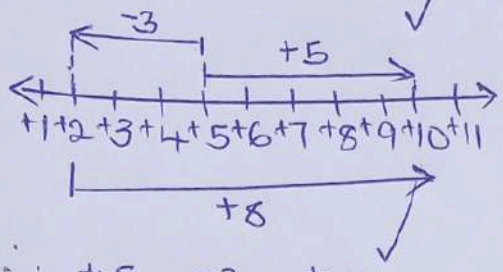
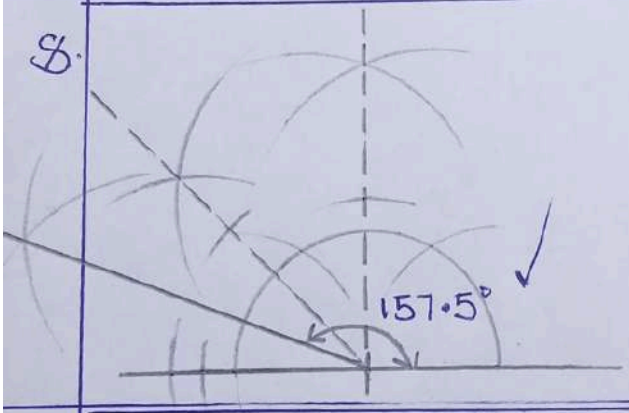
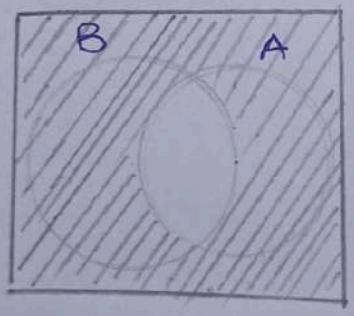
NERDS EXAMINATION SERIES (MATHEMATICS DEPARTMENT)

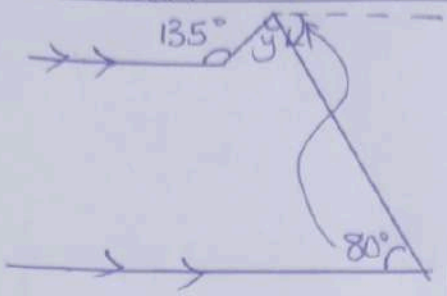
MARKING GUIDE FOR PRIMARY LEAVING MOCK 2024 (MTC)

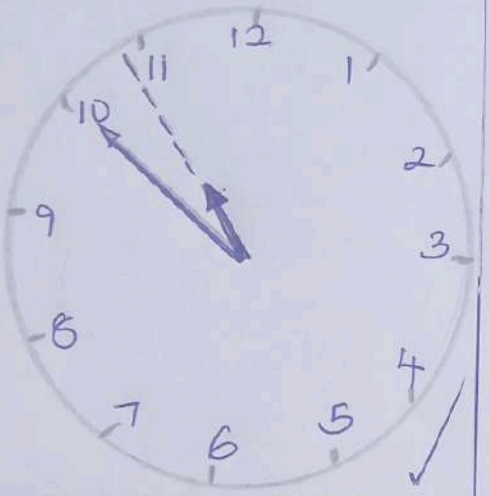
QN	SOLUTION	MARKS	COMMENT
1.	$5\overline{)2525}$ → 0505 $0\times5=0$, 25 $5\times5=25$, 002 $0\times5=0$, 25 $5\times5=25$, 00 $\therefore 2525 \div 5 = 505$ ✓	B1 A1	- Encourage the use of long division - Follow the order DMSB Divide, Multiply, Subtract, Bringdown } long division
2.	Sheep he had at first 43 sheep + 19 sheep 62 sheep ✓ 62 in Roman Numerals: $62 = 60 + 2$ $62 = LX\ II$ $62 = LXII$ ✓	B1 A1	- Getting the number of sheep had at first is the no. 1 thing to be done.
3.	Complement of $(x-50)^\circ$ Let the complement be y $y + (x-50)^\circ = 90^\circ$ $y = 90^\circ - (x-50^\circ)$ $y = 90^\circ - x + 50^\circ$ $y = 90^\circ + 50^\circ - x$ $y = 140^\circ - x$ $y = (140^\circ - x)^\circ$ ✓	B1 A1	- Complementary angles add up to 90° - Accept $90 - (x-50)^\circ$ Straight forward

QN	SOLUTION	MARKS	COMMENT
4	A dozen has 12 items. Sh. 9000 ⟷ 12 books Sh. 1 ⟷ $\frac{12}{9000}$ books Sh 3000 ⟷ $\frac{12^{4}}{9000_{3}} \times 3000^{1}$ Sh. 3000 ⟷ 4 books 4 books can be purchased at sh. 3000 ✓	B1 A1	- Teach to master the approach of direct and indirect proportion to prevent learners from confusing the two.
5	Length of the arc is given to be 1256cm $\frac{\theta}{360} 2\pi r = 1256cm$ $\frac{72}{360} \times 2 \times 3.14 r = 1256cm$ $\frac{72^{4}}{360_{5}} \times \frac{1}{2} \times \frac{314}{100} r = 1256cm$ $\frac{4 \times 314 r}{10 \times 100} = 1256cm$ $\frac{1256 r}{1000} \times 1000 = 1256cm \times 1000$ $\frac{1256 r}{1256} = \frac{1256000cm}{1256}$ $r = 1000cm$ ✓	B1 A1	- Follow through steps - Revise concept of circles vigorously For correct answer

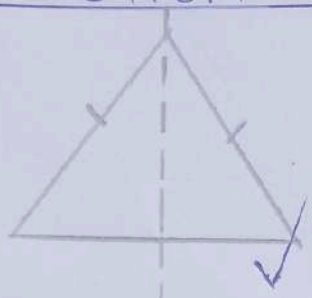
QN	SOLUTION	MARKS	COMMENT
6	 ∴ $+5 - {}^{-}3 = {}^{+}8$ ✓	B1 A1	- For correct position of arrows - For summary.
7.	63, 52, 45, 40, 37, 35 ✓ -11 -7 -5 -3 -2 Difference H-L 37-35 = 2 ✓	B1 A1	For determining next two numbers - For finding the difference.
8.	 ✓	B2	- Revise all reflex, complements and supplements of angles that can be construct without a protractor - On sight
9	$\left(\frac{1}{2}\text{ of } 4p\right) - p = 19$ $\left(\frac{1}{2} \times \frac{2p}{1}\right) - p = 19$ $2p - p = 19$ $p = 19$ ✓	B1 A1	- For following BODMAS order properly - For correct answer

Q/N	SOLUTION	MARKS	COMMENT
10	$\sqrt{7\frac{1}{9}} = \sqrt{\frac{64}{9}}$ $\sqrt{7\frac{1}{9}} = \frac{\sqrt{64}}{\sqrt{9}}$ $\sqrt{7\frac{1}{9}} = \frac{2\times2\times2}{3}$ $\sqrt{7\frac{1}{9}} = \frac{8}{3}$ $\sqrt{7\frac{1}{9}} = 2\frac{2}{3}$ ✓ 2 | 64 2 | 32 2 | 16 2 | 8 2 | 4 2 | 2 1 3 | 9 3 | 3 1	B1 A1	- For numerator square root and denominator root separately - Answer must be put back to mixed numeral format.
11	72 or 2 × 36 2 × 18 2 × 9 3 × 3 3 × 1 2 | 72 2 | 36 2 | 18 3 | 9 3 | 3 1 $2\times2\times2\times3\times3$ $2^3 \times 3^2$	B1 A1	- Superscripts also mean powers. - Reject subscripted form.
12.		B_2	on sight

QN	SOLUTION	MARKS	COMMENT
13.		B1	Revise angles formed on parallel lines.
	$y + 80° = 135°$		
	$y + 80° - 80° = 135° - 80°$	A1	
	$y = 55°$ ✓		
14.	144_{three} to base ten		Day to day, usual base, ordinary base, etc are words that can mean decimal base or base ten.
	$x3^2$ | $x3^1$ | $x3^0$ 1 | 4 | 4	B1	
	$(1 \times 3^2) + (4 \times 3^1) + (4 \times 3^0)$		
	$(1 \times 3 \times 3) + (4 \times 3) + (4 \times 1)$		
	$9 + 12 + 4$		
	25_{ten}		
	$\therefore 144_{three} = 25_{ten}$ ✓	A1	
15.	$ST = ET - D$ 1:15 | 13:75 (+60, +15, 75) +12:00 | −2:25 13:15 | 10:50 It started at ✓ 10:50 am	P1	- for getting the starting time first

QN	SOLUTION	MARKS	COMMENT
		B1	For correctly representing the starting time on the clock face.
16	$\frac{SOD}{NOD} = Mean$ $\frac{P+3+0+7}{4} = 4$ $\frac{4}{1} \times \frac{P+3+0+7}{4} = 4 \times 4$ $P + 10 = 16$ $P = 16 - 10$ $P = 6$ ✓	B1 A1	- For correct interpretation. - For correct answer.
17.	Thousands | Units 20 | 024 Twenty thousand twenty four ✓	B_2	On sight

QN	SOLUTION	MARKS	COMMENT
18.	From; $(\text{Last note} - \text{1st note})_{+1}$ = No of notes Serial no of the 1st note = last note no − (100 − 1) notes = AP00157839 − 99 AP00157740 ✓	B1 A1	- Encourage mastery of concept in all areas. - For correct subtraction.
19.	$S \times S \times S = V$ $S^3 = V$ $S^3 = 2.25M^3$ ✓ $\sqrt{S^3} = \sqrt{2.25M^3}$ $\sqrt{S^3} = \frac{\sqrt{225}}{100} M^3$ $\sqrt[3]{S^3} = \frac{\sqrt{225}}{\sqrt[3]{100}} M^3$ $S = \frac{15}{10} M$ $S = 1.5M$ ✓ The cube is 1.5M long.	B1 A1	- Revise application of square root and cube root involving geometrical figures. - Learners should be encouraged to prime factorize first

QN	SOLUTION	MARKS	COMMENT
20.	 1 Line of symmetry. ✓	B_2	Revise all lines of symmetry including alphabetical letters
21. a)	Value of m. n(H) only = Neither 18 − m = 2m + 3 18 − 3 = 2m − m 15 = m ✓	M1 A1	− For correct interpretation − For correct answe
b)	Pupils who like only one game. = (5m) + (18 − m) = (5 × 15) + (18 − 15) = 75 + 3 ✓ = 78 pupils.	B1	− Getting the Number of events (pupils who like only one game)
	Total no of pupils (5m) + (18 − m) + (m) + (2m + 3) (5 × 15) + (18 − 15) + 15 + (2 × 15 + 3) 75 + 3 + 15 + 33 ✓ 126 pupils	B1	For getting Universal set
	$P = \frac{NOE}{SS}$ = 78/126 ✓ $P = \frac{78}{126}$	A1	For correctly writing the probability.

QN	SOLUTION	MARKS	COMMENT
22.	450 dollars to Ugsh. 1 US$ = Ugsh 3,600 450 US$ = Ugsh (450 x 3600) ✓ 450 US$ = Ugsh 1620,000 Amount spent in Ugsh Ksh 1 = 40 uganda shills Ksh 32275 = Ugsh 32275 x 40 ✓ Ksh 32275 = Ugsh 1,291,000 Amount that remained Ugsh. 1,620,000 - Ugsh. 1291,000 Ugsh 329,000 ✓ Ugsh 329000 to pounds Ugsh 4700 = 1 pound Ugsh 32900 = (329000 / 4700) pounds Ugsh 329,000 = 70 pounds ✓ He received £70 from the bank.	By By By M A	- Revise foreign exchange rates - Simple approach L - Little (Local to F - Fox (Foreign) D - Dies (Divide) S - Slowly (sellingpr F - Fire (Foreign to L - Light (Local) M - Much (Multiply by B - Brightness (Buying price)

QN	SOLUTION	MARKS	COMMENT
23.	a) (3 + 1 + 2 + 4) pupils = 10 pupils ✓	✓B1	on right
	b)		

Mark	frequency
30%	3
90%	1
75%	2
25%	4

✓

The modal mark was 25% | B1 | For correct identification

c)

Mean = $\frac{SOD}{NOD}$ ✓ B1 | For correct working procedure

Mean = $\frac{(30\times3)+(90\times1)+(75\times2)+(25\times4)}{3+1+2+4}$

Mean = $\frac{90+90+150+100}{10}$ ✓ B1 | - For correct addition and multiplication.

Mean = $\frac{430}{10}$

Mean = 43

The mean score was 43% A1 | For summary and correct answer.

QN	SOLUTION	MARKS	COMMENT
24. a)			

Time frame	John B	Naboth
Now	$n+8$	n
4yrs ago	$n+8-4$ $=n+4$	$n-4$ ✓

The ratio was 4:3

John B : Naboth $= 4:3$

$n+4 : n-4 = 4:3$

$\frac{n+4}{n-4} = \frac{4}{3}$ ✓

$3(n+4) = 4(n-4)$

$3n+12 = 4n-16$

$3n-4n = -16-12$

$\frac{+n}{+1} = \frac{+28}{+1}$ ✓

$n = 28$

Johnbosco	Naboth
$n+8$	$= n$ ✓
$28+8$	$= 28$ years
36 years ✓	

By

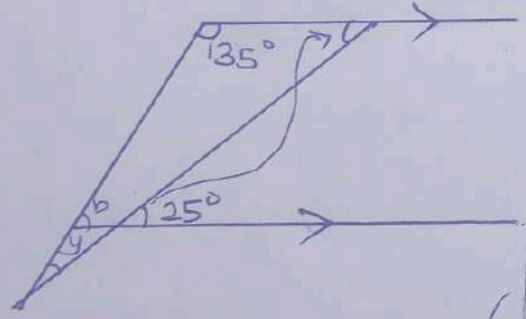
Summarising given information on a simple table form simplifies work.

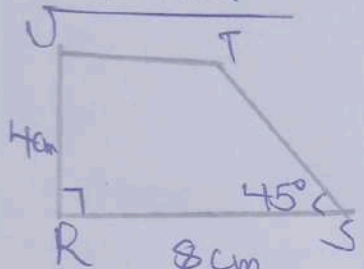
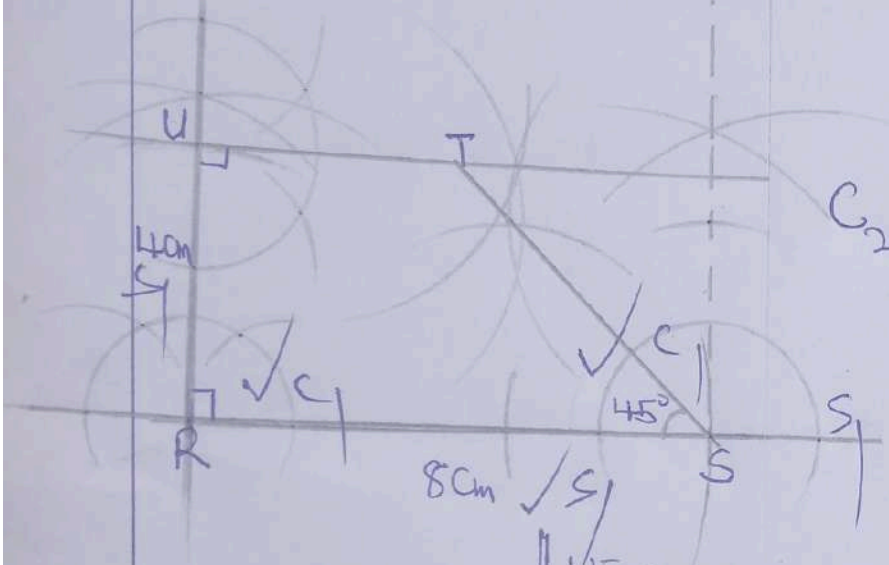
By

- Interpreting the concept of ratios (Comparison of items by division)

By

QN	SOLUTION	MARKS	COMMENT
24b)	$\frac{1}{6}$ were absent When $(1-\frac{1}{6})$ were present $\frac{6}{6}-\frac{1}{6}=\frac{5}{6}$ were present No of children in the class $=35\div\frac{5}{6}$ $=\frac{7}{35}\times\frac{6}{\cancel{5}_{1}}$ $=42$ pupils ✓ $\frac{1}{7}$ were absent $\frac{1}{\cancel{7}_{1}}\times\cancel{42}^{6}$ 6 pupils were absent Pupils present 42 pupils − 6 pupils 36 pupils. ✓	B1 ✓ B1 A1	For fraction present. - Getting the total number of pupils in the class. - Also getting the fraction present and working out that fraction of the total no is correct.
25.	Perimeter $\times 2 = 1000$ m ARC + AC + ARC + AC = P $2(2ARCs + 2AC) = 1000$m	✓B1	

Q N	SOLUTION	MARKS	COMMENT
	$2\left(2 \times \frac{22}{7} \times \frac{1}{2} \times 70^{10} + 2AC\right) = 1000m$	M1	- Encourage simplified approach and guide learners to attain good question interpretation
	$2(220 + 2AC) = 1000m$		
	$440 + 4AC = 1000m$		
	$4AC = (1000 - 440)m$	B1	
	$4AC = 560m$		
	$\frac{1\cancel{4}AC}{\cancel{4}_1} = \frac{560^{140}m}{\cancel{4}_1}$		- concept remains the same.
	$AC = 140m$	A1	
26	Value of y.		
(a)			
	$y + 25° + 135° = 180°$	M1	- correct interpretation
	$y + 160° = 180°$		
	$y + 160° - 160° = 180° - 160°$		
	$y = 20°$	A1	- For correct answer
(b)	$b + 135° = 180°$ (corresp. $\angle$s)	M1	
	$b = 180° - 135°$		- Revise angles formed by parallel lines.
	$b = 45°$		
	$\therefore b$ is $45°$	A1	

QN	SOLUTION	MARKS	COMMENT
27.	Sketch. 	S_1	The sketch carries a mark that's why it is very vital.
		C_2 C_1 C_1 S_1 S_1	- construction of 90° and 45° (one mark @) - Correct sides (1 mark)
	$UT = 4\,cm$ Accept 3.9 cm 4.1 cm only.		
b	Area		
	$A = \frac{1}{2}h(a+b)$		
	$A = \frac{1}{2} \times 4\,cm(4cm+8cm)$	M	- For correct method
	$A = \frac{1}{2_1} \times {}^{2}4\,cm(12\,cm)$		
	$A = 2\,cm \times 12\,cm$		- The answer may vary depending on the length $\overline{UT}$
	$A = 24\,cm^2$		
	The Area is $24\,cm^2$	A1	For getting the right answer.

QN	SOLUTION	MARKS	COMMENT
28 a)	$3a+2(b-c)$ $3\times\frac{1}{2}+2\left(\frac{3}{4}-\frac{1}{4}\right)$ $3\times\frac{1}{2}+2\left(\frac{3-1}{4}\right)$ ✓ $\frac{3}{2}+2\left(\frac{2}{4}\right)$ $\frac{3}{2}+\frac{1}{2}\times\frac{2}{4_2}^1$ $\frac{3}{2}+\frac{1}{1}$ $\frac{3+2}{2}$ $=\frac{5}{2}$ ✓ $=2\frac{1}{2}$	M1 A1	Follow through steps. - Answer must be simplified.
b)	$5(3n-1)-3(n-1)=22$ $15n-5-3n+3=22$ $15n-3n+3-5=22$ $12n-2=22$ $12n=22+2$ $\frac{12n}{12}=\frac{24}{12}$ $n=2$	M1 A1	- Correctly collecting like terms involving Crossing equal signs. - For answer.

QN	SOLUTION	MARKS	COMMENT
29 (a)	143_{six} to base 10		- In division of bases esp. when they are the same. Changing them to base 10 is a must and after changing back to the given base
	$\begin{array}{\|c\|c\|c\|}\hline x6^2 & x6^1 & x6^0 \\ \hline 1 & 4 & 3 \\ \hline \end{array}$		
	$(1\times6^2)+(4\times6^1)+(3\times6^0)$		
	$(1\times6\times6)+(4\times6)+(3\times1)$		
	$36+24+3$	B1	
	63 ✓		
	13_{six} to base 10		
	$\begin{array}{\|c\|c\|}\hline x6^1 & x6^0 \\ \hline 1 & 3 \\ \hline \end{array}$		
	$(1\times6^1)+(3\times6^0)$		
	$6+3$	B1	
	9 ✓		
	$63\div9=7$		- Incase the bases are different the answer can stay in base 10.
	7_{ten} to base six		
	$\begin{array}{\|c\|c\|c\|}\hline B & N & R \\ \hline 6 & 7 & \\ \hline & 1 & 1 \\ \hline \end{array}$ ✓		
	$7 = 11_{six}$	A1	
	$\therefore 143_{six} \div 13_{six} = 11_{six}$ ✓		

QN	SOLUTION	MARKS	COMMENT
29b	$(5\times10^6)+(4\times10^4)+(2\times10^{-2})+(3\times10^{-3})$ ✓ $(5\times1000000)+(4\times10000)+\left(2\times\frac{1}{100}\right)+\left(3\times\frac{1}{1000}\right)$ $5000000+40000+0.02+0.003$ 5000000.000 + 40000.000 ✓ 0.020 0.003 5,040,000.023 ✓	A1	-correct arrangement of placevalues leads to the right answer.
30a)	Total distance = 460km Total time without stops $T=\frac{D}{S}$, $7\frac{4}{6}$ $T=\frac{460km}{60}$ $T=7\frac{2}{3}hrs$ ✓ Total time on stopovers $=4\times40min$ $=160min$	B1	Getting total time taken then applying the concept of duration.

QN	SOLUTION	MARKS	COMMENT
	Time for the whole journey 160min + $7\frac{2}{3}$ hr 2hr 40min + 7hr 40min 2:40 7:40 10 20 ✓ 10hr and 20min Arrival time in kampala 8:00hr 10:20hr 18 20hrs ✓ 18:20 -12:00 6:20pm He arrived kampala at 6:20pm. ✓ A		
(B)	80% of the journey $=\left(\frac{80}{100} \times 460\right)$ km but 1Litre was used in every 15km	R	- A learner must first know what 80% of the journey he presents

QN	SOLUTION	MARKS	COMMENT
	15km ⟷ 1 Litre 1 km ⟷ $(\frac{1}{15})$ Litres $(\frac{80}{100} \times 460)$ Km ⟷ $(\frac{80}{100} \times 460 \times \frac{1}{15})$ Litres 80% of the journey ⟷ $(\frac{368}{15})$ Litres but 1 Litre = Sh 3900 80% of the journey would cost $Sh\ 3900 \times \frac{368}{15}$ (260) Sh 260 × 368 ✓ Sh. 95,680 ✓	A1	- Here you may encourage learners to let it be the way it is and get down with the calculation.
c	Time taken would be: $T = \frac{D}{S}$ $T = \frac{460}{80}$ ✓ $= 5\frac{3}{4}$ hrs	B1	- Getting the time he would take.

QN	SOLUTION	MARK	COMMENT
	He would arrive Kampala at. 8:00 am + 5 3/4 hrs 8:00 am + 5hr 45min 8:00 ✓ 5:45 13:45 13:45 -12:00 ✓ 1:45pm	A1	- The answer should be in a 12hr clock For correct answer.
31.	Principal (Money borrowed) Amount = P + I Amount = sh 450,000 sh450,000 = (PRT) + P ✓ sh450,000 = $\left(P \times \frac{2\frac{1}{2}}{100} \times 5\right) + P$ sh450,000 = $\left(P \times \frac{5}{2} \div 100 \times 5\right) + P$ sh450,000 = $\left(P \times \frac{5}{2} \times \frac{1}{100} \times 5\right) + P$	B1	- Follow through the working procedure.

Qn	SOLUTION	MRK	COMMENT
	$Sh450,000 = (P \times \frac{5}{2} \times \frac{1}{100} \times 5) + P$		
	$Sh450,000 = \frac{P}{8} + P$		
	$Sh450,000 \times 8 = \frac{P \times 8}{8} + P \times 8$		
	$Sh3600000 = 9P$		The units should be properly placed
	$\frac{Sh3600000}{9} = \frac{9P}{9}$		
	$Sh400,000 = P$		
	∴ He borrowed Sh 400,000	A	For correct answer.
b)	$I = P \times R \times T$		
	$I = Sh400,000 \times \frac{10}{100} \times 2$	M	For finding interest first
	$I = Sh80,000$		
	$A = Sh400,000 + 80,000$		
	$A = Sh\ 480,000$	A	For finally getting the amount.
	He would pay Sh480,000		

QN	SOLUTION	MRK	COMMENT;
32. (a)	No of poles = $\frac{\text{Perimeter}}{\text{Interval}}$ No of poles = $\frac{2(L+w)}{10m}$ No of poles = $\frac{2(120+50)m}{10m}$ No of poles = $\frac{2\times170m}{10m}$ No of poles = $\frac{340m}{10m}$ No of poles = 34	M1 A1	In closed shapes we don't add or subtract anything, We deal normally.
(b)	2 poles ↔ sh27000 1 pole ↔ $\frac{sh27000}{2}$ 34 poles ↔ $\frac{sh27000}{2_1}\times\frac{17}{34}$ 34 poles ↔ sh459000	M1 A1	Reject 2poles = sh 2700 Accept 2poles cost sh27,0
(c)	~~A = 2(l~~ A = L x w A = 120m x 50m A = 6000m^2	M1 A1	- Correct method Area is in sq units always

END COMPILED BY 0701316438 (MIC DEPT)