




2017 SECOND TERM
SOLUTIONS
MATHEMATICAL
LITERACY

Symbol	Explanation
M	Method
M/A	Method with accuracy
CA	Consistent accuracy
A	Accuracy
C	Conversion
S	Simplification
RT/RG	Reading from table/reading from a graph
SF	Correct substitution in formula
O	Opinion/Example
P	Penalty, e.g. for no units, incorrect rounding off, etc.
R	Rounding off

1. Maps, Plans and other representations of the physical world

QUESTION ONE				
	1.1.1	Handbags	2	1
	1.1.2	Width 5 cm \approx Actual width = 5×100 cm $\therefore = 500$ cm or 5 m	3	2
	1.2.1	M15 and M16	3	2
	1.2.2	$24 \times 2 = 48$ seats	2	2
	1.2.3	Total income in OR = $(72 \times 78) + (388 \times 48) + (83 \times 42) + (81 \times 28) + (112 \times 15) + (82 \times 10)$ $= 5\,616 + 18\,624 + 3\,486 + 2\,268 + 1\,680 + 820$ $= 32\,494$	6	3
QUESTION 2				
	2.1.1	North East	2	1
	2.1.2	1:75	2	1
	2.1.3	$h = \underline{\hspace{2cm}} \text{ cm} \times 75 \div 100 = \underline{\hspace{2cm}} \text{ m}$ $w = \underline{\hspace{2cm}} \text{ cm} \times 75 \div 100 = \underline{\hspace{2cm}} \text{ m}$	3	3
	2.1.4		2	1
	2.1.5	15	2	2
	2.1.6	$\frac{7}{15}$	2	2
2.2	2.2.1	4	2	1
	2.2.2	From the reception go straight along the orchard and turn right, then go down pass the playground and turn left and go straight you will get 11b.	3	2
	2.2.3	7	2	1
	2.2.4	9	2	1
	2.2.5	Table tennis OR Pool table	2	1
QUESTION 3				
	3.1.1	6-7	1	1
	3.1.2	No. The elevation on the finish point is lower than the elevation at the start	2	4
	3.1.3	$395\text{ft} - 220\text{ft} = 175\text{ft}$. Josiah is correct.	4	2
	3.1.4	$13\text{miles} \times 1,609,344 = 20,921,472\text{km}$. Therefore the elevation map does not show a half-marathon.	3	3
3.2	3.2.1	15	2	2
	3.2.2	12	2	2
	3.2.3	H 35 and 36	2	3
	3.2.4	NW	2	3
QUESTION 4				
4.1	4.1.1	7 windows	2	1
	4.1.2	None	2	1
	4.1.3	Two doors, the kitchen and lounge.	2	2
	4.1.4	SE (south-east)	2	2

4.2	4.2.1	_____ mm	2	2
Question 5				
5.1	5.1.1	≈ 3cm	2	2
	5.1.2	3cm:1.5m 3cm :150cm 1 : 50	2	2
	5.1.3	'w' = 12cm	2	1
	5.1.4	Actual width = 12 x 50 = 600cm =6m	3	3
	5.1.5	$\frac{5}{25} = 0,2$	2	3
5.2	5.2.1	Top view		
	5.2.2	G8, G9 and G10		
	5.2.3	Milner Road		
	5.2.4	Left		
	5.2.5	Zones 3 and 4		
	5.2.6	DE		
5.2.7	a.	4		
	b.	South-East		
	5.2.8	$\frac{4}{7} \times 100\% = 57,1\%$		
QUESTION 6				
	6.1	850 km = 550 miles ✓ 2 700km =550× 2700 ÷ 850 = 1747, 0588miles ✓ = 1747, 06 ✓	(3)	
	6.2	Western Cape, Eastern Cape, Kwazulu-Natal, Northern Cape ✓✓	(3)	
	6.3	223 mm on the map represents 2 700 km ✓ 223 mm on the map represents 2 700 000 000 mm ✓ 1 mm on the map represents 2700 000 000 000 ÷ 2 = 12107623,32 mm ✓ Scale is 1: 12 000 000 ✓	(4)	
Question 7				
	7.1	. South West ✓✓	(2)	
	7.2	Mountain zebra NP; addo elephant NP; tsitsikamma NP ✓✓✓	(3)	
	7.3	Average speed =153 km ÷ ½ h ✓✓ =306 km per hour ✓✓	(4)	

Measurements

Question 1

1.1	$V = l \times b \times h$ <p>A. $V = 50 \times 56 \times 80$ $= 224000 \text{cm}^3$</p> $\text{Litres} = \frac{224000}{1000} = 224l$ <p>B. $V = l \times b \times h$ $= 50 \times 80 \times 100$ $= 400000 \text{cm}^3$</p> $\text{Litres} = \frac{400000}{1000} = 400l$ <p>C. $V = l \times b \times h$ $= 45 \times 25 \times 56$ $= 63000 \text{cm}^3$</p> $\text{Litres} = \frac{63000}{1000} = 63l$	9	2
1.2	$V = 75 \times 43 \times 90$ $= 290250 \text{cm}^3$	4	3
1.3	<p>Bag B is the best option, since the maximum weigh is 20kg and is equal to maximum weight allowed by the airline and it can accommodate the volume of his luggage.</p> <p>Option A is also a good choice provided that he does not exceed the maximum permissible weight allowed by the airline, i.e. he packs the bag such that the weight does not exceed 20kg.</p>	3	4
1.4	7kg	2	1
1.5	$V = 36 \times 23 \times 56$ $= 46368 \text{cm}^3$	3	2
1.6	<p>Increase in weight will increase fuel consumption and expense.</p> <p>Uploading and downloading of the luggage will require more time and effort, this can result in delayed flights.</p> <p>1kg extra from all passengers can result in a huge additional weight that will impact on the wear and tear of the aircraft and the vehicles used to transport the luggage onto the aircraft before departure, and to the baggage reclaim section after landing.</p>	3	4
1.7	There is a direct relationship, a bag with a greater volume can generally carry a greater weight.	2	4

Ques 2	Solution	Explanation	T&L
2.1	<p>Capacity of section C = $5 \text{ m} \times 1,2 \text{ m} \times 15 \text{ m}$ \checkmark_{SF} = 90 m^3 \checkmark_{CA}</p> <p>Capacity of section A = $2 \text{ m} \times 12,5 \text{ m} \times 15 \text{ m}$ \checkmark_{SF} = 375 m^3 \checkmark_{CA}</p> <p>Maximum capacity = $90 \text{ m}^3 + 375 \text{ m}^3 + 300 \text{ m}^3$ \checkmark_{MA} = 765 m^3</p> <p style="text-align: center;">OR</p> <p>Maximum capacity = Capacity of section (A + B + C) \checkmark_{SF} \checkmark_{CA} \checkmark_{CA} \checkmark_{CA}</p> <p>= $2 \text{ m} \times 12,5 \text{ m} \times 15 \text{ m} + 300 \text{ m}^3 + 5 \text{ m} \times 1,2 \text{ m} \times 15 \text{ m}$</p> <p>= $375 \text{ m}^3 + 300 \text{ m}^3 + 90 \text{ m}^3$ \checkmark_{MA}</p> <p>= 765 m^3 \checkmark_{SF}</p> <p style="text-align: center;">OR</p> <p>Volume = $30 \text{ m} \times 15 \text{ m} \times 2 \text{ m}$</p> <p>= 900 m^3 \checkmark_{CA}</p> <p>Volume beneath C = $5 \text{ m} \times 15 \text{ m} \times 0,8 \text{ m}$</p> <p>= 60 m^3 \checkmark_{CA}</p> <p>Volume beneath B = $\frac{1}{2} \times 12,5 \text{ m} \times 15 \text{ m} \times 0,8 \text{ m}$ \checkmark_{SF}</p> <p>= 75 m^3</p> <p>Maximum capacity = $900 \text{ m}^3 - 60 \text{ m}^3 - 75 \text{ m}^3$ = 765 m^3 \checkmark_{MA}</p>	<p>1SF correct values 1CA capacity section C</p> <p>1SF correct values 1CA capacity section A</p> <p>1MA adding capacities in m^3</p> <p style="text-align: center;">OR</p> <p>1SF Correct values for A</p> <p>1SF correct values for C 1CA capacity section A 1CA capacity section C 1MA adding capacities in m^3</p> <p style="text-align: center;">OR</p> <p>1SF volume</p> <p>1CA volume section A</p> <p>1SF volume beneath B</p> <p>1CA volume beneath B</p>	M L3

		1MA subtracting volume in m ³ (5)	
2.2	$\begin{aligned} \text{Volume of water} &= 94\% \times 765 \text{ m}^3 = 719,1 \text{ m}^3 \quad \checkmark M \\ &= 719\,100 \text{ l} \quad \checkmark C \\ &= \frac{719\,100 \times 1}{3,785} \text{ gallons} \quad \checkmark C \\ &\approx 189\,986,79 \text{ gallons} \quad \checkmark CA \end{aligned}$ <p style="text-align: center;">OR</p>	1M calculating % 1C convert to litres 1C convert to gal. 1CA simplification <p style="text-align: center;">OR</p>	M L3
	$\begin{aligned} \text{Capacity (in litres)} &= 765 \text{ m}^3 \times 1\,000 = 765\,000 \text{ l} \quad \checkmark C \\ \text{Capacity (in gallons)} &= \frac{765\,000}{3,785} \quad \checkmark C \quad \checkmark M \\ &= 202\,113,6063 \quad \checkmark CA \quad \checkmark M \\ \text{Volume of water} &= 94\% \times 202\,113,6063 \quad \checkmark CA \\ &= 189\,986,79 \text{ gallons} \end{aligned}$	1C convert to litres 1C convert to gal. 1M calculating % 1CA simplification (4)	
2.3	<p>In 1 hour 2 350 litres of water will flow.</p> $\begin{aligned} \text{In 1 day: } &24 \times 2\,350 \text{ litres} \quad \checkmark MA \\ &= 56\,400 \text{ litres will flow} \quad \checkmark CA \end{aligned}$ $\begin{aligned} \text{In } 2\frac{1}{2} \text{ days amount of water flowing} &= 2\frac{1}{2} \times 56\,400 \text{ litres} \quad \checkmark M \\ &= 141\,000 \text{ litres} \quad \checkmark CA \end{aligned}$ <p>∴ Statement is NOT VALID. $\checkmark O$</p> <p style="text-align: center;">OR</p> $\begin{aligned} \text{Time to fill swimming pool} &= \frac{135\,000 \text{ l}}{2\,350 \text{ l/h}} \quad \checkmark MA \\ &\approx 57,4468 \text{ hours} \quad \checkmark CA \end{aligned}$ <p>57,4468 hrs = 2 days and 9 h 27 min $\checkmark M$</p> <p>Two and a half days = 2 days 12 hours $\checkmark C$</p>	1MA using flow rate 1CA water in 1 day 1CA M multiplying 1CA simplification 1O conclusion <p style="text-align: center;">OR</p> 1MA finding time taken 1CA time	

	<p>∴ Statement is NOT VALID ✓O</p> <p style="text-align: center;">OR</p> <p>Time to fill swimming pool = $\frac{135000\ell}{2350\ell/h}$ ✓MA</p> <p style="text-align: right;">$\approx 57,4468$ hours ✓CA</p> <p style="text-align: center;">✓MA</p> <p>· Two and a half days = (2 × 24 + 12) hours = 60 hours ✓A</p> <p>∴ Statement is NOT VALID ✓O</p> <p style="text-align: center;">OR</p>	<p>1M splitting calc. hrs</p> <p>1C converting two and a half days 1O conclusion</p> <p>OR</p> <p>1MA finding time taken</p> <p>1CA time</p> <p>1MA multiply with 24 and add 12 1A hours 1O conclusion OR</p>	
	<p>Time to fill swimming pool = $\frac{135000\ell}{2350\ell/h}$ ✓MA</p> <p style="text-align: right;">$\approx 57,4468$ hours ✓CA</p> <p style="text-align: center;">✓MA ✓CA</p> <p>57,4468 hours ÷ 24 hours/day = 2,3936</p> <p>NOT VALID ✓O</p> <p style="text-align: center;">OR</p> <p style="text-align: center;">$2\frac{1}{2}$ days × 24 h/d = 60 hours ✓MA ✓A</p> <p style="text-align: center;">✓MA</p> <p>Volume of water = 60 hours × 2 350 ℓ/hour</p> <p style="text-align: center;">= 141 000 ℓ ✓CA</p> <p>This is more than the 135 000 ℓ to be topped up ✓O</p> <p>The statement is NOT VALID</p>	<p>1MA finding time taken</p> <p>1CA time</p> <p>1MA dividing by 24 h/d 1CA days 1O conclusion</p> <p style="text-align: center;">OR</p> <p>1MA multiplying with 24 h/d 1A number of hours 1MA multiplying hours with flow rate 1CA simplification</p> <p>1O conclusion</p>	<p>M L3</p> <p style="text-align: right;">(5)</p>

Question 3

		Question 3	Mark	Level
	3.1	Radius = 30 cm	2	1
	3.2	$= \frac{1}{2} \pi(\text{diameter} \div 2)^2 + (\text{side})^2$ $= \frac{1}{2} \pi(30)^2 + 60^2$ $= 5013,716\dots$ $\approx 5013,72 \text{ cm}^2$	5	3

Question 4

Ques	Solution	Explanation	Topic/L
4.1.1 (a)	$d = 4,2 \text{ m} - (1,2 \text{ m} + 1,8 \text{ m})$ $\checkmark M$ $= 1,2 \text{ m}$ $\checkmark A$ $= 1\,200 \text{ mm}$ $\checkmark C$ OR $d = 4200 \text{ mm} - (1\,200 \text{ mm} + 1800 \text{ mm})$ $\checkmark M$ $\checkmark C$ $= 1\,200 \text{ mm}$ $\checkmark A$	1M subtracting 1A value 1C conversion OR 1M subtracting 1C conversion 1A value (3)	L1
(b)	$15\text{m} + 1,2 \text{ m} + 1,2 \text{ m} + 4,2 \text{ m} + 1,2 \text{ m} + 1,2 \text{ m} + 15 \text{ m}$ $\checkmark MA$ $= 39 \text{ m}$ $\checkmark CA$ $= 39\,000\text{mm}$ $\checkmark C$ OR $15 \text{ m} \times 2 + 1,2 \text{ m} \times 4 + 4,2 \text{ m} = 39 \text{ m}$ $\checkmark CA$ $= 39\,000 \text{ mm}$ $\checkmark C$	1M/A adding all values 1CA total length 1C conversion OR 1M/A adding all values 1CA total length 1C conversion (3)	L1
(c)	$\text{Total area} = 1,8 \text{ m} \times 15 \text{ m} + 1,2 \text{ m} \times 4,2 \text{ m}$ $\checkmark SF$ $= 27 \text{ m}^2 + 5,04 \text{ m}^2$ $\checkmark S$ $= 32,04 \text{ m}^2$ $\checkmark A$ $\checkmark A$ OR $\text{Total area} = 2(1,2 \times 1,2) \text{ m}^2 + [1,8 \times (15 + 1,2)] \text{ m}^2$ $\checkmark S$ $\checkmark SF$ $= 2,88 \text{ m}^2 + 29,16 \text{ m}^2$ $= 32,04 \text{ m}^2$ $\checkmark A$ $\checkmark A$ OR	1SF substituting 1S simplification 1A area 1A correct unit OR 1SF substituting 1S simplification 1A area 1A correct unit OR	L2

	$\begin{aligned} \text{Total area} &= [2 (1,2 \times 1,2) + (1,8 \times 15) + (1,8 \times 1,2)] \text{ m}^2 \\ &= [2,88 + 27 + 2,16] \text{ m}^2 \\ &= 32,04 \text{ m}^2 \end{aligned}$ <p style="text-align: center;">OR</p>	$\begin{aligned} &\checkmark S \quad \checkmark SF \\ &\checkmark A \quad \checkmark A \end{aligned}$ <p>1SF substituting 1S simplification 1A area 1A correct unit</p> <p style="text-align: center;">OR</p>	
	$\begin{aligned} \text{Total area} &= 16,2 \text{ m} \times 4,2 \text{ m} - 2 \times (1,2 \text{ m} \times 15 \text{ m}) \\ &= 68,04 \text{ m}^2 - 36 \text{ m}^2 \\ &= 32,04 \text{ m}^2 \end{aligned}$ <p style="text-align: center;">$\checkmark A \quad \checkmark A$</p>	$\checkmark SF$ <p>1SF substituting 1S simplification 1A area 1A correct unit</p> <p>Max 2 out of 4 if only one area correctly calculated with unit</p> <p style="text-align: right;">(4)</p>	
(d)	$\begin{aligned} \frac{1}{3} \text{ of the length of the hall} &= 16,2 \text{ m} \\ \text{Length of hall} &= 16,2 \text{ m} \times 3 \quad \text{OR} \quad 16,2 \text{ m} \div \frac{1}{3} \\ &= 48,6 \text{ m} \end{aligned}$ <p style="text-align: center;">$\checkmark A \quad \checkmark M \quad \checkmark CA$</p>	<p>1A length of runway</p> <p>1M multiply by 3 1CA length of hall</p> <p style="text-align: right;">(3)</p>	L1
4.1.2	$\begin{aligned} 4,2 \text{ m} &= \frac{4,2}{0,3048} \text{ feet} \\ &= 13,7795.. \text{ feet} \\ &\approx 13,8 \text{ feet} \end{aligned}$ <p style="text-align: center;">$\checkmark M \quad \checkmark S \quad \checkmark R$</p>	<p>1M dividing by conversion factor</p> <p>1S simplification 1R rounding</p> <p style="text-align: right;">(3)</p>	L2
4.1.2	$\begin{aligned} 3\,456 \text{ cm}^3 &= A^2 \times 24 \text{ cm} \\ A^2 &= 3\,456 \text{ cm}^3 \div 24 \text{ cm} \\ &= 144 \text{ cm}^2 \\ A &= \sqrt{144} \text{ cm} \\ &= 12 \text{ cm} \end{aligned}$ <p style="text-align: center;">OR</p> $\begin{aligned} A &= \sqrt{\frac{3\,456}{24}} \\ &= 12 \text{ cm} \end{aligned}$ <p style="text-align: center;">$\checkmark SF \quad \checkmark C \quad \checkmark CA$</p>	<p>1SF substitute into formula 1C conversion to cm 1CA simplification 1CA length of A</p> <p style="text-align: center;">OR</p> <p>1SF substitute into formula 1C conversion to cm 1CA simplification 1CA length of A</p> <p style="text-align: right;">(4)</p>	L2

4.3

Ques	Solution	Explanation	Topic/L
4.3.1	✓SF		
4.3.2	<p>Area of one label = $(1 + 2 \times 3,142 \times 7) \times 24 \text{ cm}$ $= 1\,079,712 \text{ cm}^2$ ✓A</p> <p>✓M Total area of labels = $1\,079,712 \text{ cm}^2 \times 76$ $= 82\,058,112 \text{ cm}^2$ $\approx 82\,058 \text{ cm}^2$ ✓R</p> <p>OR</p> <p>✓A ✓SF ✓M Total area of labels = $[(1 + 2 \times 3,142 \times 7) \times 24 \text{ cm}] \times 76$ $= 82\,058,112 \text{ cm}^2$ $\approx 82\,058 \text{ cm}^2$ ✓R</p>	<p>1SF substitute into formula 1A area of one label 1M multiply by 76</p> <p>1R rounding (accept 82 059)</p> <p>OR</p> <p>1SF substitute into formula 1A area of one label 1M multiply by 76 1R rounding (accept 82 059)</p> <p>Penalise with one mark if π on calculator is used</p> <p>(4)</p>	L2
4.3.3	<p>Volume of cylinder = $3,142 \times 7^2 \times 24 \text{ cm}^3$ ✓SF $= 3\,694,99 \text{ cm}^3$ ✓A</p> <p>✓MA Difference in volume = $3\,694,99 \text{ cm}^3 - 3\,456 \text{ cm}^3$ $= 238,99 \text{ cm}^3$</p> <p>OR</p> <p>✓SF ✓A ✓MA Difference in volume = $3,142 \times 7^2 \times 24 \text{ cm}^3 - 3\,456 \text{ cm}^3$ $= 238,99 \text{ cm}^3$</p>	<p>1SF substitute into formula 1A volume of cylinder 1M/A show how volume was obtained</p> <p>OR</p> <p>1SF substitute into formula 1A volume of cylinder 1M/A show how volume was obtained</p> <p>(3)</p>	L2
4.3.4	kilograms or kg or g ✓✓A	2A unit (2)	L1

Question

Ques	Solution	Explanation
5.1	Calculating Cost of Concrete $V = 12\text{m} \times 5\text{m} \times 10\text{cm} \checkmark \text{S}$ $= 12\text{m} \times 5\text{m} \times 0,1\text{m} \checkmark \text{C}$ $= 6 \text{ m}^3 \checkmark \text{A}$ Cost = $R89 \times 6 \checkmark \text{M}$ $= R534 \checkmark \text{CA}$	1S Substitution 1C Conversion 1A answer 1M multiplying 1CA answer (5)
(a)	Frame: $P = 2(12\text{m} + 5\text{m}) \checkmark \text{SF}$ $= 34 \text{ m} \checkmark \text{A}$ $\approx (34 \div 6) = 5.6$ $\approx \mathbf{6 \text{ lengths}}$	1SF 1A answer 1R rounding (3)
(b)	Uprights: $4 \times 2,6 \text{ m} = 10,4 \text{ m} \checkmark \text{MA}$ $\approx (10,4 \div 6) = 1,7 \checkmark \text{A}$ $\approx \mathbf{2 \text{ lengths}} \checkmark \text{R}$	1MA 1A answer 1R rounding (3)
(c)	Stabilizers: $3 \times 12\text{m} = 36 \text{ m} \checkmark \text{MA}$ $\approx (36 \div 6) = \mathbf{6 \text{ lengths}} \checkmark \text{A}$	1MA 1A answer (2)
(d)	Semi circle: $(2 \times 3,142 \times 2,5 \text{ m}) \div 2 \checkmark \text{M}$ $= 7,9 \text{ m} \checkmark \text{S}$ $\approx (7,9 \div 6) = 1,3 \checkmark \text{A}$ $\approx \mathbf{2 \text{ lengths}} \checkmark \text{R}$ Total semi circles: $2 \times 2\text{lengths} = \mathbf{4 \text{ lengths}} \checkmark$	1MA radius = 2,5m 1S simplification 1A answer 1R rounding 1S simplification (5)
5.2.2	Total Metal lengths = $6 + 2 + 6 + 4 = 18$ Total Cost of Metal = $18 \times R109 \checkmark \text{MA}$ $= R1 \text{ 962} \checkmark \text{CA}$	1M adding 1A multiplying with R109 1CA answer (3)
5.3.1	$13,1 \text{ m} \times 100 \checkmark \text{M}$ $= 1 \text{ 310 mm} \checkmark \text{A}$	1M 1A answer (2)
5.3.2	Rolls = $13,1 \text{ m} \div 3 \text{ m} \checkmark \text{M}$ $= 4,4 \text{ m} \checkmark \text{A}$ $\approx 5 \text{ rolls} \checkmark \text{R}$	1M 1A answer 1R rounding (3)
5.3.3	Total cost of shade cloth = $5 \times R512 \checkmark \text{M}$ $= R2 \text{ 560} \checkmark \text{CA}$	1M multiplying 1CA answer (2)
4.4	Total Cost of Material $R2 \text{ 560} + R1 \text{ 962} + R534 \checkmark \text{M}$ $= R5 \text{ 056} \checkmark \text{CA}$	1M adding 1CA answer (2)
5.5	Costs The temporary garage is much cheaper / the permanent garage will be too expensive $\checkmark \checkmark \text{O}$ Building/Erecting time Temporary garage can be erected within a shorter period / Permanent garage can take longer to build $\checkmark \checkmark \text{O}$	20 20 (4)

Question 6

Ques	Solution	Explanation	
6.1.1	<p>Volume of a cylinder = $\pi \times (\text{radius})^2 \times \text{height}$</p> $60\text{m}^3 = 3,142 \times (\text{radius})^2 \times 7,35 \text{ m} \quad \checkmark \text{ SF}$ $(\text{radius})^2 = \frac{60\text{m}^3}{3,142 \times 7,35\text{m}} \quad \checkmark \text{ M}$ $= 2,598111173 \text{ m}^2$ $\text{radius} = \sqrt{2,598111173} \quad \checkmark \text{ M}$ $= 1,611865743 \text{ m} \quad \checkmark \text{ CA}$ <p>diameter = $1,611865743 \text{ m} \times 2$</p> $= 3,223731486 \text{ m} \quad \checkmark \text{ CA}$	<p>1S substituting</p> <p>1M changing the subject</p> <p>1M square root</p> <p>1CA radius</p> <p>1CA diameter (5)</p>	M L3
6.1.2	<p>Total capacity = $4 \times 60 \text{ m}^3 \quad \checkmark \text{ M}$</p> $= 240 \text{ m}^3 \quad \checkmark \text{ C}$ $= 240\,000 \text{ l}$ <p>Capacity in gallon = $\frac{240\,000}{3,7} \quad \checkmark \text{ M}$</p> $\approx 64\,864,86 \quad \checkmark \text{ CA}$	<p>1M multiplying</p> <p>1C convert to l</p> <p>1M dividing</p> <p>1CA gallons (4)</p>	M L2
6.1.3	<p>Volume of fertiliser in silos = $(15\% \times 60\text{m}^3) + (\frac{1}{4} \times 60\text{m}^3) \quad \checkmark \text{ M}$</p> $= 9 \text{ m}^3 + 15 \text{ m}^3$ $= 24 \text{ m}^3 \quad \checkmark \text{ A}$ <p>Fertiliser needed for wheat field $\quad \checkmark \text{ M}$</p> $= 1\,055 \text{ acres} \times 22,65 \text{ kg}$ $= 23\,895,75 \text{ kg}$ $= \frac{23\,895,75}{1,3} \text{ litre}$ $= 18\,381,35 \text{ litre} \quad \checkmark \text{ C}$ <p>Volume of fertiliser needed = $18\,381,35 \div 1\,000$</p> $= 18,38 \dots \text{ m}^3$ $\approx 18,4 \text{ m}^3 \quad \checkmark \text{ C}$ <p style="text-align: right;">$\checkmark \text{ O}$</p>	<p>1M % and $\frac{1}{4}$ of 60</p> <p>1A volume of silos</p> <p>1M multiply by 22,65</p> <p>1C convert to l</p> <p>1C conversion</p> <p>1O deduction (6)</p>	M L4

	She will have enough fertiliser for the wheat field.		
6.2	<p>June, July, Aug.</p> <p>Mean (2012) = $\frac{93,8 + 282,2 + 52,2}{3}$ ✓ M = 142,73 mm ✓ A</p> <p>Mean (2013) = $\frac{244,2 + 56,2 + 19,0}{3}$ = 106,47 mm ✓ A</p> <p>Mean (2014) = $\frac{316,4 + 32,6 + 14,8}{3}$ = 121,27 mm ✓ A</p> <p>Mean (2015) = $\frac{68,0 + 16,4 + 215,2}{3}$ ✓ A = 99,8667 mm</p> <p>The probability will be 75%. ✓ ✓ CA</p>	<p>1M concept of mean 1A mean 2011</p> <p>1A mean 2012</p> <p>1A mean 2013</p> <p>1A mean 2014</p> <p>2CA probability in % (7)</p>	<p>L2 L4</p>

Question 7

7.1	South Westerly	2	2
7.2	Perimeter = 224 m + 200 m + 150 m + 200 m + 250 m = 1 024 m	4	2
7.3	Volume = $\pi \times (10)^2 \times 2 = 628,318... \approx 628,32 \text{ cm}^3$	4	2
5.4	Area of cattle kraal = $\frac{1}{2} \times 200 \times 200 = 20\ 000 \text{ m}^2$	3	2
7.5	Area of Mr Khoso's plot = $\frac{1}{2} \times (200 + 150 + 250) \times 200 = 60\ 000$	4	2

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QUESTION 8

Ques	Solution	Explanation	
8.1	<p>✓✓O</p> <p>For easy access OR to save on costs OR no privacy required OR aesthetic value OR ease of movement between rooms OR ventilation purposes</p>	2O explanation (2)	L4
8.2	<p>✓A</p> <p>Living room, bathroom and bedroom 2.</p> <p>✓✓O</p> <p>No direct sunlight into the room.</p> <p>OR</p> <p>The sun's position is on the northern side of the house. ✓✓O</p>	1A identified at least two rooms 2O reason (3)	L2 L4
8.3.1	The living room floor side OR ✓MA		L2

	\checkmark MA \checkmark C \checkmark M $= 3,550 \text{ m} - (3,550 \text{ m} \times 7,04\%)$ $= 3,3008 \text{ m}$ $\approx 3,3 \text{ m}$ $\therefore 3,3 \text{ m} \times 3,3 \text{ m}$	$100\% - 7,04\% = 92,96\%$ Side \checkmark C \checkmark M $= 3,550 \text{ m} \times 92,96\%$ $= 3,3008 \text{ m}$ $\therefore 3,3 \text{ m} \times 3,3 \text{ m}$	1C conversion 1MA for subtracting 1M multiplication (3)	
8.3.2	Area of 4 walls \checkmark SF $= 4 \times (3,3 \text{ m} \times 2,650 \text{ m})$ $= 34,98 \text{ m}^2$ \checkmark CA Area of 2 door openings $= 2 \times \text{length} \times \text{width}$ $= 2 \times 2,032 \text{ m} \times 0,750 \text{ m}$ \checkmark M $= 3,048 \text{ m}^2$ \checkmark CA Area of window $= 1,511 \text{ m} \times 0,949 \text{ m}$ \checkmark M $= 1,434 \text{ m}^2$ \checkmark CA Area to cover with panelling $= (34,98 - 3,048 - 1,5615 - 1,434) \text{ m}^2$ \checkmark M $= 28,9365 \text{ m}^2$ \checkmark CA $\approx 29 \text{ m}^2$ \checkmark R OR	Area of opening to passage $= \text{length} \times \text{width}$ $= 2,082 \text{ m} \times 0,75 \text{ m}$ \checkmark M $= 1,5615 \text{ m}^2$ \checkmark CA	1SF area wall dimensions 1CA area of 4 walls 2M door opening dimensions 1CA area of opening to passage 1CA 2 door openings 1M window dimensions 1CA area of window 1M subtracting 1CA area 1R rounding OR	L3
	Area of northern wall $= \text{Area of wall} - \text{area of door}$ \checkmark M $= (3,3 \text{ m} \times 2,650 \text{ m}) - (2,082 \text{ m} \times 0,750 \text{ m})$ $= 8,745 \text{ m}^2 - 1,5615 \text{ m}^2$ $= 7,1835 \text{ m}^2$ \checkmark CA Area of eastern wall $= \text{Area of wall} - \text{area of door}$ \checkmark M $= (3,3 \text{ m} \times 2,650 \text{ m}) - (2,032 \text{ m} \times 0,750 \text{ m})$ $= 8,745 \text{ m}^2 - 1,524 \text{ m}^2$ $= 7,221 \text{ m}^2$ \checkmark CA Area of southern wall $= \text{Area of wall} - \text{area of door} - \text{area of window}$ \checkmark M \checkmark A $= (3,3 \text{ m} \times 2,650 \text{ m}) - (2,032 \text{ m} \times 0,750 \text{ m}) - (1,511 \text{ m} \times 0,949 \text{ m})$ $= 8,745 \text{ m}^2 - 1,524 \text{ m}^2 - 1,434 \text{ m}^2$ $= 5,787 \text{ m}^2$ \checkmark CA Area of western wall $= (3,3 \text{ m} \times 2,650 \text{ m})$ \checkmark CA		1M subtracting areas 1CA for calculating area of northern wall 1M subtracting areas 1CA for calculating area of eastern wall 1M subtracting areas 1A subtracting 1CA for calculating area of southern wall 1CA for calculating area of western wall	

<p>$= 8,745 \text{ m}^2$</p> <p>Area to cover ✓M $= 7,1835 \text{ m}^2 + 7,221 \text{ m}^2 + 5,787 \text{ m}^2 + 8,745 \text{ m}^2$ $= 28,9365 \text{ m}^2$ ✓CA $\approx 29 \text{ m}^2$ ✓R</p> <p style="text-align: center;">OR</p> <p>Area of wall including door and window openings $= \text{perimeter of floor} \times \text{height}$ $= 2 \times (\text{width} + \text{width}) \times \text{height}$ $= 2 \times (3,3 \text{ m} + 3,3 \text{ m}) \times 2,650 \text{ m}$ ✓M $= 34,98 \text{ m}^2$ ✓CA</p> <p>Area of window 1 opening $= \text{length} \times \text{breadth}$ ✓M $= 1,511 \text{ m} \times 0,949 \text{ m}$ $= 1,433939 \text{ m}^2$ ✓CA</p> <p>Area of 2 door openings Area of opening to passage $= 2 \times \text{length} \times \text{width}$ $= \text{length} \times \text{width}$ $= 2 \times 2,032 \text{ m} \times 0,750 \text{ m}$ ✓M $= 2,082 \text{ m} \times 0,75 \text{ m}$ ✓M $= 3,048 \text{ m}^2 = 1,5615 \text{ m}^2$ ✓CA $= 1,5615 \text{ m}^2$ ✓CA</p> <p>Area to cover ✓CA ✓M $= 34,98 \text{ m}^2 - 1,433939 \text{ m}^2 - 3,048 \text{ m}^2 - 1,5615 \text{ m}^2$ $= 28,936561 \text{ m}^2$ $\approx 29 \text{ m}^2$ ✓R</p>	<p>1M for adding 4 walls</p> <p>1CA simplification 1R rounding</p> <p style="text-align: center;">OR</p> <p>1M multiplying 1CA calculating total area of walls 1M area formula 1CA calculating area of window 2M area formula 2CA calculating area of door openings</p> <p>1M for subtracting 1CA simplification 1R for rounding</p> <p style="text-align: right;">(11)</p>	
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QUESTION 9			
Ques	Solution	Explanation	Level
9.1.1	$\text{Outer diameter} = \frac{54}{100} \times 121,92 \text{ cm}$ $= 65,8368 \text{ cm}$ $= 658,368 \text{ mm}$ $\approx 658 \text{ mm}$	<p>1M % of 121,92 cm</p> <p>1CA outer diameter in cm</p> <p>1C conversion to mm</p> <p>1R rounding (4)</p>	M L1
9.1.2	$\text{Circumference of rim} = 3,142 \times 584 \text{ mm}$ $= 1834,93 \text{ mm}$ <p>Part of circumference filled by spokes = $24 \times 2 \text{ mm}$</p> $= 48 \text{ mm}$ $\text{Distance between spokes} = \frac{1834,93 - 48}{24} \text{ mm}$ $= 74,46 \text{ mm}$	<p>1SF substitution</p> <p>1A circumference</p> <p>1A space by spoke</p> <p>1M subtracting part filled by spokes</p> <p>1M division by 24</p>	M L2

		1CA/NP distance apart in cm. (6)	
9.1.3	<p>Width by wheelchair and hands = $60,96 \times 10$ mm = 609,6 mm^{✓C}</p> <p>Gap width = $\frac{750 - 609,6}{2}$ mm^{✓M} = 70,2 mm^{✓CA}</p>	<p>1C conversion to mm</p> <p>1M difference between 750 mm and 609,6 mm 1M divide difference by 2</p> <p>1CA gap width (4)</p>	M L1
9.2.1	<p>Total width = (80×4)mm + (640×2)mm^{✓M} = 320 mm + 1 280 mm^{✓M} = 1 600 mm^{✓CA} = 1,6 m^{✓C}</p> <p>OR</p> <p>Total width = $80 + 640 + 80 + 80 + 640 + 80$ mm^{✓M} = 1 600 mm^{✓CA} = 1,6 m^{✓C}</p>	<p>1M adding values</p> <p>1CA width in mm</p> <p>1C conversion</p> <p>OR</p> <p>1M adding values</p> <p>1CA width in mm</p> <p>1C conversion (3)</p>	M L1
9.2.2	<p>$e = [2\ 485\ \text{mm} - (80 + 640 + 95 + 95 + 220)\ \text{mm}] \div 2$^{✓M} ^{✓A}</p> <p>= $(2\ 485\ \text{mm} - 1\ 130\ \text{mm}) \div 2$^{✓M} = $1\ 355\ \text{mm} \div 2$^{✓CA} = 677,5 mm</p> <p>OR</p> <p>$e = (2\ 485 - 80 - 640 - 95 - 95 - 220)\ \text{mm} \div 2$^{✓A}^{✓M} ^{✓M} = $1\ 355\ \text{mm} \div 2$^{✓CA} = 677,5 mm</p>	<p>1M adding</p> <p>1A simplification</p> <p>1M divide by 2</p> <p>1CA length</p> <p>OR</p> <p>1A correct values</p> <p>1MA subtracting</p> <p>1M divide by 2</p> <p>1CA length (4)</p>	M L1
9.2.3	<p>Total area = $(640 \times 677,5 \times 4) + (\frac{3,142 \times 640^2}{2})$ mm²^{✓SF}^{✓M}^{✓A} ^{✓M}</p> <p>= $1\ 734\ 400\ \text{mm}^2 + 643\ 481,6\ \text{mm}^2$ = $2\ 377\ 881,6\ \text{mm}^2$^{✓CA}</p>	<p>1SF substitute in formulas</p> <p>1M multiply by 4</p> <p>1A identify of correct radius</p>	M L3

	✓M	1M divide by 2 1M adding different areas 1CA total area (6)	
9.2.4	$\begin{aligned} \text{Total mass} &= 15\,985,408 \text{ cm}^3 \times 2,5 \text{ g/cm}^3 \\ &= 39\,963,52 \text{ g} \quad \checkmark A \quad \checkmark SF \\ &= 39,96 \text{ kg} \quad \checkmark C \end{aligned}$	1M change subject of formula 1SF substitution into formula 1A total mass in gram 1C conversion to kg (4)	M L2

Question 10

10.1	Minimum volume = $7 \times 0,5 = 3,5 \text{ l}$	3	2
10.2	SA = $2 \times \pi \times 3,25 \times 15,1 = 308,347... \approx 308,35 \text{ cm}^2$	3	2
10.3	Number of 750 ml bottles = $4\,200 \div 750 = 5,6$ bottles. He will need 6 bottles.	3	2

Question 11

11.1	Area = $40 \times 30 = 1\,200 \text{ cm}^2$	2	2
11.2	Surface area = $2 \pi \times 6 \times 15 + 2\pi \times (6)^2 = 791,681... \approx 791,68 \text{ cm}^2$	4	2
11.3	Surface area = $2 \times 15 \times 8 + 2 \times 15 \times 15 + 2 \times 8 \times 15 = 930 \text{ cm}^2$	4	2
11.4	Volume = $p \times 6^2 \times 15 = 1\,696,460... \approx v 1\,696,46 \text{ cm}^2$	3	2

Question 12

Ques	Solution	Explanation	T & L
12.1	Square ✓✓A	2A answer (2)	M L1
12.2	Rectangle ✓✓A	2A answer (2)	M L1
12.3	Length of fence = $2 (7,5 \text{ m} + 5 \text{ m}) \checkmark M$ $= 25 \text{ m} \checkmark A$ OR $= 2 (7,5 \text{ m}) + 2 (5 \text{ m}) \checkmark$ $= 25 \text{ m} \checkmark$ OR	1M multiplying by 2 1A answer 1M multiplying by 2 1A answer	M L2

	$= 2,5 \text{ m} \times 10 \checkmark$ $= 25 \text{ m} \checkmark$	1M multiplying by 10 1A answer (2)	
12.4	<p>Area of the cabbage patch = side \times side $= 2,5 \text{ m} \times 2,5 \text{ m} \checkmark M$ $= 6,25 \text{ m}^2 \checkmark A$</p> <p>Area needed for each cabbage = side \times side $= (20 \text{ cm} \div 100) \times (20 \text{ cm} \div 100) \checkmark C$ $= 0,2 \text{ m} \times 0,2 \text{ m} \checkmark M$ $= 0,04 \text{ m}^2 \checkmark CA$</p> <p>Number of cabbages = $\frac{6,25 \text{ m}^2}{0,04 \text{ m}^2} \checkmark M$ $= 156,25 \checkmark CA$ $\approx 156 \checkmark R$</p>	1M multiplication 1A answer 1C conversion 1M multiplication 1CA answer 1M dividing 1CA answer 1R rounding (8)	M L3
12.5	<p>(a) Volume of a cylinder = $\pi \times \text{radius}^2 \times \text{height}$ $= 3,142 \times (320 \text{ mm} \div 10)^2 \times 60 \text{ cm} \checkmark C$ $= 3,142 \times (32 \div 2)^2 \text{ cm} \times 60 \text{ cm} \checkmark SF$ $= 48\,261,12 \text{ cm}^3 \checkmark CA$</p> <p>(b) $1 \text{ k} \ell = 1\,000 \ell$ No. of 20ℓ buckets = $\frac{1000 \ell}{20 \ell} \checkmark MA$ $= 50 \checkmark CA$</p>	1C conversion 1M finding the radius 1SF correct substitution 1CA answer (4) 1MA dividing 1 000 by 20 1CA answer (2)	M L2 M L2

MODELS - MEMO

No.	Question 1	Explanation	Marks	TL
1.1	It is to make provision for patients in wheelchairs. ✓✓		2	
1.2	$\text{Length} = 3\,600 + 2\,400 \times 3 + 1\,200 + 50 \times 2$ $= 12\,100 \checkmark$ $\text{Breadth} = 4\,200 + 1\,200$ $= 6\,000 \checkmark$ $\text{Area of parking zone} = \text{length} \times \text{breadth}$ $= 12,1 \times 6 \checkmark$ $= 72,6 \text{ m}^2 \checkmark$		4	
1.3	$\text{Number of bricks per pallet} = 50 \text{ bricks/m}^2 \checkmark \times 10 \text{ m}^2 \checkmark$ $= 500 \text{ bricks per pallet} \checkmark$		3	
1.4	$\text{Number of pallets} = 72,6 \div 10 \checkmark \checkmark$ $= 7,26 \checkmark$ $= 8 \text{ pallets} \checkmark$		4	
TOTAL			13	
No.	Question 2	Explanation	Marks	TL
2.1	$73,5 \times 2,54 \text{ cm}$ $= 186,69 \text{ cm} \div 100$ $= 1,8669$ $\therefore \text{shorter than } 1,9 \text{ m}$		5	
2.2	$1 \text{ m} - (33 \times 2,54) = 100 \text{ cm} - 83,82 \text{ cm (subtracting)}$ $= 16,18 \text{ cm}$ $100 \text{ cm} - (36 \times 2,54)$ $= 100 \text{ cm} - 91,44 \text{ (converting)}$ $= 8,56 \text{ cm}$ $\text{Total waste} = (16,18 \text{ cm} \times 2) + (8,56 \text{ cm} \times 3)$ $= 32,36 \text{ cm} + 25,68 \text{ cm (above calculation correct)}$ $= 58,04 \text{ cm}$		9	

2.3	WOOD NEEDED TO BUILD SHELVES				9	
	Description	Quantity	Quantity to be purchased	Total		
	Uprights	× 4	4 × 2 m @ R55,06 each	R220,24		
	Upright supports	× 4	2 × 1 m @ R27,53/m	R55,06		
	Top shelf	× 1	5 × 1 m @ R27,53/m	R137,65		
	Other shelves	× 3	15 × 1 m @ R27,53/m	R412,95		
	Shelf support	× 8	4 × 1 m @ R27,53/m	R110,12		
			TOTAL EXCL. VAT	R936,02		
			VAT @ 14%	R131,04		
			TOTAL INCL. VAT	R1 067,06		
∴ Bongani is incorrect.						
TOTAL					23	

No.	Question 3	Explanation	Marks	TL
3.1	<p>Area to be painted = $(15 \text{ mm} \times 180 \text{ mm} \times 2) + (60 \text{ mm} \times 15 \text{ mm} \times 2) + (180 \text{ mm} \times 60 \text{ mm}) + ((180 \text{ mm} - 40 \text{ mm} - 30 \text{ mm}) \times 60 \text{ mm})$</p> <p>$= 5\,400 \text{ mm}^2 + 1\,800 \text{ mm}^2 + 10\,800 \text{ mm}^2 + 6\,600 \text{ mm}^2$</p> <p>$= 24\,600 \text{ mm}^2$</p>	<p>Multi-step</p> <p>Reasoning and reflecting</p>	<p>5</p> <p>3</p>	<p>L 3</p> <p>L 4</p>
3.2	<p>$= (50 \text{ mm} \times 60 \text{ mm}) + (\frac{1}{2} \times 40 \text{ mm} \times 30 \text{ mm} \times 2)$</p> <p>$= 3\,000 \text{ mm}^2 + 1\,200 \text{ mm}^2$</p> <p>$= 4\,200 \text{ mm}^2$</p> <p>∴ Bongani's statement is incorrect</p> <p>OR</p> <p>Area to be painted = $(5 \text{ cm} \times 6 \text{ cm}) + (\frac{1}{2} \times 4 \text{ cm} \times 3 \text{ cm} \times 2)$</p> <p>$= 30 \text{ cm}^2 + 12 \text{ cm}^2$</p> <p>$= 42 \text{ cm}^2$</p> <p>∴ Bongani's statement is incorrect</p>		<p>2</p>	<p>L 3</p> <p>L 4</p>

3.3	Area to be painted = $24\,600\text{ mm}^2 + 5\,400\text{ mm}^2 + 4\,200\text{ mm}^2$ $= 34\,200\text{ mm}^2$ NOTE Must add the figures from the questions 3.1 and 3.2.		2	
3.4	$34\,200\text{ mm}^2 \div 1\,000\,000\text{ m}$ $= 0,0342\text{ m}^2$ $5\text{ m}^2 \div 0,0342\text{ m}^2$ $= 146,1988304 \times 5\text{ l m}$ $= 730,994 \dots$ $= 730\text{ trucks}$ \therefore Yes, he has enough paint OR $5\text{ m}^2 \times 1\,000\,000 \times 5\text{ l m}$ $= 25\,000\,000\text{ mm}^2 \div 34\,200\text{ mm}^2\text{ m}$ $= 730,994 \dots$ $= 730\text{ trucks}$ \therefore Yes, he has enough paint.		5	
TOTAL			21	

No.	Question 4	Explanation	Marks	TL
4.1	$3\text{ m} \div 0,7 = 4,2 \therefore 4\text{ boxes}$ $2\text{ m} \div 0,4 = 5\text{ boxes}$		2	
4.2	$4 \times 5 \times 2\text{ m} = 40\text{ boxes}$		2	
4.3	$\frac{3}{5}$		2	
4.4	$\frac{3}{5} + \frac{2}{5} = \frac{5}{5} = 1$		3	

No.	Question 5	Explanation	Marks	TL
5.1	$P = 145\text{cm} + 145\text{cm} + 75\text{cm} + 75\text{cm}$ $P = 440\text{ cm}$	accept 4 400 mm or 4,4 m * If perimeter of border = 460cm : 2 marks	3	
5.2	$440\text{cm} \div 2,5\text{cm} = 176$ $176 + 4 = \underline{180\text{ tiles}}$ OR $145\text{cm} \div 2,5\text{ cm} = 58\text{ tiles} \times 2 = 116\text{ tiles}$ $75\text{cm} \div 2,5\text{ cm} = 30\text{ tiles} \times 2 = 60\text{ tiles}$ $116 + 60 = 176\text{ tiles}$ $176 + 4 = \underline{180\text{ tiles}}$ OR Area of Border \div Area of Tile = 180 $1125 \div 6,25 = \underline{180\text{ tiles}}$ OR $80 \div 2,5 = 32$ $150 \div 2,5 = 60$ $(32 + 60) \times 2 = 184 - 4 = \underline{180\text{ tiles}}$ <ul style="list-style-type: none"> • Inside border = 172 tiles 		4	
5.3	$180 \times 2 = 360\text{ tiles}$ $360 + 8 = \underline{368\text{ tiles}}$ OR $145\text{ cm} + 5\text{ cm} = 150\text{ cm}$ $150\text{ cm} \div 2,5\text{ cm} = 60\text{ tiles} \times 2 = 120\text{ tiles}$ $75\text{cm} + 5\text{cm} = 80\text{cm}$ $80\text{cm} \div 2,5\text{cm} = 32\text{ tiles} \times 2 = 64\text{ tiles}$ $120\text{ tiles} + 64\text{ tiles} = 184\text{ tiles}$		5	

	$184 + 180 + 4 = \underline{368 \text{ tiles}}$ OR Area of two borders = $13\,175\text{cm}^2$ Area of mirror = $10\,875\text{cm}^2$ $13\,175\text{cm}^2 - 10\,875\text{cm}^2$ $= 2300\text{cm}^2 \div 6,25\text{cm}^2$ $= \underline{368 \text{ tiles}}$			
5.4	$368 \text{ tiles} \div 20 = 18,4$ She will need 19 boxes.(round up)		2	
TOTAL			14	

● Finance - Exchange rates

Question	Working/Explanation	Marks
1.1	$\frac{500 \checkmark}{0,059 \checkmark} = R8\,474,576271 \checkmark$ <i>Bank Charge</i> = $2,75\% \checkmark \times R8\,474,576271 \checkmark$ $= R233,05 \checkmark$	6
1.2.1	<i>£1 bought for R16,5842</i> $£500 = R16,5842 \checkmark \times 500 \checkmark$ $= R8\,292,10 \checkmark$	3
1.2.2	Getting the money from Rennies is better because he will receive R8 292,10 but will get R8 241,53 from the bank. ✓✓	2
1.2.3	$£636,31 \checkmark \times 17,6930 \checkmark = R11\,258,23 \text{ or } R11\,258,24 \checkmark$	3
1.3	$\$769 = R13,37 \checkmark \times 769 \checkmark$ $= R10\,281,53 \checkmark$ $\frac{719 \checkmark}{0,059 \checkmark}$ $= R12\,186,44 \checkmark$ OR $\$1 = 13,37 \checkmark \times 0,059 \checkmark$ $= 0,78883 \checkmark$ $\$769 = 769 \checkmark \times 0,78883 \checkmark$ $= £606,61 \checkmark$	6
TOTAL MARKS		20

Question 2

2.1	<p>'return ticket' means you use the ticket going and coming back</p> <p>'single trip' means the journey of going only, not coming back</p>	1	2 explanations	(2)
2.2	<p>07:40 – 40 minutes</p> <p>= 07:00 – 7hrs</p> <p>= 00:00 = 24:00</p> <p>= 24:00 – 3 hrs</p> <p>= 21:00</p> <p>∴ he should leave on the 19th of June at 21:00 or 9:00 pm</p>	2	<p>1 subtraction</p> <p>1 date</p> <p>1 correct time in any form</p>	(3)
2.3.1	<p>0,621 miles = 1 km</p> <p><u> ?</u> = 960 km</p> $0,621 \times \frac{9630}{1}$ <p>= 5980,23 miles or</p> <p>0,621 miles = 1 km</p> <p> x x 9630 km</p> $x \times 1 = 0,621 \times 9630$ $x = 5980,23 \text{ miles}$	2	<p>1 multiplication</p> <p>1 correct answer</p> <p>Answer only fill mark</p>	(2)
2.3.2	<p>£1 = R17,54</p> <p>But £1 = \$1,29</p> <p>∴ \$1,29 = R17,54</p> <p> ? = R9 500</p> $1,29 \times \frac{9\,500}{17,54}$ <p>= \$698,69</p> <p>Or</p> <p>\$1,29 = R17,54</p> <p> x = R9 500</p>	3	<p>1 calculation</p> <p>1 for \$1,29 = R17,54</p> <p>1 Answer</p>	(3)

	$\frac{17,54x}{17,54} = \frac{9\,500 \times 1,29}{17,54}$ $x = \$698,69$			
2.4	<p>President Zuma's ticket</p> $\$698,69 \div 2 = \$349,35$ <p>For single trip</p> $\$349,35 \rightarrow 5980,23 \text{ miles}$ <p>? \rightarrow 1 mile</p> $\$349,35 \times \frac{1}{5980,23}$ $= \$0,06 \text{ per mile}$ <p>President Trump's ticket</p> $\$800 \div 2 = \400 <p>For single trip</p> $\$400 \rightarrow 3800 \text{ miles}$ <p>? \rightarrow 1 miles</p> $400 \times \frac{1}{3800}$ $= \$0,11 \text{ per mile}$ <p>Yes, Thandeka was right because Mr Zuma pays \$0,06 per mile (6 cents) while Mr Trump pays \$0,11 per mile (11 cents)</p>	4	<p>1 dividing by 2 on Zuma's ticket</p> <p>1 calculation</p> <p>1 answer</p> <p>1 dividing by 2 on Trump's ticket</p> <p>1 calculation</p> <p>1 answer</p> <p>1 yes</p> <p>2 explanation</p>	(9)
2.5.1	$3+3+(9 \times 2)+13+3$ $= 40 \text{ people}$	1	<p>1 addition</p> <p>1 answer</p> <p>Answer only full mark</p>	(2)
2.5.2	$40 \div 6 = 6,666$ $= 7 \text{ times}$	1	<p>1 division</p> <p>1 answer</p> <p>Answer only full marks</p>	(2)
2.5.3	$250 \text{ ml} \times 2 = 500 \text{ ml}$ $500 \text{ ml} \rightarrow 6 \text{ people}$	2	<p>multiplication</p>	(3)

	<p>→ 40 people</p> $500 \times \frac{40}{6}$ <p>= 3333,33 ml</p> <p>= 4 litres</p> <p>Or</p> <p>From 1.5.2</p> $\frac{7 \times 500}{1000} = 3,5 \text{ litres}$ <p>= 4 litres</p>		<p>1 changing to litres</p> <p>1 4 litres</p>	
2.5.4	<p>£1 = R17,54</p> <p>? = R1 000</p> $1 \times \frac{1000}{17,54}$ <p>= £57,01</p> <p>Since it costs £60, she won't be able to buy the watch because R1000 = £57,01</p> <p>Or</p> <p>No because R1000 = £57.01 and the watch costs £60.</p>	3	<p>1 $\frac{1000}{17,54}$</p> <p>1 £57,01</p> <p>1 no</p> <p>1 Explanation (4)</p>	

No.	SOLUTION	EXPLANATION	Marks	Level
3.1.1	South African rands ✓ US dollars ✓	2A	2	1
3.1.2	$\frac{\$1047.92}{1047.92} : \frac{R138\ 13}{1047.92} \checkmark$ \$1 : R13.18134972 ✓✓	1M, Dividing 2A Answer only full marks NPR	3	2
3.1.3	R138 : R622 ✓ 69 : 311 ✓	1M, Ratio 1A, Simplification Answer only full marks	2	2

3.1.4	$R1\ 644 = 11.90\% \text{ of } R\ 13\ 813 \checkmark\checkmark$ Or $= \frac{11.90}{100} \times R13\ 813 \checkmark\checkmark$	2M, concept of 11.90%	2	2
3.1.5	Total cost = $R13\ 813 + (R\ 1\ 644 + R138 + R622) \checkmark\checkmark$ = $R13\ 813 + R2\ 404$ = $R16\ 217 \div R13.18 \checkmark$ = $\$1230.42 \checkmark$ Or Total cost = $(R2404 \div R13.18) + 1047.92 \checkmark\checkmark$ = $\$1230.32 \checkmark\checkmark$	2M; adding correct amounts 1Conversion 1A NPR	4	3
3.2.1	Tax bracket 3 – 25% \$37 650-\$91 150 $\checkmark\checkmark$	2RD	2	1
3.2.2	$\% = \frac{9\ 8\ 67}{56\ 38\ 3} \times 100\% \checkmark\checkmark$ = 17.5% \checkmark	2SF, dividing \$56 6863 1A, rounding	3	2
a)	Salary in dollars = $\frac{R650\ 000}{R13.18} \checkmark$ = \$49 317 $\checkmark\checkmark$	3MA, correct conversion Answer only full marks NPR	3	3
b)	Tax return = $(\$13\ 250 \times 0.1) + (\$36\ 067 \times 0.15) \checkmark\checkmark$ = \$1325 + \$5410.05 \checkmark = \$6 735.05 US Tax in Rands = $\$6\ 735.05 \times 13.18$ = R88 767.96 $\checkmark\checkmark$ His statement was incorrect the individual from US pays more tax. $\checkmark\checkmark$ Or	2Multiplying 1Addition 2Conversion 2Opinion	7	4

	<p>Tax return = $(\\$13\,250 \times 0.1) + (\\$36\,067 \times 0.15)$ ✓✓ = \$1325 + \$5410.05 ✓ = \$6 735.05</p> <p>RSA Tax in dollars = R431 124.90 ÷ 13.18 ✓ = \$32 710.54 ✓</p> <p>His statement was incorrect the individual from US pays more tax. ✓✓</p>			
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Question 4

4.1	€28,49✓✓	2 for correct answer	1
4.2	Swaziland ✓✓ Namibia ✓✓	2 for each country	1
4.3	Dirham ✓✓	2 for correct answer	1
4.4	Cost = $\frac{4,08✓}{0,0404✓}$ = R100,99✓	1 for correct currency 1 for correct exchange rate 1 for correct answer	3
4.5	PPP = $\frac{\text{Chicken wrap in the local currency}}{\text{Chicken wrap price in SA rands}}$ PPP = $\frac{4,08✓}{42,50✓}$ PPP = 0,0960✓✓	1 for correct local currency 1 for R42,50 1 for 0.096 1 for writing 0.0960	3
4.6	Undervalued✓, the exchange rate is less than the Nando`s index. ✓✓	1 for undervalued 2 for correct reason	4
1.7	You have to spend a lot in that country ✓✓	2 for correct reason	4

SUPPLEMENTARY EXAMINATION FEBRUARY – MARCH SOLUTIONS



basic education

Department:
Basic Education
REPUBLIC OF SOUTH AFRICA

NATIONAL SENIOR CERTIFICATE

GRADE 12

MATHEMATICAL LITERACY P1

FEBRUARY/MARCH 2017

MEMORANDUM

MARKS: 150

Symbol	Explanation
M	Method
M/A	Method with accuracy
CA	Consistent accuracy
A	Accuracy
C	Conversion
S	Simplification
RT/RG/RD	Reading from table/graph/diagram
SF	Correct substitution in formula
O	Opinion/Example
P	Penalty, e.g. for no units, incorrect rounding off, etc.
R	Rounding off
AO	Answer only full marks
NPR	No penalty for rounding

QUESTION 1 [35 marks]			
Ques	Solution	Explanation	Topic/L
1.1.1	Amount deposited/paid ^{✓✓A} OR Payments into the bank account. ^{✓✓A}	2A answer (2)	F L1
1.1.2	Amount that is owed to the bank. ^{✓✓O} OR ^{✓✓O} Overdraft / borrowed from bank OR Money used above the available balance.	2O explanation (2)	F L1
1.1.3	$A = R8\,906,94 - 2\,765,66$ $= R6\,141,28$ OR $A = - 2\,765,66 + R8\,906,94$ $= R6\,141,28$	1M adding 1A correct amounts 1CA value for A OR 1M adding 1A correct amounts 1CA value for A AO	F L2
1.1.4	Net payment = R1 285,17 + R8 906,94 + R23 004,57 ^{✓MA} = R33 196,68 ^{✓CA}	1MA adding all the amounts 1CA simplification (if one value omitted) AO (1 value omitted max 1) (2)	F L1
1.1.5	11 February was a Thursday ^{✓M} 26 February was a Friday ^{✓A} Total number of week days = 12 ^{✓CA}	1M identifying day of week 1A day of week 1CA days AO (11 days 1 mark if AO but 2 marks if working shown) (3)	M L1

Ques	Solution	Explanation	Topic/L
1.1.6	Cash withdrawal fee ✓MA $= R6,70 + R4,00 + 1,20\% \times R5\,490,00$ $= R6,70 + R4,00 + R65,88$ ✓S $= R76,58$ ✓CA	1MA adding/multiplication 1S simplification 1CA amount AO (Max 2 marks if R6,70 is omitted) (3)	F L2
1.1.7	External ✓✓A	2A answer (2)	F L1
1.2.1	Amount of money in the account after a year $= R9\,500 \times 106,4\%$ ✓A ✓M ✓RT $= R10\,108$ <p style="text-align: center;">OR</p> Amount of interest earned after a year $= R9\,500 \times 6,4\%$ ✓RT $= R608$ Amount of money in the account after a year $= R9\,500 + R608$ ✓M ✓A $= R10\,108$	1RT reading from table 1M for adding percentages 1A multiplying correct values <p style="text-align: center;">OR</p> 1RT reading from table 1M for adding interest 1A multiplying correct values (3)	F L2
1.2.2	Interest for six months $= 7,4\% \div 2$ ✓RT $= 3,7\%$ ✓CA Amount of interests earned after 6 months $= R10\,108 \times 3,7\%$ $= R374$ ✓CA Amount of money in the account after another 6 months $= R10\,108 + R374$ $= R10\,482,00$ ✓CA <p style="text-align: center;">OR</p>	1RT reading correct value from table 1CA for calculating 6 month interest rate 1CA for interest 1CA for amount plus interest <p style="text-align: center;">OR</p>	F L2

Ques	Solution	Explanation	Topic/L
	<p style="text-align: center;">OR</p> <p>Interest for six months \checkmark_{RT} $= 7,4\% \div 2$ $= 3,7\%$ \checkmark_{CA}</p> <p>Amount of money in the account after 6 more months $= 1,037 \times R10\ 108$ \checkmark_M $= R10\ 482,00$ \checkmark_{CA}</p>	<p style="text-align: center;">OR</p> <p>1RT reading correct value from table 1CA for calculating 6 month interest rate</p> <p>1M adding and multiplying interest 1CA amount plus interest AO</p> <p style="text-align: right;">(4)</p>	
1.3.1	<p>The increase in the price for goods and services from one period to another period</p> <p style="text-align: center;">OR</p> <p>Inflation is the rise over time in prices of goods and services.</p>	<p>1O increase 1O price of goods or services</p> <p style="text-align: right;">(2)</p>	F L1
1.3.2	<p>Number of hours worked = $\frac{514,80}{11,44}$ OR $\frac{476,55}{10,59}$ \checkmark_A \checkmark_A</p> <p style="text-align: center;">= 45</p> <p style="text-align: center;">OR</p> <p>Monthly wage = $45 \times R11,44$ or $45 \times R10,59$ = R514,80 = R 476,55</p>	<p>1A numerator 1A denominator</p> <p>1A hours 1A rate</p> <p style="text-align: right;">(2)</p>	F L1
1.3.3	<p>Minimum monthly rate = $\frac{r \times w}{12}$</p> <p style="text-align: center;">\checkmark_{SF} \checkmark_A</p> <p style="text-align: center;">= $\frac{514,80 \times 52}{12}$</p> <p style="text-align: center;">= 2 230,80 \checkmark_{CA}</p>	<p>1SF substitution</p> <p>1A for multiplying by 52</p> <p>1CA simplification AO</p> <p style="text-align: right;">(3)</p> <p>$(4 \times 514,80 = R2059,2)$ Max 1 mark</p>	F L2

Ques	Solution	Explanation	Topic/L
1.3.4 (a)	Total minimum wage = 40 hours \times \checkmark M R11,44 per hour = R457,60 \checkmark A	1M multiplying 1A simplification AO (2)	F L1
1.3.4 (b)	Hourly rate for one domestic worker = $\frac{R550,90}{40 \text{ hour}}$ \checkmark M = R13,7725 per hour } = R13,77 per hour } \checkmark CA	1M dividing by weekly hours 1CA hourly rate AO NPR (2)	F L2
		(2)	[35]

QUESTION 2 [28 marks]			
Ques	Solution	Explanation	Topic/L
2.1.1	<p>End time = 18:15 + 25 min = 18:40 ✓MA ✓A</p> <p>Time set aside = time from 14:00 to 18:40 ✓M</p> <p style="text-align: center;">✓CA</p> <p>= 4 hours 40 min or $4\frac{2}{3}$ hr or 4,67 hrs</p> <p style="text-align: center;">OR</p> <p>Time set aside for start of last items ✓A</p> <p>= time from 14:00 to 18:15</p> <p>= 4 hours 15 min ✓MA ✓M</p> <p>Time set aside = 4 hours 15 min + 25 min</p> <p style="text-align: center;">✓CA</p> <p>= 4 hours 40 min or $4\frac{2}{3}$ hr or 4,67 hrs</p>	<p>1MA calculating end time</p> <p>1A using time on table</p> <p>1M subtracting</p> <p>1CA total time</p> <p>1A using time on table</p> <p>1MA calculating time</p> <p>1M adding</p> <p>1CA total time</p> <p>AO</p> <p style="text-align: right;">(4)</p> <p>(omitting time (25 min) max 3 marks)</p>	M L2
2.1.2	<p style="text-align: center;">✓MA</p> <p>Difference in mass = 800 g – 600 g</p> <p style="text-align: center;">= 200 g ✓CA</p>	<p>1MA subtracting correct mass</p> <p>(reversing values-no penalty)</p> <p>1CA mass</p> <p>(Identifying correct weights only max 1 mark)</p> <p>AO</p> <p style="text-align: right;">(2)</p>	M L1
2.1.3	<p>17 years ✓A</p> <p>17:05 ✓✓RT/CA</p>	<p>1A correct age</p> <p>2RT /CA reading from table</p> <p style="text-align: right;">(3)</p> <p>18 years 16:05 (Max 2 marks for 16:05)</p>	M L2
2.2.1	<p>Obese ✓✓RT</p>	<p>2RT weight status</p> <p style="text-align: right;">(2)</p>	M L1
2.2.2	<p>Height in inches = $6 \times 12 + 3$ = 75 ✓M</p> <p style="text-align: center;">✓SF ✓C</p> <p>BMI = $\frac{200}{75 \times 75} \times 703$</p> <p>= 24,99556 ✓CA</p> <p>= 25 ✓R</p>	<p>1M multiplying/adding</p> <p>1C conversion</p> <p>1SF substitution</p> <p>1CA simplification</p> <p>1R rounding</p> <p>AO</p> <p style="text-align: right;">(5)</p>	M L2

Ques	Solution	Explanation	Topic/L
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2.3.1	<p>Full length of podium</p> $= 50 \text{ cm} + 50 \text{ cm} + 50 \text{ cm} \quad \checkmark^M$ $= 150 \text{ cm} \div 100$ $= 1,5 \text{ m} \quad \checkmark^C$	<p>1M adding</p> <p>1C converting to m</p> <p>AO</p> <p>(2)</p>	M L2
2.3.2	$C = 37,5 \div 5 \times 4 \quad \checkmark^M$ $= 30 \text{ cm} \quad \checkmark^A$ <p style="text-align: center;">OR</p> $C = 22,5 \div 3 \times 4 \quad \checkmark^M$ $= 30 \text{ cm}$ <p style="text-align: center;">OR</p> <p>Number of parts = $5 + 4 + 3 = 12$</p> $\frac{5}{12} \times \text{total height of podium} = 37,5 \quad \checkmark^M$ $\text{Total height of podium} = \frac{450}{5} \quad \checkmark^A$ $= 90$ $C = 90 - 37,5 - 22,5 \quad \text{or} \quad C = \frac{4}{12} \times 90$ $= 30 \quad \checkmark^A$	<p>1A correct values 1M using ratio 1A simplification</p> <p style="text-align: center;">OR</p> <p>1A correct values</p> <p>1M using ratio</p> <p>1A simplification</p> <p>1M using ratio</p> <p>1A height of podium</p> <p>1A simplification AO</p> <p>(3)</p>	M L2
2.3.3	<p>Volume = length \times breath \times height</p> $\text{Volume} = 50 \text{ cm} \times 50 \text{ cm} \times 37,5 \text{ cm} \quad \checkmark^{SF}$ $= 93\,750 \text{ cm}^3 \quad \checkmark^A$	<p>1SF substitution 1CA volume 1A unit</p> <p>(3)</p>	M L2

Ques	Solution	Explanation	Topic/L
2.3.4	$500 \text{ ml} = 500 \text{ cm}^3 \quad \checkmark\text{C}$ $\text{Height} = \frac{500 \text{ cm}^3}{3,142 \times (3,77)^2 \text{ cm}^2} \quad \checkmark\text{SF}$ $= 11,196... \text{ cm} \quad \checkmark\text{CA}$ $\approx 11 \text{ cm} \quad \checkmark\text{R}$	1C conversion 1SF substitution (accept 500 ml) 1CA simplification 1R rounding (Incorrect conversion max 3 marks)	M L2
		(4)	
		[28]	

QUESTION 3 [23 marks]			
Ques	Solution	Explanation	Topic/L
3.1.1	Bethulie $\checkmark\checkmark\text{A}$	2A direction (2)	MP L1
3.1.2	(a) left $\checkmark\text{A}$ (b) Douglas $\checkmark\text{A}$ (c) right hand side $\checkmark\text{A}$	1A correct direction 1A correct street 1A correct side (3)	MP L1
3.1.3	N1 $\checkmark\checkmark\text{A}$	2A National road (2)	MP L1
3.1.4	$\checkmark\text{A} \quad \checkmark\text{A} \quad \checkmark\text{A}$ R701 , R390 , R58 OR only R58 $\checkmark\checkmark\checkmark\text{A}$	3A provincial roads (3)	MP L1
3.1.5	$\checkmark\text{A} \quad \checkmark\text{A}$ Zastron, Rouxville, Smithfield, Bethulie and Venterstad $\checkmark\text{A}$	1A first town 1A second town 1A last three towns (3)	MP L2
3.1.6	Map : Actual $\checkmark\text{A} \quad \checkmark\text{M}$ 42 mm : 72,9 km 42 mm : 72 900 000 $\checkmark\text{C}$ 10 : 17 357 142,86 $\checkmark\text{CA}$	1A measurement [accept 40 to 43 mm] 1M scale concept 1C conversion 1CA simplified scale [Accept 18 225 000 to 16 953 488,37] NPR (Ratio reversed max 3 marks) (4)	MP L3

3.2.1	11 voting officials ✓✓RT	2RT reading from diagram (2)	MP L1
3.2.2	Clockwise ✓✓A	2A direction (2)	MP L1
3.2.3	Voting booths ✓✓A	2A correct point (2)	M L1
		[23]	

QUESTION 4 [39 marks]			
Ques	Solution	Explanation	Topic/L
4.1.1	E ✓✓A	2A correct choice (2)	D L1
4.1.2	B ✓✓A	2A correct choice (2)	D L1
4.2.1	$\frac{3}{10} \times 100\%$ = 30% ✓CA	1A numerator 1A denominator 1CA percentage AO (3)	P L2
4.2.2	72; 109; 118; 137; 137; 144; 144; 146; 162; 168 Median = $\frac{137+144}{2}$ = 140,5 ✓CA	1MA arranging (increasing or decreasing) 1M median concept 1CA median AO (Wrong column used Max 2 marks) (3)	L2 D
4.2.3	39% and 41% ✓A	1A mode 1 1A mode 2 (Wrong column used Max 1 mark for both modes) (2)	L1 D
4.2.4	G ✓✓RT	2RT correct learner (2)	D L1
4.2.5	$382\% \div 10$ = 38,2% or 38% OR $\frac{1337}{10 \times 350} \times 100\%$ = 38,2% or 38% or accept 0,382 or 0,38 ✓CA	1M mean concepts 1MA adding correct values 1CA mean % value OR 1M mean concepts 1MA adding correct values 1CA mean % value AO (3)	D L2

Ques	Solution	Explanation	Topic/L
4.2.6	$\text{New SBA \%} = \frac{137}{300} \times 100\%$ $= 46\%$ <p style="text-align: center;">OR</p> $\frac{137}{6} = 23$ $= \frac{23}{50} \times \frac{100}{1}$ $= 46\%$	1A numerator 1A denominator 1CA percentage <p style="text-align: center;">OR</p> 1A numerator 1A denominator 1CA percentage AO	D L2
4.3.1	B	2A correct statement	D L1
4.3.2	Indian/Asian 15 – 19	1RT race group 1RT age group	D L1
4.3.3	$Y = 2\,334\,819 + 2\,498\,098 = 4\,832\,917$ <p style="text-align: center;">OR</p> $Y = 426\,156 + 430\,667 + 431\,779 + 437\,412 + 1\,558\,886 + 1\,150\,775 + 365\,544 + 31\,698$ $Y = 4\,832\,917$	1MA adding 1CA total <p style="text-align: center;">OR</p> 1MA adding 1CA total AO	P L1
4.3.4	$\frac{2\,334\,819}{54\,957\,764} \times 100\%$ $= 4,25\%$	1RT correct values 1M Probability as a % 1CA percentage AO NPR	D L2

Ques	Solution	Explanation	Topic/L
4.3.5	$674\,730 : 688\,118 \quad \checkmark_{RT} \quad \checkmark_A$ $= 337\,365 : 344\,059 \quad \checkmark_{CA}$	1RT correct values 1A ratio concept 1CA simplified ratio (3)	D L1
4.3.6	$\frac{2\,498\,098}{54\,957\,764} \times 100\% \quad \checkmark_{RT} \quad \checkmark_M$ $= 4,545486967..% \quad \checkmark_{CA}$	1RT correct values 1M multiply by 100% 1CA answer AO NPR (3)	D L2
4.3.7	Age 20–39 $\checkmark\checkmark_{RT}$	2RT correct age group (2)	D L1
4.3.8	Bar graph $\checkmark\checkmark_{RT}$	2RT correct graph type (2)	D L1
		[39]	

QUESTION 5 [25 marks]			
Ques	Solution	Explanation	Topic/L
5.1.1	Checkers ✓✓A	2A correct (2)	F L1
5.1.2	$X = R440,85 - R(19,99 + 7,99 + 14,99 + 89,99 + 46,99 + 15,99 + 9,99 + 31,99 + 19,99 + 25,99 + 76,99 + 19,99 + 23,99 + 17,99)$ $X = R440,85 - R422,86$ $= R17,99 \quad \checkmark A$	1M adding/subtracting 1A simplification AO (2)	F L1
5.1.3	Difference = R15,99 – R13,50 ✓MA $= R2,49 \quad \checkmark CA$	1MA subtracting correct values 1CA simplification (2)	F L1
5.1.4	9 ✓✓A	[CA from Q 5.1.2] 2A correct number (2)	F L1
5.1.5	Cabbage ✓✓A Milk ✓A	2A first product 1A second product (3)	F L1
5.1.6	Eggs ✓✓A	2A product (2)	F L1
5.1.7	Difference in cost $= R(49,99 - 36) \times 2,5 \quad \checkmark A \quad \checkmark M \quad \checkmark A \quad \checkmark M \quad \text{OR} \quad R(49,99 \times 2,5 - 36 \times 2,5)$ $= R 34,98 \quad \checkmark CA$ <p style="text-align: center;">OR</p> Woolworths = R49,99 × 2,5 ✓M $= R124,98 \quad \checkmark A$ P n P = R36,00 × 2,5 $= R90,00 \quad \checkmark A$ Difference in cost = R124,98 – R90,00 ✓M $= R34,98 \quad \checkmark CA$	2A correct prices 1M for subtracting prices 1M multiplying 1CA simplification <p style="text-align: center;">OR</p> 1M multiplying with correct price 1A simplification 1A simplification 1M for subtracting prices 1CA simplification (5)	F L2

Ques	Solution	Explanation	Topic/L
5.2.1	Checkers ✓✓A	2A correct outlet (2)	F L1
5.2.2	Woolworths ✓✓A OR PnP ✓✓A	2A correct outlet (2)	F L1
5.2.3	$\text{Difference} = \overset{\checkmark A}{R\ 479,44} - \overset{\checkmark A}{R208,74} \quad \checkmark M$ $= \overset{\checkmark CA}{R\ 270,70}$ <p style="text-align: center;">OR</p> $\text{Difference} = \overset{\checkmark A}{R\ 440,85} - \overset{\checkmark A}{R208,74} \quad \checkmark M$ $= \overset{\checkmark CA}{R\ 232,11}$	1A correct values 1M subtraction 1CA simplification 1A correct values 1M subtraction 1CA simplification (3)	F L1
[25]			
TOTAL			150



basic education

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NATIONAL SENIOR CERTIFICATE

GRADE 12

MATHEMATICAL LITERACY P2

FEBRUARY/MARCH 2017

MEMORANDUM

MARKS: 150

Symbol	Explanation
M	Method
M/A	Method with accuracy
CA	Consistent accuracy
A	Accuracy
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S	Simplification
RT/RG/RD	Reading from table/graph/diagram
SF	Correct substitution in formula
O	Opinion/Example
P	Penalty, e.g. for no units, incorrect rounding off, etc.
R	Rounding off
AO	Answer only full marks
NPR	No penalty for rounding
J	Justification

QUESTION 1 [31 marks]			
Ques	Solution	Explanation	Level
1.1.1	<p>World population = 65,3 million × 113 ✓M = 7 378,9 million ✓S = 74 hundred million ✓R = 7 400 million = 7 400 000 000 = 7,4 billion</p>	<p>1M multiplying 1S simplification in millions 1R answer in hundred million</p> <p>(3)</p>	L2 D
1.1.2	<p>% Europe = 100% – (12% + 29% + 14% + 39%) ✓M = 6 % ✓A</p> <p>Total displaced people = (65,3 + 21,3 + 10) million = 96,6 million ✓A</p> <p>Number of people distributed in Europe = 6% × 96,6 million ✓M = 5,796 million OR 5 796 000 ✓CA</p> <p style="text-align: center;">OR</p> <p>Total displaced people = (65,3 + 21,3 + 10) million = 96,6 million ✓A</p> <p>12% + 29% + 14% + 39% = 94% ✓A</p> <p>94% × 96,6 million = 90,804 million ✓M Number of people in Europe = 96,6 million – 90,804 million ✓M = 5,796 million ✓CA</p>	<p>1M adding to get 94% 1A percentage for Europe</p> <p>1A total</p> <p>1M percentage calculation 1CA number in Europe</p> <p style="text-align: center;">OR</p> <p>1A total</p> <p>1A adding to get 94%</p> <p>1M percentage calculation 1M subtracting from total 1CA number in Europe</p> <p>(5)</p>	L3 D
1.1.3	<p>Number of persons from the three countries given = (1,1 + 2,7 + 4,9) million = 8,7 million ✓A</p> <p>% of refugees = $\frac{8,7 \text{ million}}{21,3 \text{ million}} \times 100\%$ ✓M = 40,8 % ✓CA</p> <p>∴ The statement is not valid. ✓O</p> <p style="text-align: center;">OR</p>	<p>1A total persons</p> <p>1RT total of refugees 1M % calculation</p> <p>1CA percentage</p> <p>1O verification</p> <p style="text-align: center;">OR</p>	L4 D

Ques	Solution	Explanation	Level
	<p style="text-align: center;">OR</p> <p>Number of refugees from the three countries</p> $= 21,3 \text{ million} \times 54\%$ <p style="text-align: center;">\checkmark_{RT} \checkmark_M</p> $= 11,5 \text{ million} \quad \checkmark_A$ <p>Total number at the three countries</p> $= (1,1 + 2,7 + 4,9) \text{ million}$ $= 8,7 \text{ million} \quad \checkmark_A$ <p>\therefore The statement is not valid. \checkmark_O</p>	<p style="text-align: center;">OR</p> <p>1RT total refugees 1M % calculation 1A number</p> <p>1A total persons</p> <p>1O deduction NP for omitting millions</p> <p style="text-align: right;">(5)</p>	
1.2.1	<p style="text-align: center;">\checkmark_{RT} \checkmark_M</p> <p>% females below 18 yrs = 8,8% + 10,2% + 6,6%</p> $= 25,6\% \quad \checkmark_{CA}$	<p>1RT correct three values 1M adding 1CA percentage AO</p> <p style="text-align: right;">(3)</p>	L2 P
1.2.2	<p>This age group covers the largest range of ages. $\checkmark\checkmark_O$</p> <p style="text-align: center;">OR</p> <p style="text-align: center;">$\checkmark\checkmark_O$</p> <p>This age group is a workforce. They might not have work in their own country.</p> <p style="text-align: center;">OR</p> <p>They are physically fit and able to migrate. $\checkmark\checkmark_O$</p> <p style="text-align: center;">OR</p> <p>Adults fleeing to protect their children/ political climate of country. $\checkmark\checkmark_O$</p> <p>OR Any other valid reason</p>	<p>2O explanation</p> <p style="text-align: right;">(2)</p>	L4 D
1.3.1	<p>May $\checkmark\checkmark_O$</p>	<p>2A correct month</p> <p style="text-align: right;">(2)</p>	L2 D
1.3.2	<p>Mean</p> $= \frac{5580 + 7373 + 10280 + 29810 + 40340 + 43460}{6}$ <p style="text-align: center;">\checkmark_M</p> $= \frac{136843}{6} \quad \checkmark_A$ $= 22807,16667 \quad \checkmark_{CA}$ ≈ 22807 <p style="text-align: right;">\checkmark_O</p>	<p>1M calculating mean</p> <p>1A sum of the number of refugees 1CA mean</p> <p>NPR (No mode or median calculated correctly full marks)</p> <p style="text-align: right;">(3)</p>	L2 D

Ques	Solution	Explanation	Level
1.3.3	<p>For both years the number of refugees increase from January to June</p> <p>OR</p> <p>For 2014 the number of refugees increase from January to June and for 2015 the number of refugees increase from January to June</p> <p>OR</p> <p>For both years the number of refugees increase substantially in April and June.</p> <p>OR</p> <p>Month to month there are an increase form 2014 to 2015</p> <p>OR</p> <p>Compared to 2014, 2015 has more refugees entering Europe per month.</p> <p>OR</p> <p>There was a significant increase from March to April in both years</p>	<p>1O both years 1O increase 1O months</p> <p>OR</p> <p>1O for year 1O increase 1O months</p> <p>OR</p> <p>1O both years 1O increase substantially 1O months</p> <p>OR</p> <p>1O both years 1O increase substantially 1O months</p> <p>OR</p> <p>1O both years 1O increase substantially 1O months</p> <p>OR</p> <p>1O both years 1O increase substantially 1O months</p> <p>(3)</p>	L4 D
1.4	<p>Budget amount for 2016 = US\$ 5 300 million × 118,7%^{✓A} ✓M or (1,187) = US\$ 6 291,1 million ✓CA = US\$ 6 291 100 000 ✓C</p> <p>Factor increase = $\frac{6\,291\,100\,000}{300\,000}$ or $\frac{6\,291,1}{0,3}$ = 20 970,3333 ✓CA</p> <p>OR</p> <p>Increase from 2015 18,7% × US\$ 5 300 million ✓M = US\$ 991,1 ✓A</p> <p>Budget amount for 2016 = US\$ 5 300 million + US\$ 991,1 million = US\$ 6 291,1 million ✓CA = US\$ 6 291 100 000 ✓C</p> <p>Factor increase = $\frac{6\,291\,100\,000}{300\,000}$ = 20 970,3333 ✓CA</p>	<p>1M increase % 1A 118,7% 1CA increased amount 1C value in millions or 1950 budget to 0,3</p> <p>1CA factor NPR</p> <p>OR</p> <p>1M calculating % 1A amount</p> <p>1CA increase amount 1C value in millions</p> <p>1CA factor NPR</p> <p>(5)</p>	L3 F
(31)			

QUESTION 2 [40 marks]			
Ques	Solution	Explanation	Level
2.1.1	$\text{Density} = \frac{39\,000}{13,5 \text{ acres}} \quad \checkmark\text{SF}$ $= 2\,888,88 \text{ persons per acre} \quad \checkmark\text{CA}$ $\approx 2\,889 \text{ persons per acre} \quad \checkmark\text{R}$	1SF substitution of correct values 1CA simplification 1R rounding (3)	L2 M&P
2.1.2	$P = \frac{11\,393}{39\,000} \quad \checkmark\text{RT} \quad \checkmark\text{M}$ $\approx 0,29 \text{ or } 29,21\% \quad \checkmark\text{CA}$	1RT reading values 1M probability concept 1CA correct rounded probability (3)	L2 P
2.1.3	There are provisions made for disabled spectators who don't require seats. ✓✓O OR Some people can be standing. ✓✓O OR Staff, line judges, officials, coaches, media personnel. ✓✓O	2O reason (2)	L4 M&P
2.1.4	$\text{No. 3 court, it is closest to the road.} \quad \checkmark\text{A} \quad \checkmark\checkmark\text{O}$	1A correct court 2O explanation (accept No. 2 court, it is closer to the car park) (3)	L4 M&P
2.1.5	West or North West ✓✓A	2A direction (2)	L3 M&P
2.1.6	$\text{Width of the screen} = \frac{40 \text{ m}^2}{5 \text{ m}} \quad \checkmark\text{M}$ $= 8 \text{ m} \quad \checkmark\text{A}$ <p>Measured width of screen 7 mm ✓A Scale: 7 mm : 8 m 7 mm : 8 000 mm ✓C 1 : 1 142,86 ✓CA</p> <p>[Accept measurements 6 mm to 8 mm]</p>	1M dividing 1A width 1A measured length 1C converting 1CA unit scale (5)	L3 M&P
2.2.1	F ✓✓A	2A correct number (2)	L2 M&P
2.2.2	$7 \text{ and } 8 \quad \checkmark\text{A}$	1A correct number 1A correct number (2)	L2 M&P

Ques	Solution	Explanation	Level
2.2.3	<p style="text-align: right;">✓✓O</p> <p>Fewer rows with seats in this region</p> <p style="text-align: center;">OR</p> <p style="text-align: right;">✓✓O</p> <p>The people in wheelchairs (physically challenged) will use it from their demarcated area.</p> <p style="text-align: center;">OR</p> <p>Guards sitting there ✓✓O</p>	<p>2O reason</p> <p style="text-align: right;">(2)</p>	L4 M&P
2.2.4	<p>Area of the court = $41 \text{ m} \times 22 \text{ m}$ $= 902 \text{ m}^2$ ✓A</p> <p>Seed needed = $902 \text{ m}^2 \times 245 \text{ g/m}^2$ ✓M $= 220\,990 \text{ g}$ $= 220,99 \text{ kg}$ ✓C</p> <p>Fescue seed = $\frac{3}{10} \times 220,99 \text{ kg}$ ✓M $= 66,297 \text{ kg}$ ✓CA</p> <p>The statement is not valid. ✓O</p> <p style="text-align: center;">OR</p> <p>Area of the court = $41 \text{ m} \times 22 \text{ m}$ $= 902 \text{ m}^2$ ✓A</p> <p>$\frac{3}{10}$ of area of the court = $\frac{3}{10} \times 902 \text{ m}^2$ ✓M $= 270,6 \text{ m}^2$</p> <p>Fescue seed = $270,6 \text{ m}^2 \times 245 \text{ g/m}^2$ ✓M $= 66\,297 \text{ g}$ ✓CA $= 66,297 \text{ kg}$ ✓C</p> <p>The statement is not valid. ✓O</p> <p>OR</p> <p>Area = 702 m^2 ✓A Ratio 7 : 3 $\frac{3}{10} \times 245 \text{ g} = 73,5 \text{ g fescue/ m}^2$ ✓M</p> <p>$73,5 \text{ g/ m}^2 \times 702 \text{ m}^2 = 66\,297 \text{ g}$ ✓M ✓CA $= 66,297 \text{ kg}$ ✓C</p> <p>Not valid ✓O</p>	<p>1A area</p> <p>1M multiply with spread rate</p> <p>1C converting to kg</p> <p>1M working with ratio</p> <p>1CA mass of red fescue seed</p> <p>1O conclusion</p> <p>1A area</p> <p>1M working with ratio</p> <p>1M multiply with spread rate</p> <p>1CA mass of red fescue seed</p> <p>1C converting to kg</p> <p>1O conclusion</p> <p style="text-align: center;">OR</p> <p>1A area</p> <p>1M working with ratio</p> <p>1M multiply with spread rate</p> <p>1CA mass of seed</p> <p>1C converting to kg</p> <p>1O conclusion</p> <p style="text-align: right;">(6)</p>	L4 M

Ques	Solution	Explanation	Level
2.3.1	$\text{Percentage increase} = \frac{\text{£}2,50 - \text{£}1,70}{\text{£}1,70} \times 100\%$ $= 47,0588\dots\%$ $\% \text{ increase per year} = \frac{47,0588}{21}$ $\approx 2,24\%$	1RT reading values from graph 1SF substitution 1CA simplification 1A dividing by 21 1CA simplification (5)	L3 F
2.3.2	$\text{Income} = 142\,000 \times \text{£}2,50$ $= \text{£}355\,000$	1M multiplying 1RT price from graph 1CA income AO (3)	L2 F
2.3.3	The average inflation rate remained unchanged / constant OR The annual inflation rate change for the UK would have been 0%	2A comment (if the answer only refers to the price of strawberries max 1 mark) (2)	L4 F
[40]			

QUESTION 3 [36 marks]

Ques	Solution	Explanation	Level
3.1.1	$35^{\circ}\text{C} - (-3^{\circ}\text{C}) = 35^{\circ}\text{C} + 3^{\circ}\text{C}$ $= 38^{\circ}\text{C}$	1RT reading values from table 1CA difference AO	M L2 (2)
3.1.2	Range = $29^{\circ}\text{C} - 9^{\circ}\text{C} = 20^{\circ}\text{C}$ Month: September	1M concept of range 1A range in °C 1A September	D L2 (3)
3.1.3	<p style="text-align: center;">Mean and extreme maximums and minimums</p> <p>1A × 6 for each two points plotted correctly 1CA joining the points</p>		D L2 (7)
3.1.4	Inner band OR 50 to 75 percentile band. OR Above the mean but below the 75 th percentile	2A band OR 1A interpreting the starting point of the percentile band 1A end point of percentile band (accept 25 to 75 percentile band)	D L4 (2)

Ques	Solution	Explanation	
3.1.5	$^{\circ}\text{F} = (^{\circ}\text{C} \times \frac{9}{5}) + 32$ $119,1^{\circ}\text{F} = (^{\circ}\text{C} \times \frac{9}{5}) + 32 \quad \checkmark\text{SF}$ $(^{\circ}\text{C} \times \frac{9}{5}) = 119,1 - 32 \quad \checkmark\text{S}$ $^{\circ}\text{C} = 87,1 \div \frac{9}{5} \quad \checkmark\text{S}$ $= 48,3888 \quad \checkmark\text{CA}$ $\approx 48,4^{\circ}\text{C}$	1SF substituting values 1S simplification 1S simplification 1CA Celsius value (4)	M L3
3.2.1	$\checkmark\checkmark\text{RT}$ North	2RT modal wind direction. (2)	D L3
3.2.2	$P_{(\text{westerly})} = 16\% + 11\% + 9\% \quad \checkmark\text{RT}$ $= 36\% \quad \checkmark\text{CA}$	1RT reading all W values 1CA probability AO (2)	P L2
3.2.3	$\checkmark\checkmark\text{O}$ The percentages do not add up to 100%. OR Too many sectors needed $\checkmark\checkmark\text{O}$	2O explanation (2)	D L4

Ques	Solution	Explanation	T&L
3.3.1	<p>Accommodation per person = $\frac{R850}{3}$ ✓A = R283,33 ✓CA</p> <p>Kz 100 000 = R9 173,05</p> <p>Amount Kwanza = $\frac{R283,33}{R9173,05} \times Kz100\,000$ ✓A ✓M ≈ Kz 3 088,76 ✓CA</p> <p style="text-align: center;">OR</p> <p>R9 173,05 = Kz 100 000</p> <p>R1 = $\frac{100\,000}{9\,173,05}$ ✓M = Kz 10,9014995</p> <p>∴ R850 = Kz 10, 9014995 × 850 ✓A ≈ Kz 9 266,27 ✓CA</p> <p>Cost per person = $\frac{9\,266,27}{3}$ ✓A ≈ Kz 3 088,76 ✓CA</p>	<p>1A divide by 3 1CA accommodation per person in R</p> <p>1A multiply by 100 000 1M divide by 9 173,05</p> <p>1CA amount per person</p> <p style="text-align: center;">OR</p> <p>1M divide by 9 173,05</p> <p>1A multiply by 850</p> <p>1CA total amount</p> <p>1A divide by 3 1CA accommodation per person in Kz (using R850 per person max 5 marks. Multiplying R850 by 3 max 4 marks)</p> <p style="text-align: right;">(5)</p>	F L3
3.3.2	<p>\$1 = Kz 169,27344 ✓M</p> <p>Average disposable salary = \$ 1 760,41 × Kz 169,27344/\$ ≈ Kz 297 990,66 ✓A</p> <p>Angola:</p> <p>Rent as a % of income = $\frac{145\,990}{297\,990,66} \times 100\%$ ✓M = 48,99% ✓CA</p> <p>South Africa</p> <p>Rent as a % of income = $\frac{4\,430}{16\,500} \times 100\%$ ✓M = 26,85% ✓CA</p> <p>It is much cheaper in SA but not double. ✓O</p>	<p>1M multiplying</p> <p>1A Disposable salary in Kz</p> <p>1M percentage calculation</p> <p>1CA percentage</p> <p>1M percentage calculation</p> <p>1CA percentage</p> <p>1O conclusion</p> <p style="text-align: right;">(7)</p>	F L4
(7)			[36]

QUESTION 4 [43 marks]			
Ques	Solution	Explanation	Levels
4.1.1	$\text{Volumetric mass} = \frac{43 \text{ cm} \times 30,5 \text{ cm} \times 14,5 \text{ cm}}{5\,000} \quad \begin{matrix} \checkmark \text{SF} \\ \checkmark \text{C} \\ \checkmark \text{RT} \end{matrix}$ $= 3,8 \text{ kg} \quad \checkmark \text{CA}$ <p>OR</p> $\text{Volume (in mm}^3\text{)} = 430 \times 305 \times 145 \quad \checkmark \text{SF}$ $= 19\,016\,750$ $\text{Volumetric mass} = \frac{19\,016\,750}{5\,000} \quad \checkmark \text{RT}$ $= 3\,803,35\text{g} \div 1\,000 \quad \checkmark \text{C}$ $= 3,8 \text{ kg} \quad \checkmark \text{CA}$	<p>1SF substitution mm/cm</p> <p>1C conversion to cm</p> <p>1RT correct mass factor</p> <p>1CA volumetric mass</p> <p>AO</p> <p>OR</p> <p>1SF substitution in volume formula</p> <p>1RT correct mass factor</p> <p>1C conversion</p> <p>1CA volumetric mass</p> <p>(4)</p>	L2 M
4.1.2	$\text{Volumetric mass} = \frac{\text{volume of the parcel in cm}^3}{\text{mass factor}}$ $2 \text{ kg} = \frac{20\text{cm} \times 25\text{cm} \times 15\text{cm}}{\text{mass factor}} \quad \checkmark \text{SF}$ $\text{Mass factor} = \frac{7\,500 \text{ cm}^3}{2 \text{ kg}} \quad \begin{matrix} \checkmark \text{S} \\ \checkmark \text{S} \end{matrix}$ $= 3\,750 \text{ cm}^3/\text{kg} \quad \checkmark \text{S}$ $\approx 4\,000 \text{ cm}^3/\text{kg} \quad \checkmark \text{R}$	<p>1SF substitution</p> <p>1S volume</p> <p>1S change formula</p> <p>1S simplification</p> <p>1R rounding</p> <p>(5)</p>	L3 M
4.1.3	<p>Surface area of a rectangular-based box</p> $= 2(575 \text{ mm} \times 375 \text{ mm} + 575 \text{ mm} \times 400 \text{ mm} + 375 \text{ mm} \times 400 \text{ mm}) \quad \begin{matrix} \checkmark \text{A} \\ \checkmark \text{SF} \end{matrix}$ $= 1\,191\,250 \text{ mm}^2 \quad \checkmark \text{CA}$ <p>Surface area of a square based box</p> $= 2 \times 410 \text{ mm} (2 \times 600 \text{ mm} + 410 \text{ mm}) \quad \begin{matrix} \checkmark \text{A} \\ \checkmark \text{SF} \end{matrix}$ $= 1\,320\,200 \text{ mm}^2 \quad \checkmark \text{CA}$ <p>The statement is not valid. $\checkmark \text{O}$</p> <p>OR</p> <p>Surface area of a square based box</p> $= 4 \times 410 \text{ mm} \times 600 \text{ mm} + 2 \times (410 \text{ mm})^2$ $= 1\,320\,200 \text{ mm}^2$ <p>The statement is not valid.</p>	<p>1SF substitute into formula</p> <p>1A correct values</p> <p>1CA simplification</p> <p>1SF substitution</p> <p>1A using the squared side (410)</p> <p>1CA simplification</p> <p>1O conclusion</p> <p>(7)</p>	L4 M

Ques	Solution	Explanation	Level
4.2.1	<p>These places are far from Mbombela. ✓✓O</p> <p style="text-align: center;">OR</p> <p style="text-align: right;">✓✓O</p> <p>There might not be many parcels to deliver to those places.</p> <p style="text-align: center;">OR</p> <p style="text-align: right;">✓✓O</p> <p>From Mbombela parcels might go to a central depot to be delivered from there.</p>	2O reason	L4 M&P
4.2.2 (a)	<p>Package to Graskop: Less than 30 kg @ R70,00 ✓A</p> <p>Package to Klerksdorp: 18 kg</p> <p style="text-align: right;">✓A</p> <p style="text-align: center;">15 kg + 1 excess of 5 kg</p> <p style="text-align: right;">✓A ✓CA</p> <p>Delivery cost R106,00 + R15,00 = R121,00</p> <p>Package to Port Alfred: 18 kg</p> <p style="text-align: right;">✓A</p> <p style="text-align: center;">10 kg + 2 excess of 5kg</p> <p style="text-align: right;">✓A ✓CA</p> <p>Delivery cost R160,00 + 2 × R15 = R190</p> <p>Total cost = R70 + R121 + R190 = R381 ✓M</p> <p>VAT = R381 × 14% ✓M</p> <p style="text-align: center;">= R53,34</p> <p>Total cost including VAT = R434,34 ✓CA</p> <p style="text-align: center;">OR</p> <p>Prices with VAT</p> <p>Local: R70 × 114% = R79,80</p> <p>Klerksdorp: R106 × 114% = R120,84 ✓M</p> <p>Shaded areas: R160 × 114% = R182,40</p> <p>Excess label: R15 × 114% = R17,10</p> <p>To Graskop cost = R79,80 ✓A</p> <p style="text-align: right;">✓A ✓A ✓CA</p> <p>To Klerksdorp cost = R120,84 + R17,10 = R137,94</p> <p style="text-align: right;">✓A ✓A ✓CA</p> <p>To Port Alfred cost = R182,40 + 2 × R17,10 = R216,60</p> <p>Total cost = R79,80 + R137,94 + R216,60 ✓M</p> <p style="text-align: center;">= R434,34 ✓CA</p>	<p>1A Graskop R70</p> <p>1A splitting mass to Klerksdorp</p> <p>1A R106</p> <p>1CA cost</p> <p>1A splitting mass to PA</p> <p>1A R160</p> <p>1CA cost</p> <p>1M adding</p> <p>1M VAT</p> <p>1CA total cost incl. VAT (For Port Alfred max 3 marks is cost is calculated using R106 - Cost R121 or R117 - Cost 132)</p> <p style="text-align: center;">OR</p> <p>1M adding VAT to costs</p> <p>1A Graskop cost</p> <p>Klerksdorp:</p> <p>1A basic cost</p> <p>1A one excess label</p> <p>1CA cost</p> <p>Port Alfred</p> <p>1A basic cost</p> <p>1A two excess labels</p> <p>1CA cost</p> <p>1M adding</p> <p>1CA total cost incl. VAT</p> <p style="text-align: right;">(10)</p>	L3 F

Ques	Solution	Explanation	Level
4.2.2 (b)	<p>30 April from 14:50 to 24:00 is 9 hours 10 min ✓A</p> <p>1 May is 24 hours } ✓A 2 May from 00:00 to 8:15 is 8 hours 15 min }</p> <p>Total elapsed time = 41 hours 25 min ✓CA</p> <p>This is within the 48 hour service. ✓O</p>	<p>1A time 30 April</p> <p>1A time 1 and 2 May</p> <p>1CA adding time</p> <p>1O opinion based on CA from 4.2.2 (a)</p> <p>(4)</p>	L4 M
4.2.3 (a)	<p>Box size A:</p> <p>Number of boxes = $\frac{650}{7} = 92,857$ ✓M ≈ 93 ✓R</p> <p>Mass of box = $7 \times 2 \text{ kg} = 14 \text{ kg}$</p> <p>Cost = $R117,00 \times 93$ ✓A = R10 881 ✓CA</p>	<p>1M dividing</p> <p>1R rounding up</p> <p>1A rate to George</p> <p>1CA cost</p> <p>(4)</p>	L3 F
4.2.3 (b)	<p>Box size B:</p> <p>Number of boxes = $\frac{650}{15} = 43,333$ ✓MA</p> <p>43 boxes packed with 15 parts, mass 30 kg each ✓R</p> <p>Number of parts left = $650 - 43 \times 15 = 5$ ✓CA</p> <p>Mass of the parts = $5 \times 2 \text{ kg} = 10 \text{ kg}$</p> <p>1 box packed with the remaining 5 parts, mass 10 kg ✓A</p> <p>Cost per 30 kg box = $R117 + 3 \times R15 = R162$</p> <p>Cost = $R162 \times 43 + R117$ ✓M = R7 083 ✓CA</p> <p>Box size B is more economical. ✓O</p> <p>OR (for the first part) Mass of all the parts = $650 \times 2 \text{ kg} = 1\,300 \text{ kg}$ Mass of a box with 15 parts = 30 kg Number of boxes needed = $\frac{1300}{30} = 43,33$</p>	<p>1MA dividing</p> <p>1R rounding down</p> <p>1CA extra smaller box</p> <p>1A cost per box</p> <p>1M multiply and adding 1CA cost</p> <p>1O advice</p> <p>(7)</p>	L4 F

