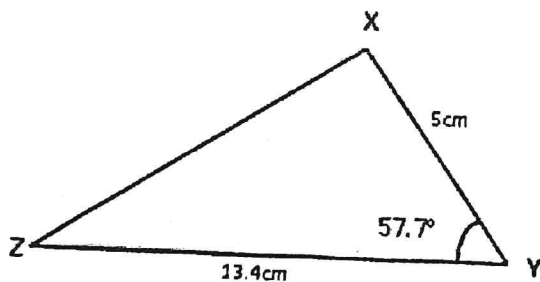
$$= 6\sqrt{2} + 4\sqrt{3} \quad \sqrt{A_1}$$

$$6\sqrt{2} + 4\sqrt{3} = x^2\sqrt{3} - k\sqrt{2}$$

$$\Rightarrow \left. \begin{matrix} k = -6 \\ x = \pm 2 \end{matrix} \right\}$$

$\sqrt{B_1}$ (for the three values otherwise $\sqrt{B_0}$)

3. In triangle XYZ below $YZ = 13.4$ cm, $XY = 5$ cm and $\angle XYZ = 57.7^\circ$. Calculate the radius, to two decimal places, of the circumscribing circle to the triangle. [3 marks]



$$r = \frac{11.53068884}{2 \times \sin 57.7} \sqrt{M_1}$$

$$= 6.820779307$$

$$= 6.82 \text{ cm} \quad \sqrt{A_1}$$

$$y^2 = 5^2 + 13.4^2 - 2 \times 5 \times 13.4 \cos 57.7 \sqrt{M_1}$$

$$y = 11.53068884$$

4. The cash price of a bed is KShs. 6500. Wambui bought it on hire purchase by making a down payment of Kshs. 2300 followed by 12 monthly instalments of Ksh.490. Calculate the rate of the carrying charge to two decimal places if it is compounded. [4 marks]

$$P = 6500 - 2300 \quad \checkmark M1$$

$$= 4200$$

$$A = 490 \times 12 \quad \checkmark M1$$

$$= 5880$$

$$5880 = 4200 \left(1 + \frac{r}{100}\right)^{12} \quad \checkmark A1$$

$$\frac{\log 1.4}{12} = \log \left(1 + \frac{r}{100}\right)$$

$$\frac{r}{100} = \text{antilog} \left(\frac{\log 1.4}{12} \right) - 1$$

$$= 0.028436156$$

$$r = 2.8436156$$

$$r = 2.84\% \quad \checkmark A1$$

5. Using the substitution $k = (m-3)$ solve for m in the equation $2(m-3)^2 - 5(m-3) - 7 = 0$ by completing square method. [4 marks]

$$2k^2 - 5k - 7 = 0 \quad \checkmark M1$$

$$k^2 - \frac{5}{2}k = \frac{7}{2}$$

$$k^2 - \frac{5}{2}k + \left(\frac{-5}{4}\right)^2 = \frac{7}{2} + \left(\frac{-5}{4}\right)^2 \quad \checkmark M1$$

$$\left(k - \frac{5}{4}\right)^2 = \frac{81}{16}$$

$$k = \frac{5}{4} \pm \frac{9}{4} \quad \checkmark M1$$

$$k = -1 \text{ or } 3\frac{1}{2}$$

$$m = -1 + 3 \text{ or}$$

$$= 2$$

$$m_2 = 3\frac{1}{2} + 3$$

$$= 6\frac{1}{2}$$

$\checkmark A1$

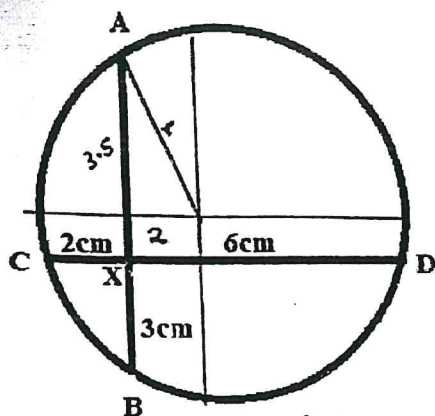
6. Simplify completely. $\frac{\log 49 + 2\log \sqrt{7}}{4\log 7 - \log 7}$ [2 marks]

$$= \frac{2\log 7 + \log 7}{3\log 7} \quad \checkmark M1$$

$$= \frac{3\log 7}{3\log 7}$$

$$= 1 \quad \checkmark A1$$

7. In the figure below chord AB is perpendicular to chord CD at X and CX=2cm, DX=6cm and BX=3cm.



Calculate the radius of the circle to two decimal places.

[3 marks]

$$Ax = \frac{6 \times 2}{3} \quad \checkmark_{M1}$$

$$= 4$$

Alternative 1

$$r^2 = 3.5^2 + 2^2 \quad \checkmark_{M1}$$

$$r = 4.03 \text{ cm} \quad \checkmark_{A1}$$

Alternative 2

$$4r^2 = a^2 + b^2 + c^2 + d^2$$

$$4r^2 = 2^2 + 3^2 + 4^2 + 6^2 \quad \checkmark_{M1}$$

$$r = 4.03 \text{ cm} \quad \checkmark_{A1}$$

$$8 - 16 + 6(1)^5(-2x) + 15(1)^4(-2x)^2 + 20(1)^3(-2x)^3 + \dots$$

$$= 1 - 12x + 60x^2 + 160x^3 + \dots \quad \checkmark_{M1}$$

$$(1 - 2x)^6 = (1 + 0.02)^6$$

$$x = -0.01$$

$$1 - 12(-0.01) + 60(-0.01)^2 + 160(0.01)^3 + \dots \quad \checkmark_{M1}$$

$$= 1.01262 \quad \checkmark_{A1}$$

$$\det A = -6$$

$$A^{-1} = -\frac{1}{6} \begin{bmatrix} -1 & -4 \\ -4 & -2 \end{bmatrix}$$

$$= \begin{bmatrix} \frac{1}{6} & \frac{2}{3} \\ \frac{2}{3} & \frac{1}{3} \end{bmatrix} \quad \checkmark_{M1}$$

$$T = \begin{pmatrix} \frac{1}{6} & \frac{2}{3} \\ \frac{2}{3} & \frac{1}{3} \end{pmatrix} \begin{pmatrix} -20 & 30 \\ 40 & -10 \end{pmatrix} \quad \checkmark_{M1}$$

$$T = \begin{pmatrix} 16\frac{2}{3} & -1\frac{2}{3} \\ 0 & 16\frac{2}{3} \end{pmatrix} \quad \checkmark_{A1}$$

10. Find the co-ordinate of the centre and the radius of a circle whose equation is given as

$$3x^2 + 3y^2 - 12x + 18y + 8 = 0.$$

[3 marks]

$$x^2 + 4x + y^2 + 6y = -\frac{8}{3}$$

$$x^2 - 4x + (-2)^2 + y^2 + 6y + (3)^2 = -\frac{8}{3} + (-2)^2 + (3)^2 \quad \checkmark_{M1}$$

$$(x-2)^2 + (y+3)^2 = 10\frac{1}{3} \quad \checkmark_{M1}$$

$$\text{Centre } (2, -3)$$

$$\text{Radius} = 3.214550254 \text{ units}$$

} $\checkmark_{A1}$

11. A merchant blends 350kg of Kakuzi Tea costing Sh. 84 per kg with 140kg of KETEPA tea costing Sh.

105 per kg. Calculate the price at which he must sell 1 kg of the mixture to attain 15% profit. [3 marks]

$$\text{Cost Price Per Kg} = \frac{350 \times 84 + 140 \times 105}{350 + 140} \quad \checkmark_{M1}$$

$$= 90/-$$

$$\text{S.P per Kg} = \frac{115 \times 90}{100} \quad \checkmark_{M1}$$

$$= 103.50 \quad \checkmark_{A1}$$

12. Kiptoo earns a monthly basic salary of Kshs.25000. He is entitled to a tax relief of Kshs.480 per month, a house and medical allowances of Kshs.12000 and Kshs.3000 respectively. Calculate his annual taxable income in Kenyan Pounds. [3 marks]

$$\text{Monthly taxable income}$$

$$= 25000 + 12000 + 3000 \quad \checkmark_{M1}$$

$$= 40000$$

$$\text{Annual Taxable income in K£}$$

$$= \frac{40000 \times 12}{20} \quad \checkmark_{M1}$$

$$= 24000 \text{ K£} \quad \checkmark_{A1}$$

13. A quantity Q varies partly as quantity R and partly inversely as the square of R . Given that $Q = 3$ when $R = 1$ and $Q = 5$ when $R = 0.5$. Find the equation connecting Q and R . [3 marks]

$$Q = kR + \frac{l}{R^2} \quad \text{where } k \text{ and } l \text{ are constants} \quad \checkmark M_1 \quad \text{Correct relationship}$$

$$3 = k(1) + \frac{l}{1^2} \Rightarrow 3 = k + l$$

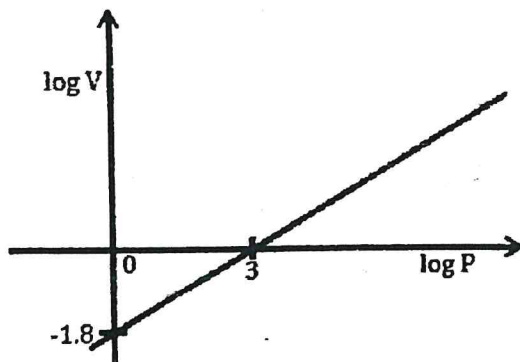
$$5 = k(0.5) + \frac{l}{0.5^2} \Rightarrow 5 = 0.5k + 4l \quad \checkmark M_1 \quad \text{Correct attempt to solve for either } k \text{ or } l$$

$$k = 2 \text{ and } l = 1$$

$$Q = 2R + \frac{1}{R^2}$$

$\checkmark A_1$ Correct equation

14. The graph below is part of the straight line graph obtained from the initial equation $V = aP^n$.



Write down the equation of the straight line in the form $y = mx + c$ hence use the graph to calculate the values of a and n . [3 marks]

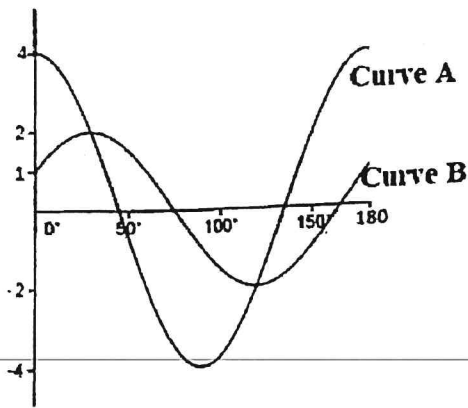
$$\log V = n \log P + \log a \quad \checkmark B_1$$

$$\log a = -1.8$$

$$a = 0.015848931 \quad \checkmark B_1$$

$$n = \frac{-1.8 - 0}{0 - 3} = 0.6 \quad \checkmark B_1$$

15. The graph below show two curves A and B drawn on the same axis.



a) State the period of curve A.

[1 mark]

$$4 \quad 180^\circ \quad \sqrt{B_1}$$

b) State the amplitude of curve B.

[1 mark]

$$2 \quad \sqrt{B_1}$$

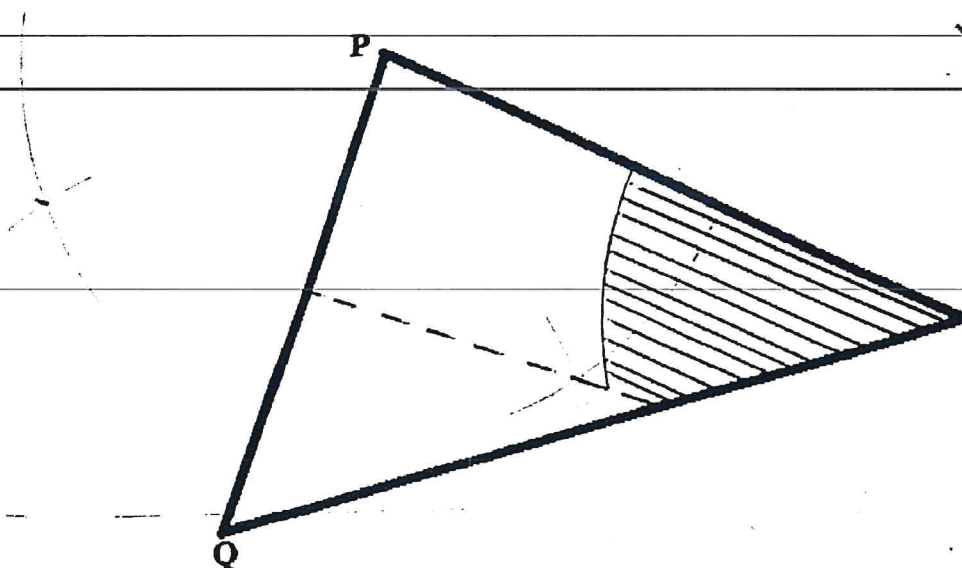
c) Given that the first peaks of the two curves A and B are 30° apart state the translation that maps curve B onto A.

[1 mark]

$$T = \begin{pmatrix} -30^\circ \\ 2 \end{pmatrix} \sqrt{B_1}$$

16. P, Q and R in the figure below represents three schools. A borehole is to be drilled such that it is closer to P than Q but 5cm from R. Shade the possible location of the borehole.

[3 marks]



$\sqrt{B_1}$ Perpendicular bisector of PQ done using dotted lines

$\sqrt{B_1}$ Arc done in full line $r=5\text{cm}$ with centre R but not spilling past the dotted lines

$\sqrt{B_1}$ Correct shading off

SECTION II (50 marks)

Answer only five questions in this section in the spaces provided:

17. The numbers 213, 205, 197, ..., 37 represents an Arithmetic Progression

Determine the:

- a) number of terms in the progression.

[3 marks]

$$\begin{aligned} T_n &= a + (n-1)d \\ d &= 205 - 213 \quad \checkmark M1 \\ &= -8 \\ 37 &= 213 + (n-1)(-8) \quad \checkmark M1 \\ n &= 23 \quad \checkmark A1 \end{aligned}$$

- b) eighteenth term of the progression.

[2 marks]

$$\begin{aligned} T_{18} &= 213 + (17 \times -8) \quad \checkmark M1 \\ &= 77 \quad \checkmark A1 \end{aligned}$$

- c) middle term of the progression.

[3 marks]

$$\begin{aligned} \text{Middle Term} &= T_{\frac{23+1}{2}} \\ &= T_{12} \quad \checkmark B1 \\ T_{12} &= 213 + (12 \times -8) \quad \checkmark M1 \\ &= 117 \quad \checkmark A1 \end{aligned}$$

- d) sum of the first 20 terms of progression.

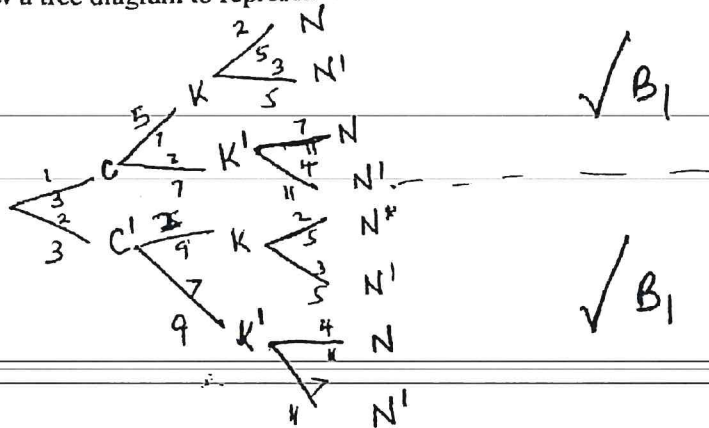
[2 marks]

$$\begin{aligned} S_{20} &= \frac{20}{2} [2 \times 213 + 19 \times -8] \quad \checkmark M1 \\ &= 2740 \quad \checkmark A1 \end{aligned}$$

19. In a certain country, the probability of school A topping in county exams is $\frac{1}{3}$. If it tops the probability of it topping in KCSE is $\frac{5}{7}$ otherwise the probability of it topping in KCSE is $\frac{2}{7}$. If the school tops in KCSE the probability of its appearing in the newspaper is $\frac{2}{9}$, otherwise the probability of its appearing in newspaper is $\frac{4}{9}$.

[2 marks]

a) Draw a tree diagram to represent the above information.



b) Use the tree diagram to find the probability that:

i) The school tops in the two exams and appears in the newspaper

[2 marks]

$$P(CKN) = \frac{1}{3} \times \frac{5}{7} \times \frac{2}{9}$$

$$= \frac{10}{189}$$

ii) The school did not appear in the newspaper.

[2 marks]

$$P(CKN') + P(C'KN') + P(C'KN') + P(C'KN')$$

$$= \frac{1}{3} \times \frac{5}{7} \times \frac{7}{9} + \frac{1}{3} \times \frac{2}{7} \times \frac{7}{11} + \frac{2}{3} \times \frac{2}{7} \times \frac{7}{9} + \frac{2}{3} \times \frac{5}{7} \times \frac{7}{11}$$

$$= \frac{1051}{1485}$$

iii) The school will appear in the Newspaper anyway.

[2 marks]

$$P(C'KN) + P(C'KN) + P(C'KN) + P(C'KN)$$

$$= \frac{2}{3} \times \frac{7}{9} \times \frac{4}{11} + \frac{2}{3} \times \frac{2}{9} \times \frac{2}{5} + \frac{1}{3} \times \frac{2}{7} \times \frac{4}{11} + \frac{1}{3} \times \frac{5}{7} \times \frac{2}{5}$$

$$= 0.43$$

iv) The school tops in any one of the exams but does not appear in the Newspaper.

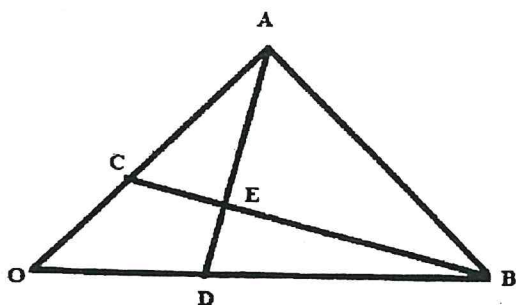
[2 marks]

$$P(C'KN') + P(C'KN')$$

$$= \frac{1}{3} \times \frac{2}{7} \times \frac{4}{11} + \frac{2}{3} \times \frac{2}{9} \times \frac{3}{5}$$

$$= 0.124$$

18. The diagram below shows triangle OAB. Vectors $\vec{OA} = \mathbf{a}$ and $\vec{OB} = \mathbf{b}$. C divides OA in the ratio 2:3 and D divides OB in the ratio 3:4 while AD and BC meet at E.



- a) Find in terms of $\mathbf{a}$ and $\mathbf{b}$ vectors:

i) $\vec{OC} = \frac{2}{5} \mathbf{a}$

[1 mark]

ii) $\vec{CB} = \vec{CO} + \vec{OB}$
 $= -\frac{2}{5} \mathbf{a} + \mathbf{b}$

[2 marks]

- b) Given that $\vec{CE} = m\vec{CB}$ and $\vec{DE} = n\vec{DA}$ where m and n are scalar:

- i) write down two distinct expressions for $\vec{OE}$.

[2 marks]

$$\vec{OE} = \frac{2}{5} \mathbf{a} + m \left(-\frac{2}{5} \mathbf{a} + \mathbf{b} \right) \quad \vec{OE} = \frac{3}{7} \mathbf{b} + n \left(-\frac{3}{7} \mathbf{b} + \mathbf{a} \right)$$

- ii) find the values of m and n .

[4 marks]

$$\left(\frac{2}{5} - \frac{2}{5}m \right) \mathbf{a} + m \mathbf{b} = n \mathbf{a} + \left(\frac{3}{7} - \frac{3}{7}n \right) \mathbf{b}$$

Comparing the coefficients

$$\left. \begin{aligned} \frac{2}{5} - \frac{2}{5}m &= n \\ m &= \frac{3}{7} - \frac{3}{7}n \end{aligned} \right\} \sqrt{M_1}$$

$$n = \frac{2}{5} - \frac{2}{5} \left(\frac{3}{7} \right)$$

$$= \frac{8}{29} \sqrt{A_1} \text{ for both}$$

m and n
correct

$$\Rightarrow m = \frac{3}{7} - \frac{3}{7} \left(\frac{2}{5} - \frac{2}{5}m \right) \sqrt{M_1}$$

$$m = \frac{9}{29} \quad n = \frac{8}{29}$$

- c) Express $\vec{OE}$ in terms of $\mathbf{a}$ and $\mathbf{b}$ only.

[2 marks]

$$\vec{OE} = \left(\frac{2}{5} - \frac{2}{5} \left(\frac{9}{29} \right) \right) \mathbf{a} + \frac{9}{29} \mathbf{b} \sqrt{M_1} = \frac{8}{29} \mathbf{a} + \frac{9}{29} \mathbf{b} \sqrt{A_1}$$

20. A triangular PQR has vertices at P(5,5), Q(10,15) and R(15,5).

a) Find the coordinates of the points P', Q' and R' the images of P, Q and R respectively under a

transformation, M whose matrix is $\begin{bmatrix} -0.6 & 0.8 \\ 0.8 & 0.6 \end{bmatrix}$.

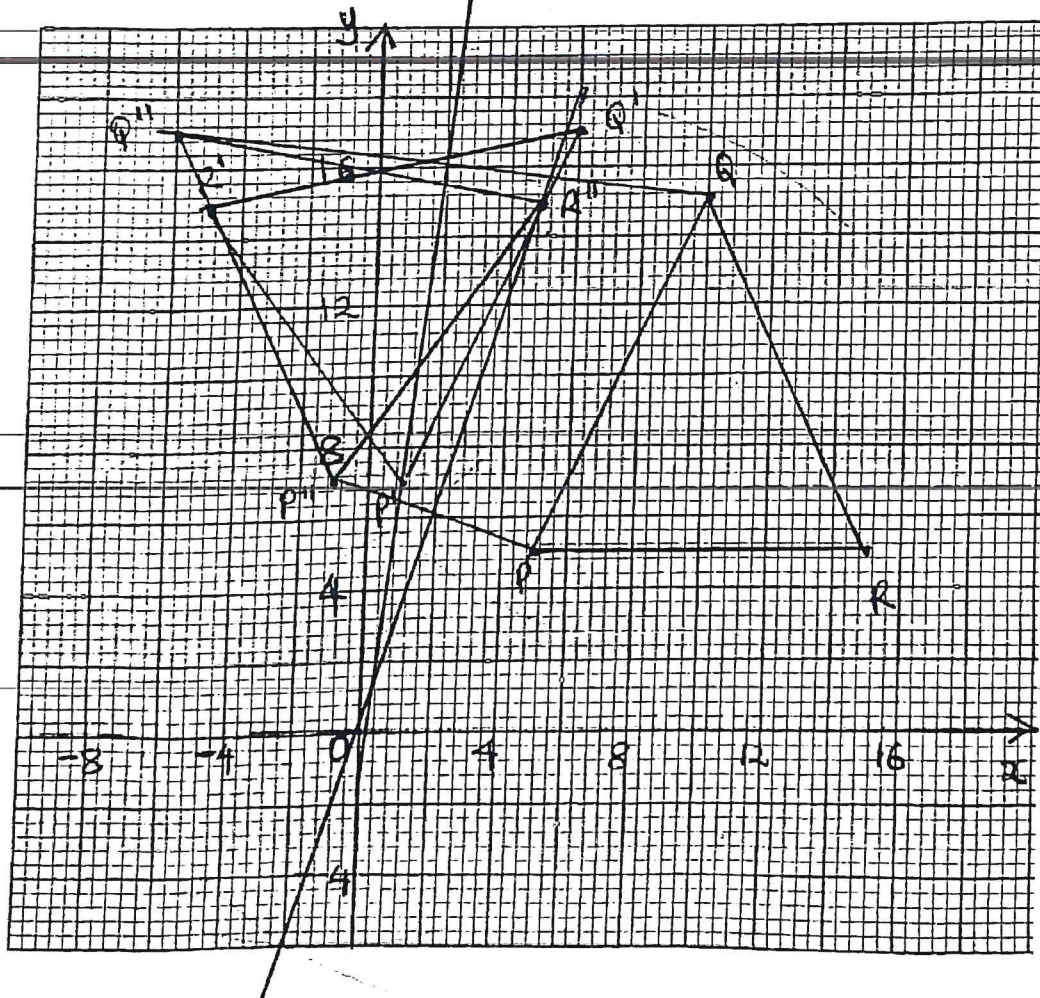
[2 marks]

$$\begin{pmatrix} -0.6 & 0.8 \\ 0.8 & 0.6 \end{pmatrix} \begin{pmatrix} 5 & 10 & 15 \\ 5 & 15 & 5 \end{pmatrix} = \begin{pmatrix} 1 & 6 & -5 \\ 7 & 17 & 15 \end{pmatrix} \begin{matrix} \checkmark M_1 \\ \text{for R.H.S} \end{matrix}$$

$$P' (1, 7) \quad Q' (6, 17) \quad R' (-5, 15) \quad \checkmark A_1 \text{ Co-ordinates}$$

b) Represent ΔPQR and its image $\Delta P'Q'R'$ on the same Cartesian plane.

[2 marks]



$\checkmark B_1 \Delta PQR$
correctly drawn

$\checkmark B_1 \Delta P'Q'R'$
correctly drawn

- c) Triangle P'' , Q'' and R'' is the image of P' , Q' and R' under a reflection in the y-axis.
 (i) Draw $\Delta P''Q''R''$ on the same grid in (b) above and state the co-ordinates of the vertices [2 marks]

$$P''(-1, 7) \quad Q''(-6, 17) \quad R''(5, 15) \quad \checkmark B_1$$

first $\checkmark B_1$ $P''Q''R''$ correctly drawn on the graph

- (ii) Describe fully a single transformation that maps ΔPQR onto $\Delta P''Q''R''$. [2 marks]

Transformation — Rotation

Centre $(0, 0.8)$

Angle of rotation $+95.5^\circ$

} $\checkmark B_1$

first $\checkmark B_1$ For showing the transformation on the graph

Accept other correctly described transformations.

- (iii) Determine a 2×2 matrix representing the transformation in c(ii) above. [2 marks]

$$\begin{pmatrix} a & b \\ c & d \end{pmatrix} \begin{pmatrix} 5 & 10 & 15 \\ 5 & 15 & 5 \end{pmatrix} = \begin{pmatrix} -1 & -6 & 5 \\ 7 & 17 & 15 \end{pmatrix}$$

$$5a + 5b = -1$$

$$10a + 15b = -6$$

$$15a + 5b = 5$$

$$5c + 5d = 7$$

$$10c + 15d = 17$$

$$15c + 5d = 15$$

$\checkmark M_1$

$$a = -0.6$$

$$\begin{pmatrix} 0.6 & -0.8 \\ 0.8 & 0.6 \end{pmatrix} \quad \checkmark A_1$$

21. On the surface of the earth, A (50°N , 80°E) and B (50°N , 120°E) are two separate places. Given that the radius of the earth is 6370km , $\pi = \frac{22}{7}$ and the local time at B is 12.30 p.m.

a) Find the time at A.

[2 marks]

$$\text{Longitude difference} = 120 - 80 \\ = 40^{\circ}$$

$$\text{Time difference} = \frac{40 \times 4}{60} \quad \checkmark M_1 \\ = 2\text{h } 40\text{mins}$$

$$\text{Time at A} \quad 12:30\text{pm} - 2\text{h } 40\text{mins} \\ = 9:50\text{am} \quad \checkmark A_1$$

b) Calculate the shortest distance between A and B in km.

[3 marks]

$$\theta = 180 - 50 \times 2 \\ = 80^{\circ} \quad \checkmark B_1$$

$$\text{Distance} = \frac{80}{360} \times 2 \times \frac{22}{7} \times 6370 \quad \checkmark M_1$$

$$= 8897 \frac{7}{9} \text{ km} \quad \checkmark A_1$$

c) If C (0° , 80°E), find the distance between A and C in km.

[3 marks]

$$\text{Latitude difference} = 50^{\circ} \quad \checkmark B_1$$

$$\text{Distance} = \frac{50}{360} \times 2 \times \frac{22}{7} \times 6370 \quad \checkmark M_1$$

$$= 5561 \frac{1}{9} \text{ km} \quad \checkmark A_1$$

d) Another town D is 3000nm west of A, find its position.

[2 marks]

$$60\theta \cos 50^{\circ} = 3000 \quad \checkmark M_1 \\ \theta = 77.78619134^{\circ}$$

$$X = 80 - \theta$$

$$= 2.213808657^{\circ}$$

$$D (50^{\circ}\text{N}, 2.214^{\circ}\text{E}) \quad \checkmark A_1$$

22. A baker makes two types of cakes, type A and type B. Type A requires 40g of fat and 320g of flour while type B requires 50g of fat and 300g of flour. On a particular day the baker had 1kg of fat and 4.8kg of flour.

a) Write down all the inequalities that can be used to represent this information.

[3 marks]

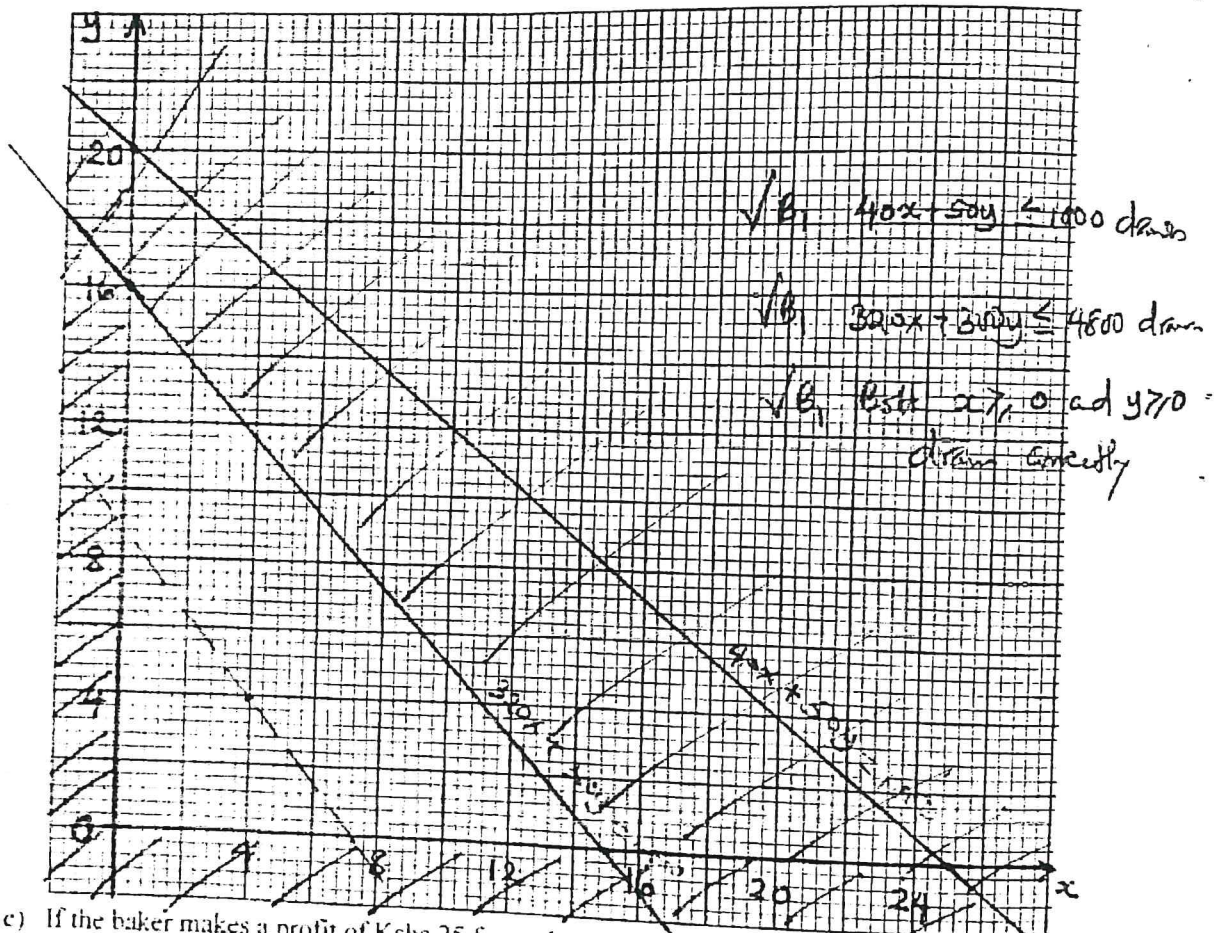
$$40x + 50y \leq 1000 \quad \checkmark B_1$$

$$320x + 300y \leq 4800 \quad \checkmark B_1$$

$$x \geq 0 \quad y \geq 0 \quad \checkmark B_1$$

b) Plot the inequalities above on the grid provided.

[3 marks]



- c) If the baker makes a profit of Kshs. 25 for each of type A cake and Kshs. 30 for each of type B cake formulate an appropriate objective function hence use a search line to determine the maximum profit for that day if he sold all the cakes.

[4 marks]

$$P = 25x + 30y \quad \checkmark B_1$$

$$25x + 30y = 220 \quad \checkmark B_1$$

Maximum pt (2, 12) $\checkmark B_1$ Accept other correct search lines

$$P = 2 \times 25 + 12 \times 30 = 410 \quad \checkmark B_1$$

23. A curve has the equation $y = -x^3 + 3x$.

a) Determine the x-ordinates of the turning points of this curve.

[2 marks]

$$\frac{dy}{dx} = -3x^2 + 3$$

$$-3x^2 + 3 = 0 \quad \checkmark M_1$$

$$x = 1 \text{ or } -1 \quad \checkmark A_1$$

b) Use mid ordinate rule with 4 strips to determine the area bounded by the curve, $x = -2$, $x = 2$ and the x-axis.

[3 marks]

x	-1.5	-0.5	0.5	1.5
y	-1.125	-2.5	-1.125	1.125

$\checkmark B_1$

$$A = 1 [1.125 + 2.5 + 1.125 + 1.125] \quad \checkmark M_1$$

$$= 5.875$$

$\checkmark A_1$

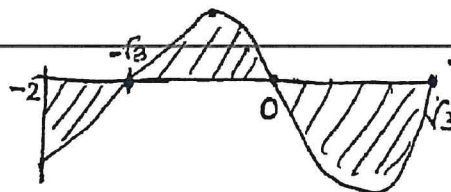
c) Determine the exact area bounded by the same curve within the limits as in (a) above.

[3 marks]

$$-x^3 + 3x = 0$$

$$\Rightarrow -x(x^2 + 3) = 0$$

$$x = 0 \quad x = \sqrt{3} \quad x = -\sqrt{3}$$



$$\begin{aligned} \text{Area} &= \int_{-2}^{-\sqrt{3}} (-x^3 + 3x) dx + \int_{-\sqrt{3}}^0 (-x^3 + 3x) dx + \int_0^{\sqrt{3}} (-x^3 + 3x) dx + \int_{\sqrt{3}}^2 (-x^3 + 3x) dx \\ &= \frac{1}{4} + \frac{9}{4} + \frac{9}{4} + \frac{1}{4} \\ &= 4\frac{3}{4} \end{aligned}$$

$\checkmark B_1$

$\checkmark M_1$

$\checkmark A_1$

d) Calculate the percentage error in calculating the area of this curve using the mid-ordinate rule.

[2 marks]

$$\% \text{ Error} = \frac{1.125}{4\frac{3}{4}} \times 100\%$$

$\checkmark M_1$

$$= 2.368421053\% \quad \checkmark A_1$$

24. The life expectancy in hours of 106 bulbs are shown in the table below.

Life Expectancy (hrs)	90-94	95-99	100-104	105-109	110-114	115-119	120-124	125-129	130-134	135-139
Frequency (f)	5	14	16	17	24	12	11	4	2	1

a) Calculate the quartile deviation of the life expectancy of the bulbs.

cf 5 19 35 52 76 88 99 103 105 106 ✓

$$Q_3 = 114.5 + \frac{79.6 - 76}{12} \times 5$$

$$= 115.96 \quad \checkmark B1$$

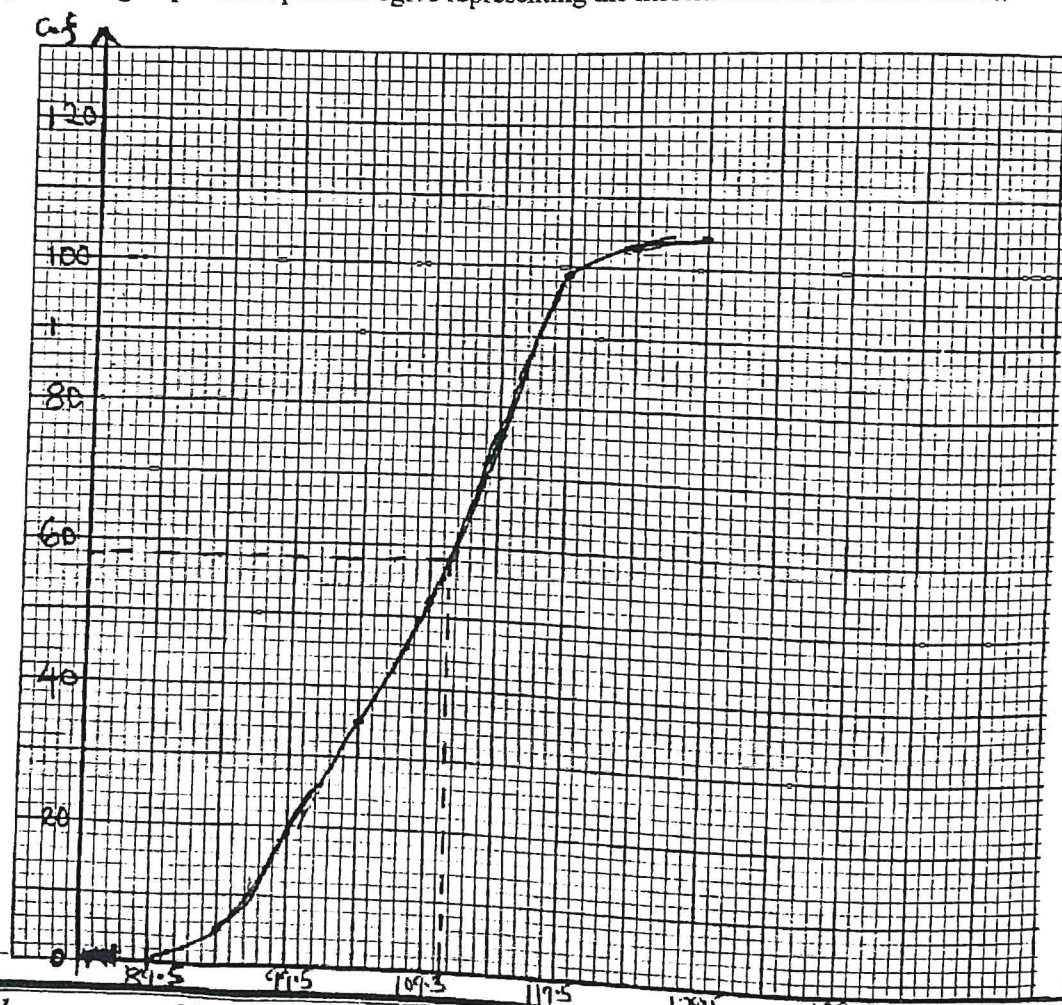
$$Q_1 = 99.5 + \frac{26.5}{16} \times 5$$

$$= 101.84 \quad \checkmark B1$$

$$QD = \frac{115.96 - 101.84}{2} \quad \checkmark M1 = 7.06 \quad \checkmark A1$$

b) On the grid provided plot the ogive representing the information in the table above.

[3 marks] s



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Maranda High School, Post Mock Examinations-January 2021
121/2 - Mathematics - Alt A

Mathematics Dept.

c) Use the graph above to estimate the median life expectancy of the bulbs.

[3 marks]

$$\frac{N}{2} = \frac{106}{2} = 58 \quad \checkmark B_1$$

✓ Second B_1 58 times on the curve

111 hours ✓ B_1

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