

FORM TWO MATHS MARKING SCHEME TERM THREE 2023

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1.

<u>NO</u>	<u>Log</u>
849.6	2.9292
2.41	0.3820
<hr/>	
	3.3112 ✓ M1
3941	3.5956
<hr/>	
	7.7156 ✓ M1
	÷ 3
<hr/>	
	2.5719 ✓ M1

$$= 8.039 \times 10^{-1}$$

$$= 0.8039 \quad \checkmark \text{ A}$$

2. Multiply by LCM of 4, 3 & 2

$$\left(\frac{x-2}{3}\right)^2 - \left(\frac{3-x}{4}\right)^2 = \left(\frac{x-2}{2}\right)^2 \quad \checkmark \text{ M1}$$

$$4x - 8 - 9 + 3x = 6x - 12$$

$$7x - 17 = 6x - 12$$

$$7x - 6x = 17 - 12 \quad \checkmark \text{ M1}$$

$$x = 5 \quad \checkmark \text{ A}$$

3. $\pounds 4650 \times 123.40 \text{ KSh} = 57512 \text{ KSh}$

Spent $- 52352$

Balance $= 525160 \text{ US\$}$

$$= \frac{525160 \text{ US\$}}{69.10} = 7600$$

US dollars = 7600 A

4. $2^{3x-2} \times 2^{3x} = 2^{2(x+1)}$

$$2^{3x-2} \times 2^{3x} = 2^{2x+2} \quad \checkmark \text{ M1}$$

$$3x-2+3x = 2x+2$$

$$6x-2 = 2x+2$$

$$4x = 4 \quad \checkmark \text{ M1}$$

$$x = 1 \text{ A}$$

5. $G = \frac{\Delta y}{\Delta x} = \frac{-1-3}{-2-1} = \frac{-4}{-3} = \frac{4}{3} \quad \checkmark \text{ M1}$

Taking a point A(1,3) and point (x,y)

$$\frac{4}{3} = \frac{y-3}{x-1} = 4(x-1) = 3(y-3) \quad \checkmark \text{ M1}$$

$$4x - 4 = 3y - 9$$

$$3y = 4x - 4 + 9$$

$$y = \frac{4x+5}{3} \text{ A}$$

6. Let $1.523523 \dots = r \quad \checkmark \text{ M1}$

$$1000r = 1523.523523 \dots$$

$$- 1.523523 \dots = r$$

$$999r = 1522 \quad \checkmark \text{ M1}$$

$$r = \frac{1522}{999} \text{ or } \frac{523}{333} \text{ A}$$

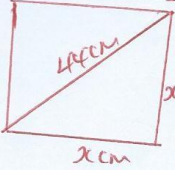
7. $\frac{1}{0.3654} = 4.151^2$

$$\frac{1}{0.3654} \Rightarrow 2.737 \quad \left. \begin{array}{l} B_1 \\ B_1 \end{array} \right\}$$

$$4.151^2 \Rightarrow 17.251$$

$$2.737 - 17.251 \text{ m}$$

$$= -14.494 \text{ A}$$

8. 

$$44^2 = x^2 + x^2$$

$$44^2 = 2x^2$$

$$\frac{1936}{2} = \frac{2x^2}{2}$$

$$= x^2 = 968$$

$$x = 31.11 \text{ m}$$

$$P = L + L + L + L$$

$$= 31.11 \times 4$$

$$= 124.45 \text{ cm} \quad \text{A}$$

9. $\frac{2.61 \times 21.83 \times 0.073}{61.72 \times 11.73} \times \frac{10^7}{10^7} \text{ m}$

$$= 0.00575 \text{ A}$$

- Food = $\frac{2}{5}$

10. - Electricity = $1 - \frac{2}{5} = \frac{3}{5} \times \frac{1}{3} = \frac{1}{5} \text{ m}$

servings = $1 - \left[\frac{2}{5} + \frac{1}{5} \right] = \frac{2}{5} \text{ m}$

$$\frac{2}{5} \rightarrow 1200$$

$$\frac{1}{5} \rightarrow ? \text{ m}$$

$$\frac{\frac{1}{5} \times 1200}{\frac{2}{5}} = \underline{\underline{600}} \quad \text{A}$$

11. $\begin{cases} 5x + 6y = 28 \\ 3x + 4y = 18 \end{cases} \quad \left. \begin{array}{l} 3 \\ 5 \end{array} \right\} \text{ m}$

$$15x + 18y = 84$$

$$15x + 20y = 90 \quad \text{m}$$

$$-2y = -6$$

$$y = 3$$

$$5x + 18 = 28$$

$$5x = 10 \quad y = 3$$

$$x = 2 \quad \underline{\underline{x = 2}} \quad \text{A}$$

12. $A \cdot S \cdot F = \frac{750}{120} = \frac{25}{4}$

$$L \cdot S \cdot F = \sqrt{\frac{25}{4}} = \frac{5}{2} \text{ m}$$

$$V \cdot S \cdot F = 125$$

$$\frac{V_1}{400} = \frac{125}{8}$$

$$V_1 = \frac{400 \times 125}{8} = \frac{62500}{1000}$$

$$= \underline{\underline{6.25}} \text{ litres} \quad \text{A}$$

$$13. \frac{5^2 + 2^2 - 3^2}{3^3} = \frac{25 + 4 - 9}{27} = \frac{20}{27} \text{ m}$$

$$14. a) \text{ L.C.M of } 12, 15 \text{ and } 21 = \underline{420} \text{ B2}$$

$$b) \text{ G.C.D of } 12, 15 \text{ and } 21 = \underline{3} \text{ B2}$$

$$15. \begin{aligned} & \cancel{2} \times \cancel{3} \times \cancel{3} \times \cancel{5} \\ & \cancel{2} \times \cancel{3} - \cancel{2} \times \cancel{5} \\ & \cancel{2} \times \cancel{3} - x \\ & x \times \cancel{3} - 2 \rightarrow x \times 1 \\ & \cancel{3} - \cancel{2} \times \cancel{5} \quad \text{M1} \\ & -x \times \cancel{5} - 3 \rightarrow +x \times 2 \\ & x \times 2 \\ & \cancel{+} \times \cancel{2} \times 2 \\ & \underline{\underline{1 \leq x \leq 2}} \text{ M} \end{aligned}$$

SECTION II (50 MARKS)

ANSWER ALL QUESTIONS

17. An amount of money was shared among five girls, Alice, Jane, Brenda, Mary and Ivy. Alice got $\frac{1}{8}$ of the total amount while Jane got $\frac{2}{5}$ of the remainder. The remaining amount was shared equally among Brenda, Mary and Ivy each getting ksh.490.
- a. How much did Jane get? (3mks)

$$\begin{array}{l}
 \text{Alice} - \frac{1}{8} \\
 \text{Jane} \quad \frac{2}{5} \text{ of } \left[1 - \frac{1}{8}\right] = \frac{7}{20} \\
 \text{Brenda} \\
 \text{Mary} \\
 \text{Ivy} \quad \left. \begin{array}{l} \text{ } \\ \text{ } \\ \text{ } \end{array} \right\} @ 490 \times 3 = 1470 \\
 \quad \quad \quad = \frac{21}{40}
 \end{array}
 \left. \begin{array}{l}
 \frac{21}{40} \rightarrow 1470 \\
 \frac{7}{20} - \frac{7}{20} = 1470 \times \frac{7}{20} \\
 \underline{\quad \quad \quad} \\
 \text{Jane} = \text{ksh } \underline{\underline{980}}
 \end{array} \right\} \frac{21}{40}$$

- b. How much was shared among the three girls. (3mks)

Amount shared

$$\begin{aligned}
 &= 490 \times 3 \\
 &= \underline{\underline{1470}}
 \end{aligned}$$

- c. Alice, Jane and Ivy invested their money and earned a profit of ksh.3640. a half of the profit was left to maintain the business and the rest shared according to their investments. Calculate how much each got. (4mks)

$$\begin{array}{l}
 \text{Alice amount} = \frac{1}{8} \times 2800 = 350 \\
 \text{Ivy} \\
 \text{Jane} \quad \left. \begin{array}{l} 490 \\ 980 \end{array} \right\} 1820 \\
 \text{Profit shared} = \frac{3640}{2} = 1820 \\
 \text{a) Alice} = \frac{350}{1820} \times 1820 = \underline{\underline{350}}
 \end{array}$$

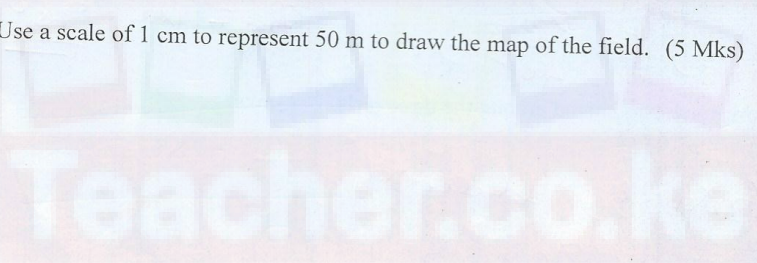
$$\text{Jane } \frac{980}{1820} \times 1820 = \underline{\underline{980}}$$

$$\text{Ivy } = \frac{490}{1820} \times 1820 = \underline{\underline{490}}$$

18. A surveyor recorded the measurements of a field book using $xy=400\text{m}$ as the base line as shown below

	Y	
To E 200	320	
	210	150 To D
To F 205	170	150 To C
	50	225 To B
	X	

a) Use a scale of 1 cm to represent 50 m to draw the map of the field. (5 Mks)

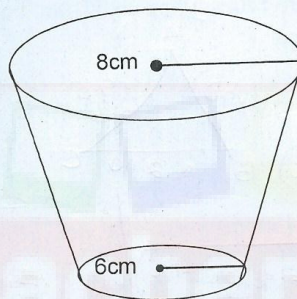


b) Find the area of the field in hectares

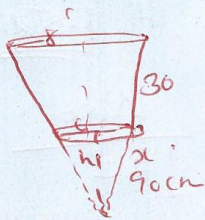
(5 Mks)

19. (a). On the grid provided, draw the square whose vertices are A(6,-2) B(7,-2) C(7,-1) and D(6,-1). (2mrks)
- b. On the same grid draw;
- A'B'C'D', the image of ABCD under an enlargement scale factor 3 centre (9,-4). (4mrks)
 - A''B''C''D'', the image of A'B'C'D' under a rotation of $+90^\circ$ about (0,0). (4 mrks)

20. A pail is in the shape of a container frustrum with base radius 6cm and top radius 8cm. The slant height of the pail is 30cm as shown below. The pail is full of water.



- a. Calculate the volume of water in the pail. (6mks)



$$\frac{8}{6} = \frac{30+x}{x}$$

$$8x = 180 + 6x$$

$$2x = 180$$

$$x = 90\text{cm}$$

$$h^2 = 90^2 - 6^2$$

$$h = 89.80\text{cm}$$

$$H^2 = 120^2 - 8^2$$

$$H = \sqrt{1400 - 64}$$

$$H = 119.75\text{cm}$$

$$V_1 = \frac{1}{3} \times \frac{22}{7} \times 8 \times 8 \times 119.75 = 8027.61$$

$$V_2 = \frac{1}{3} \times \frac{22}{7} \times 6 \times 6 \times 90 = 3386.74$$

$$\text{Volume of the frustrum} = V_1 - V_2$$

$$= 8027.61 - 3386.74$$

$$= \underline{\underline{4640.87\text{cm}^3}}$$

- b. All the water is poured into a cylindrical container of circular radius 7cm, if the cylinder has the height of 35cm, calculate the height of the cylinder above the water level, which is not in contact with water.

(4mks)

$$V = 4640.87$$

$$V \text{ of the cylinder} = \pi r^2 h$$

$$\frac{22}{7} \times 7 \times 7 \times h = 4640.87 \text{ cm}^3$$

$$\Rightarrow h = \frac{4640.87}{154} = 30.14$$



height above the water level =
 $35 \text{ cm} - 30.14$
 $= \underline{\underline{4.86 \text{ cm}}}$

21. The sides of a triangular plot of land are 170m, 190m and 210m, but the altitudes of the plot as well as the angles are not known. Find

- a) The area of the plot in Hectares 5mks

$$A = \sqrt{s(s-a)(s-b)(s-c)}$$

$$s = \frac{1}{2}(170+190+210) = 285$$

$$A = \sqrt{285(285-210)(285-190)(285-170)}$$

$$A = \sqrt{285(75)(95)(115)}$$

$$A = \sqrt{233521875}$$

$$A = 15281.4225 \text{ m}^2$$

$$A = \frac{15281.4225}{10000} = \underline{\underline{1.528 \text{ ha.}}}$$

- b) The angles of the plot 5mks

$$A = \frac{1}{2} ab \sin C$$

$$\sin C = \frac{\text{Area}}{\frac{1}{2} ab} = \frac{15281.42}{\frac{1}{2} \times 210 \times 190}$$

$$\sin C = 0.76598$$

$$\angle C = \underline{\underline{49.99^\circ}}$$

$$\sin B = \frac{\text{Area}}{\frac{1}{2} ac}$$

$$= \frac{15281.42}{\frac{1}{2} \times 210 \times 170} = 0.8561$$

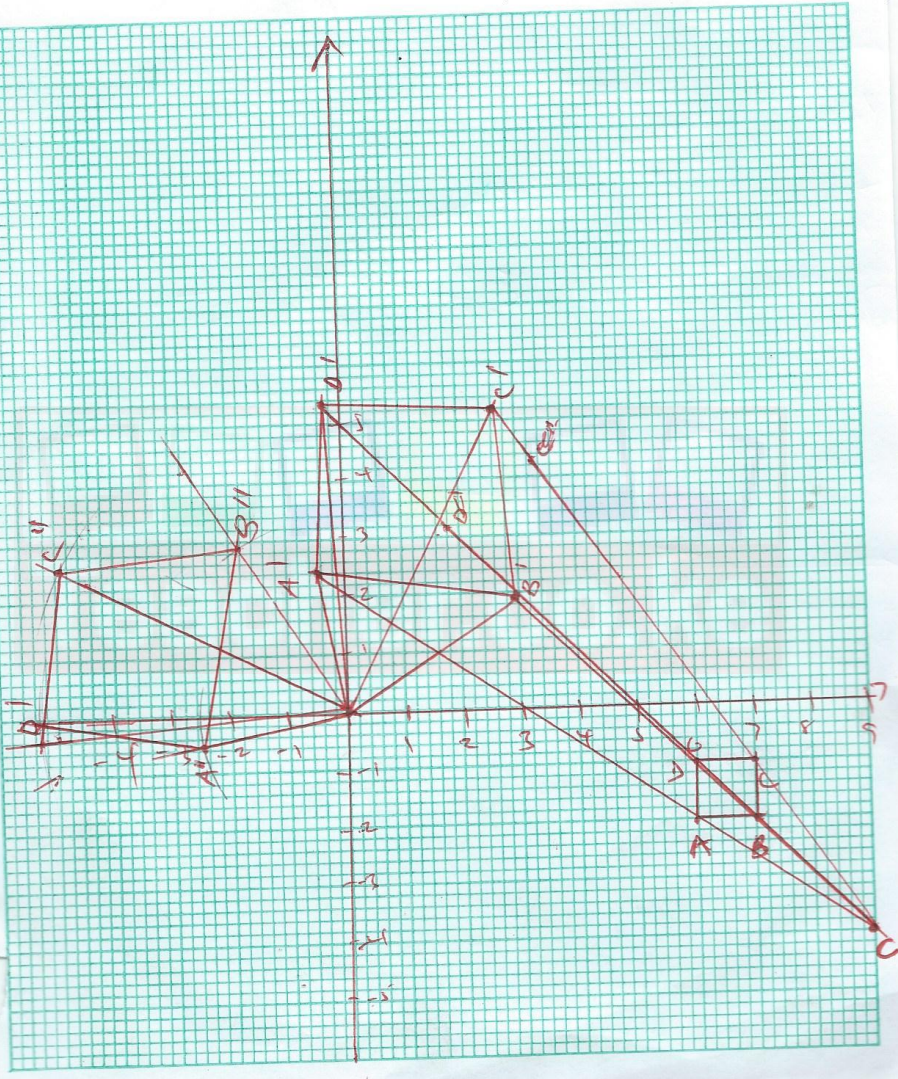
$$\angle B = 58.88^\circ$$

$$\angle A = (180 - (49.99 + 58.88))$$

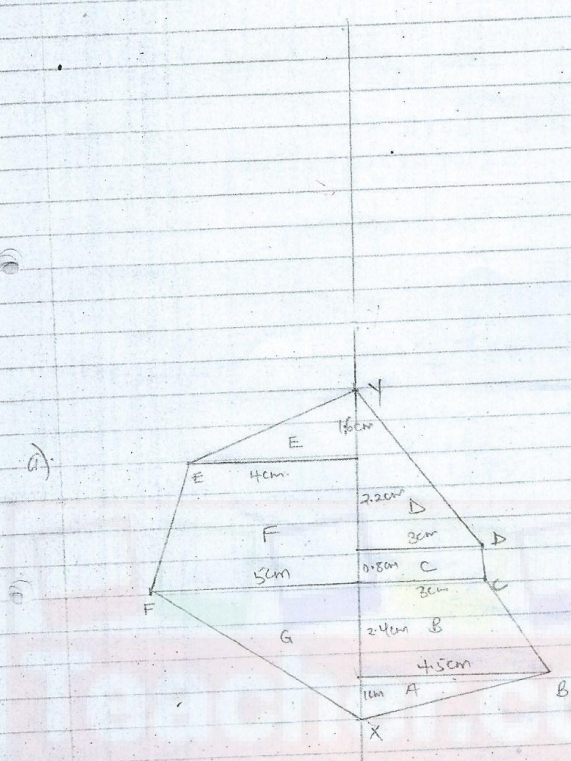
$$= \underline{\underline{71.13^\circ}}$$

THE END. GOOD LUCK...

Q19



18a



- A - Right angled Δ - $A = \frac{1}{2}bh = \frac{1}{2} \times 1 \times 4.5 = 2.25 \text{ cm}^2$
 B - Trapezium - $\frac{1}{2}(A+B)h = \frac{1}{2} \times (3+4.5) \times 2.4 = 9 \text{ cm}^2$
 C - Rectangle = $L \times W = 0.8 \times 3 = 2.4 \text{ cm}^2$
 D - Right angled $\Delta = \frac{1}{2} \times 3 \times 3.8 = 5.7 \text{ cm}^2$
 E - " " " " $\frac{1}{2} \times 1.6 \times 4 = 3.2 \text{ cm}^2$
 F = Trapezium = $\frac{1}{2}(5+4) \times 3 = 13.5 \text{ cm}^2$
 G. Right angled $\Delta = \frac{1}{2} \times 3.4 \times 5 = 8.5 \text{ cm}^2$

Total area = 44.55 cm^2
 $\frac{1 \text{ cm} \text{ rep } 50 \text{ m}}{1 \text{ cm}^2 = 2500 \text{ m}^2} \Rightarrow \frac{44.55 \text{ cm}^2}{2500} = 11.35 \text{ m}^2 = \underline{\underline{11.1375 \text{ ha}}}$

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