basic education

Department:
Basic Education
REPUBLIC OF SOUTH AFRICA

SENIOR CERTIFICATE EXAMINATION

MATHEMATICAL LITERACY P2

2015

MEMORANDUM

MARKS: 150

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

This memorandum consists of 16 pages.

QUESTION 1 [29 MARKS]			
Ques	**Solution**	**Explanation**	**Levels**
1.1.1	Beaufort West ✓✓A	2A Correct station	L2
		Beaufort W and another station one mark only Beaufort W and a two or more other stations no marks	
		(2)	
1.1.2	✓MA R550 – R170 = R 380 ✓A	1MA identifying 2 correct values 1A for correct cost	L2
		Answer only full marks	
		(2)	
1.1.3	Potchefstroom and Krugersdorp ✓✓A	2A correct stations	L2
		Cape Town and Bellville 2 marks Cape Town only 1 mark	
		(2)	

1.1.4	10:00 Day1 to 12:16 day 2 ✓ A
	= 26 hours 16 minutes ✓ A **OR** 26,266666 hours
	
	   $d = s \times t$
	1 400 km $= s \times 26\frac{16}{60}$ hours ✓ SF
	   $s = 1400$ km $\div 26\frac{16}{60}$ hours
	      $= 53,299492239$ km/h ✓ CA
	
	     ≈ 53 km/h ✓ R
		1A calculating hours and minutes
		
		1SF substituting time and 1 400 km into the formula
		1CA correct speed
		1R rounding to the nearest km/h
		
		(4)
			L3

1.1.5	✓ M
	Cost of train tickets $= R630 \times 2 \times 3$
	             $= R3\ 780$ ✓ CA
	
	Cost of accommodation $= R2\ 933 \times 2 + R3\ 133$✓ M
	             $= R8\ 999$ ✓ CA
	
	Total cost $= R3780 + R8\ 999$ ✓ CA
	      $= R12\ 779$
	
	Average cost per person $= \dfrac{R\ 12\ 779}{3}$
	      $= R4\ 259,67$ ✓ CA
	This is more than R4 000
	          OR
		1M multiplying by 2 and 3
		1CA return ticket cost
		1M calculating accommodation cost
		1CA simplification
		
		1CA total cost
		
		1CA average cost
		
		       OR
			L4

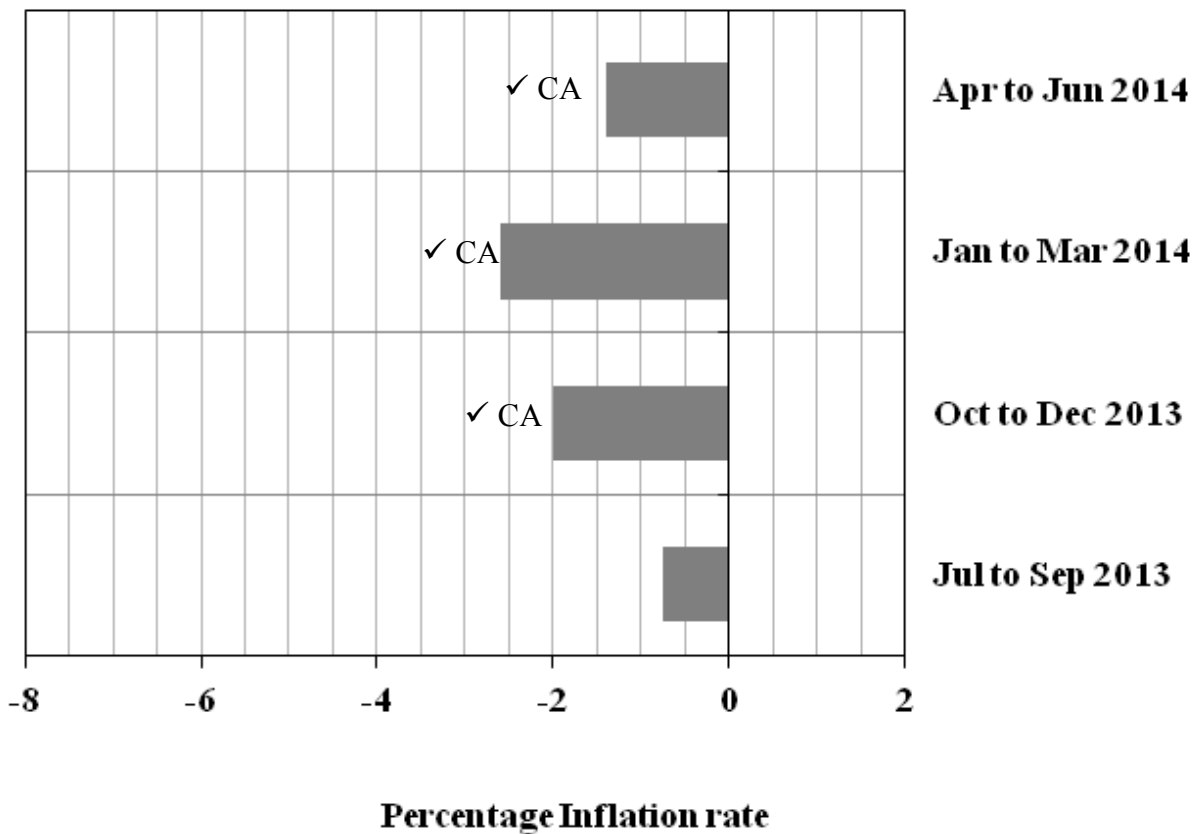| Ques	Solution	Explanation	Levels
1.1.5	Cost of 1 train ticket = R630 × 2 $\checkmark$ M = R1 260 $\checkmark$ CA Cost of accommodation = R2 933 × 2 + R3 133 $\checkmark$ M = R8 999 $\checkmark$ CA Average accommodation cost per person = $\dfrac{R\,8\,999}{3}$ = R2 999,67 $\checkmark$ CA Average cost per person = R1 260 + R2 999,67 = R4 259,67 $\checkmark$ CA This is more than R4 000	1M multiplying by 2 1CA return ticket cost 1M calculating accommodation cost 1CA simplification 1CA total cost 1CA average cost Max 4 if one accommodation used (6)	
1.2.1	Maximum cost if all members of the family are taller than 1,3 m Cost = R165 × 4 $\checkmark$M = R660 $\checkmark$A Maximum saving = R660 – R515 $\checkmark$M = R145 $\checkmark$CA	1M multiply 1A Cost 1M subtracting 1CA saving (4)	L3
1.2.2	Persons over the height of 1,3 m can go on more rides. $\checkmark\checkmark$O **OR** Certain rides cannot accommodate persons with lower or higher height limitation because of risk factors. $\checkmark\checkmark$O **OR** Individuals can easily lie about their age, but not so when height is taken into account. $\checkmark\checkmark$O **OR** To make more money. $\checkmark\checkmark$O	2O opinion (2)	L4

Ques	Solution	Explanation	Levels
1.3.1	The writing will be the correct side up after it is folded ✓✓O	2O opinion (2)	L 43
1.3.2	At scale 1 **:** 4 ✓A The width of the picture will be 52 cm ÷ 4 = 13 cm ✓CA The height of the picture will be 53 cm ÷ 4 = 13,25 cm The width of the quarter of the page is 21 cm ÷ 2 = 10,5 cm ✓A The height of the quarter of the page is 29,7 cm ÷ 2 = 14,85 cm The height will fit but ✓O the width will not fit on the quarter page. ✓O **OR** 21 ÷ 2 = 10,5 cm 29,7 ÷ 2 = 14,85 cm } ✓A Area of a quarter of a page = 14,85cm × 10,5 cm = 155,925 cm^2 ✓A Picture area $\qquad$ = 53 cm × 52 cm = 2 756 cm^2 ✓A ✓M ∴ 2 756 cm^2 ÷ 4 ÷ 4 = 172,25 cm^2 Area of picture is 16,325 cm^2 more than area of a quarter of a page. ✓O	1A working with scale 1CA width and height 1A the width and height of quarter page 1O explanation about height 1O explanation about width **OR** 1A Calculating both values 1A area of a $\frac{1}{4}$ page 1A area of picture 1M for dividing by 16 or 4 by 4 1O for explanation of area (5)	L4
		[29]	

QUESTION 2 [30 MARKS]

Ques	Solution	Explanation	Levels
2.1.1	July 2014 price (in Euro) = $\dfrac{R75}{R14,2417}$ ✓M = 5,2662… ✓A ≈ 5,27 ∴ 2015 price = € 5,27 ✓CA	1M dividing 1A current price rounded correctly 1CA future price (0% inflation) NPR (3)	L2
2.1.2 (a)	Rent of flat in EGP = 1 654 Inflation rate for Egypt 10,61% ✓M Increased rent (in EGP) after 1st year = 1 654 × 110,61% = 1 829,4894 ✓A ✓A Increased rent (in EGP) after 2nd year = 1 829,4894 × 110,61% = 2 023,598225 ≈ 2 023,60 ✓CA **OR** 1st year inflation rate effect: ✓A 1654EGP × 10,61% = 175,4894EGP Increased rent = (1654 + 175,4894)EGP = 1829,4894EGP ✓M 2nd year inflation rate effect: 1829,4894EGP × 10,61% = 194,1088253EGP ✓M Increased rent = (1829,4898 + 194,1088253)EGP = 2023,598225EGP ≈ 2023,60EGP ✓CA	 1M adding the percentage 1A increased rent 1st year 1A using the correct values 1CA the final amount **OR** 1A calculating 10,61% 1M increased rent 1st year 1M calculating and adding 10,61% 1CA the final amount **[accept the use of the compound interest formula to obtain correct answer]** (4)	L3

Ques	Solution	Explanation	Level
2.1.2 (b)	South African flats percentage rent increase $$= \frac{R\ 5\ 212,77 - R\ 4\ 613,20}{R\ 4\ 613,20} \times 100\%\ \checkmark MA \quad \checkmark A$$ $$= 12,9968\%$$ $$\approx 13\%\ \checkmark A$$ Egyptian flats percentage rent increase $$= \left(\frac{2\ 023,60\ EGP - 1\ 654\ EGP}{1\ 654\ EGP}\right) \times 100\%\ \checkmark M$$ $$= 22,3458\%$$ $$\approx 22,35\%\ \checkmark CA$$ Half of Egypt percentage increase = 11,175% $\checkmark CA$ His claim is NOT valid $\checkmark O$ **OR** South African flats rent increase = R5 212,77 – R4 613,20 = R599,57 $\checkmark A$ Percentage increase $= \frac{R599,57}{R4\,613,20} \times 100\%\ \checkmark MA \approx 13\%\ \checkmark A$ Egyptian flats rent increase = 2023,60EGP – 1654EGP = 369,6EGP Percentage increase $= \frac{369,6EGP}{1654EGP} \times 100\%\ \checkmark M \approx 22,35\%\ \checkmark CA$ $\frac{22,35\%}{13\%} = 1,72$ $\checkmark CA$ His claim is NOT valid $\checkmark O$	1A finding increase 1MA for multiplying by 100% and dividing by R 4 613,20 1A simplification [CA If R5 212,77is used in the denominator] 1M finding % increase [CA from Q.2.1.2] 1CA simplification 1CA finding half of Egypt % 1O verification **OR** 1A finding the increase 1MA for multiplying by 100% and dividing by R 4 613,20 1A simplification [CA If 5 212,77is used in the denominator] 1M finding % increase [CA from Q.2.1.2] 1CA simplification 1CA dividing the values 1O verification (7)	L4

Ques	Solution	Explanation	Level
2.2.1	Range $= -0,31 - \overset{\checkmark M}{(-2,89)} \checkmark A$ $= 2,58 \checkmark CA$	1A identifying correct values 1M subtracting 1CA range Answer only full marks (3)	L2
2.2.2	Mean Oct to Dec $= \dfrac{-1,6 - 2,1 \overset{\checkmark M}{-} 2,3}{3} = \dfrac{-6}{3}$ $\checkmark CA$ $= -2$ $\checkmark CA$ Mean Jan to Mar $= \dfrac{-2,89 - 2,58 - 2,29}{3} = \dfrac{-7,76}{3}$ $\approx -2,6$ $\checkmark CA$ Mean Apr to Jun $= \dfrac{-1,6 - 1,36 - 1,19}{3} = \dfrac{-4,15}{3}$ $\approx -1,4$ $\checkmark CA$ 	1M finding a mean 1CA finding the totals 1CA the mean for Oct to Dec 1CA the mean for Jan to Mar 1CA the mean for Apr to Jun	L3

Mean quarterly rate of inflation in Cyprus from July 2013 to June 2014

3×1 CA for each bar   (8)

Ques	Solution	Explanation	Level

2.3.1	1 km = 0,62139 mile
	$\therefore$ 1 km^2 = (0,62139 mile)^2
	
	Area in km^2 = $\dfrac{3\,500}{(0,62139)^2}$ ✓MA
	     = 9 064,4 ✓CA
	     = 9 064 ✓R
		1MA dividing by square
		
		1CA area
		1R rounding
		
		(3)
			L2

2.3.2	Paphos ✓✓A	2A correct town (2)	L2
		[30]	

QUESTION 3 [35 MARKS]

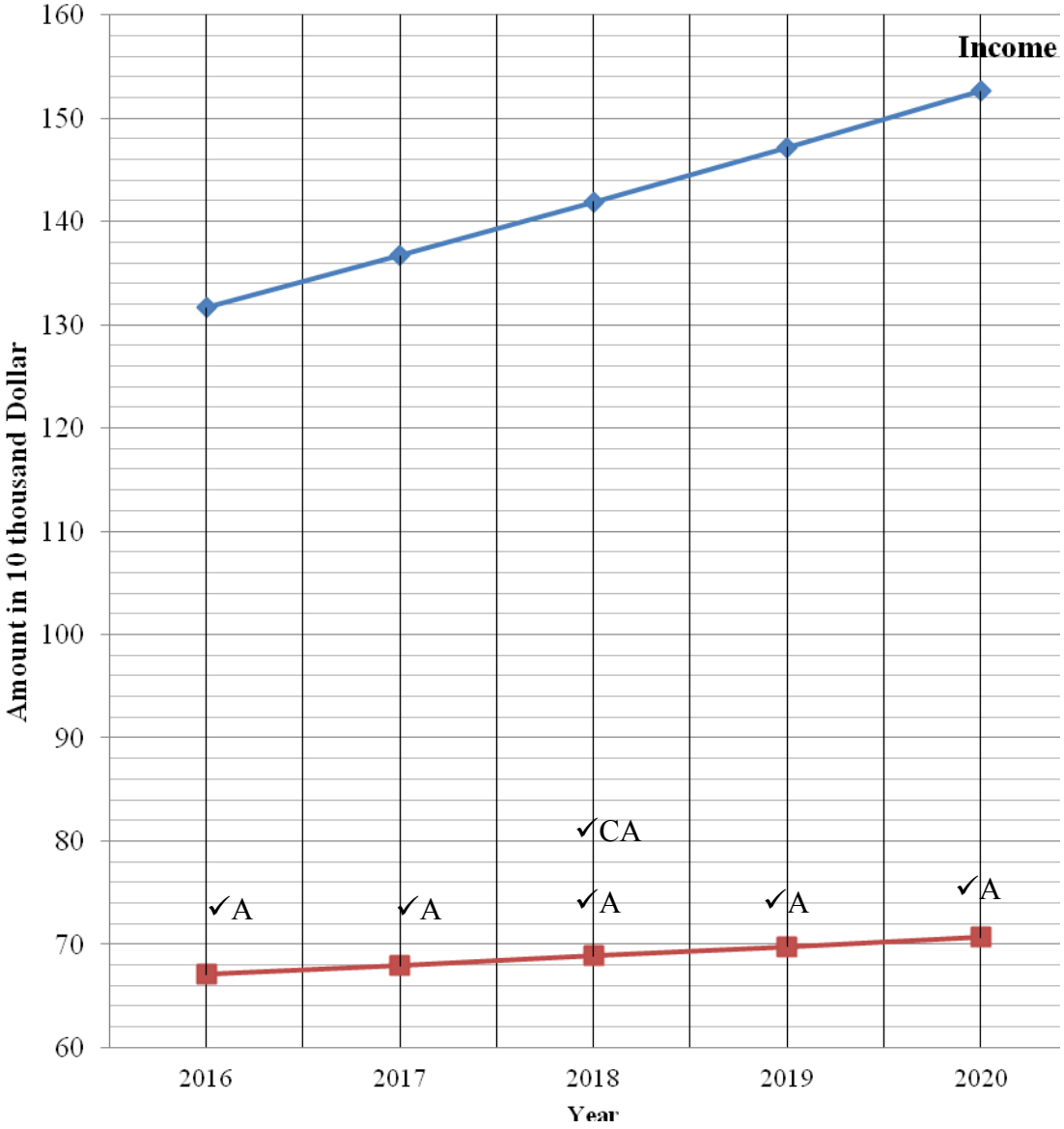| Ques	Solution	Explanation	Level

3.1.1	Area of ring in m^2 = 3,142 × [(7,65)^2 – (7,34)^2] ✓A ✓SF
	
	           ≈ 14,60 ✓S
	
	Area of white cross in m^2 = 2(3 × 3) + (9 × 3) ✓SF
	           = 18 + 27 ✓M
	           = 45 ✓S
	
	Total surface area in m^2 = 14,60 + 45
	           = 59,60 ✓CA
	           ≈ 60 ✓R
	
	OR
	
	Area of ring in m^2
	= Outer circle area – Inner circ Area
	= 3,142 × (7,65)^2 – 3,142 × (7,34)^2 ✓SF ✓A
	≈ 183,88 – 169,28
	= 14,60 ✓S
	
	Area of 5 squares of 3m size each in m^2 = 5(3 m × 3 m) ✓M ✓SF
	           = 45 ✓S
	
	Total surface area in m^2 = 14,60 + 45
	           = 59,60 ✓CA
	           ≈ 60 ✓R
	
	OR
	
	Area of ring in m^2
	= Outer circle Area – Inner circ Area ✓SF
	= 3,142 × (7,65)^2 – 3,142 × (7,34)^2 ✓A
	≈ 183,88 – 169,28
	= 14,60 ✓S
	
	Area of the white cross in m^2
	           = 1 big square – 4 small squares
	           = (3+3+3) × (3+3+3) – 4 (3 × 3) ✓SF ✓M
	           = 81 – 36
	           = 45 ✓S
	
	Total surface area in m^2 = 14,60 + 45
	           = 59,60 ✓CA
	           ≈ 60 ✓R
		1SF Substituting
		1A correct values
		1S Simplifying
		
		1SF area of square plus rectangle
		1M adding
		1S Simplifying
		
		1CA total surface
		
		1R rounding
		
		OR
		
		1SF Substituting
		1A correct values
		1S Simplifying
		
		1SF area of squares
		1M multiplying by 5
		1S Simplifying
		
		1CA total surface
		1R rounding
		
		OR
		
		1SF Substituting
		1A correct values
		1S Simplifying
		
		1SF area of outer square
		1M multiplying by 4 and subtracting
		
		1S Simplifying
		
		1CA Total surface
		1R rounding
		            (8)
			L3

                                            Please turn over

Ques	Solution	Explanation	Level
3.1.2	$$\text{Paint needed } = 2\left(\frac{60\text{m}^2}{8\text{m}^2}\ell\right)\quad\checkmark\text{M}$$ $$= 2(7{,}5\,\ell)$$ $$= 15\,\ell \quad \checkmark\text{CA}$$ $$\text{Tins needed } = 15\,\ell \div 5\,\ell$$ $$= 3 \quad \checkmark\text{CA}$$ $$\text{Cost } = 3\,(\text{R}675 \times 1{,}14)\quad\checkmark\text{M}\quad\checkmark\text{M}$$ $$= \text{R2 }308{,}50\,\checkmark\text{CA}$$ He is correct. $\checkmark$O	CA from Q3.1.1 1M multiplying by 2 and dividing by 8 1CA paint 1CA tins 1M multiply by tins 1M multiply by 1,14 1CA cost 1O verification (7)	L4
3.2	$$\text{Diameter } = 91{,}5 \times 2 \text{ mm}$$ $$= 183 \text{ mm} \quad \checkmark\text{A}$$ $$\text{Number of tins along length } = 740 \div 183 \quad \checkmark\text{M}$$ $$= 4{,}04$$ $$\approx 4$$ $$\text{Number of tins along breath } = 370 \div 183$$ $$= 2{,}02$$ $$\approx 2$$ $$\text{Number of tins along height } = 450 \div 222 \quad \checkmark\text{M}$$ $$= 2{,}02$$ $$\approx 2$$ $$\text{Maximum number of tins} = 4 \times 2 \times 2$$ $$= 16 \quad \checkmark\text{CA}$$ **OR** $$\text{Diameter } = 91{,}5 \text{ mm} \times 2$$ $$= 183 \text{ mm} \quad \checkmark\text{A}$$ Number of tins on the base: $$\text{lengthwise} \times \text{breadthwise} \times \text{height wise}$$ $$\checkmark\text{M} \qquad\qquad\qquad \checkmark\text{M}$$ $$= (740 \div 183) \times (370 \div 183) \times (450 \div 222)$$ $$= 4 \times 2 \times 2$$ $$= 16 \quad \checkmark\text{CA}$$	1A diameter 1M dividing by 183 1M dividing by 222 1CA max. No. of tins. **OR** 1A diameter 1M dividing by 183 1M dividing by 222 1CA max. No. of tins. (4)	L3

Ques	Solution	Explanation	Level
3.3.1	Volume of soil removed $= $ (side)$^2 \times$ depth $\quad$ 0,1525 m$^3 \quad = $ (side)$^2 \times$ 0,61 m $\qquad$ ✓SF $\quad \dfrac{0,1525}{0,61} \quad = $ (side)^2 $\qquad$ ✓A $\quad$ 0,25 m$^2 \quad = $ (side)^2 $\quad \sqrt{0,25\,\text{m}^2} \quad = \sqrt{(\text{side})^2}$ $\qquad\qquad$ side $= 0,5$ m $\qquad$ ✓CA $\qquad$ 0,5 × 1000 = 500 mm $\qquad$ ✓C $\qquad\qquad$ **OR** Volume = side$^2 \times$ d $\quad$ side$^2 = \dfrac{V}{d}$ $\quad$ side$^2 = \dfrac{0,1525}{0,610}$ $\quad$ ✓A ✓SF $\quad$ side $= \sqrt{0,25}$ $\quad$ side $= 0,5$ m $\quad$ ✓CA $\qquad = 500$ mm ✓C	1SF substituting values correctly into the formula 1A changing the subject of the formula 1CA calculating the side correctly 1C converting to mm $\qquad$ **OR** 1A changing the subject of the formula 1SF substituting values correctly into the formula 1CA calculating the side correctly 1C converting to mm $\hfill$ (4)	L3
3.3.2	Volume of cement for 1 pole $= (0,1525 - 0,03)$ m^3 $\qquad\qquad\qquad\qquad\quad = 0,1225$ m^3 $\quad$ ✓A Volume of cement for 12 poles $= 0,1225$ m$^3 \times 12$ $\qquad\qquad\qquad\qquad\qquad = 1,47$ m^3 ✓CA Cement mixes to fill 12 holes $= \dfrac{1,47\,m^3}{0,3\,m^3}$ $\qquad\qquad\qquad\qquad = 4,9$ $\qquad$ ✓M Number of bags of cement $= 4,9 \times 2$ $\qquad\qquad\qquad\qquad = 9,8$ $\qquad\qquad\qquad\qquad \approx 10$ $\quad$ ✓R ✓M Yes he bought enough bags of cement $\quad$ ✓O $\qquad\qquad$ **OR** Volume of cement for 1 pole $= (0,1525 - 0,03)$ m^3 $\qquad\qquad\qquad\qquad\quad = 0,1225$ m^3 $\quad$ ✓A Volume of cement for 12 poles $= 0,1225$ m$^3 \times 12$ $\qquad\qquad\qquad\qquad\qquad = 1,47$ m^3 ✓CA Volume of concrete from 10 bags of cement $= (10 \div 2) \times 0,3$ m^3 $\qquad\qquad\qquad\qquad\qquad\qquad = 1,5$ m^3 ✓M ✓M This is more than what is needed $\therefore$ he bought enough bags of cement $\qquad$ ✓A $\qquad\qquad$ **OR** $\qquad$ ✓O	1A subtracting the pole's volume 1CA simplification 1M for dividing by 0,3 1M multiplying by 2 1R rounding up 1O for stating that bags were enough $\qquad\qquad$ **OR** 1A subtracting the pole's volume 1CA simplification 1M dividing the number of bags with 2 1M multiplying with 0,3 1A volume of concrete 1O for comparing the values $\qquad\qquad$ **OR**	L4

Ques	Solution	Explanation	Level
3.3.2	**OR** $\checkmark$M Vol. of concrete mix needed: $= (0{,}1525 - 0{,}03)\ \text{m}^3 \times 12$ $= 1{,}47\ \text{m}^3$ $\checkmark$CA 2 bags $= 0{,}3\ \text{m}^3$ x bags $= 1{,}47\ \text{m}^3$ $\checkmark$M $x = 2 \times 1{,}47 \div 0{,}3$ $\checkmark$M $= 3{,}66 \div 0{,}3$ $= 9{,}8$ ≈ 10 $\checkmark$R $\checkmark$O Yes he bought enough bags of cement	**OR** 1M subtracting the pole's volume 1CA for multiplying by 12 1M for dividing by 0,3 1M multiplying by 2 1R rounding up 1O for stating that enough bags were bought (6)	
3.4	Annual salary $= \text{R}\,5\,500 \times 12$ $\checkmark$M $= \text{R}66\,000$ $\checkmark$A $\checkmark$M Tax $\quad = 18\% \times \text{R}66\,000$ $= \text{R}\,11\,880$ $\checkmark$CA Rebate $\quad = \text{R}11\,880 - \text{R}12\,726$ $= -\,\text{R}846$ $\checkmark$S The deduction is NOT correct. $\checkmark$J **OR** Monthly tax $= 18\% \times \text{R}5\,500$ $\checkmark$M $= \text{R}990$ $\checkmark$A Rebate on monthly tax $= \dfrac{\text{R}12\,726}{12}$ $\checkmark$M $= \text{R}1\,060{,}50$ $\checkmark$A The rebate is more than the tax. $\checkmark$S $\therefore$ The deduction is NOT correct. $\checkmark$J	1M multiply by 12 1A annual salary 1M multiply by 18% 1CA tax 1S simplify 1J justification **OR** 1M multiply by 18% 1A monthly tax 1M dividing by 12 1A monthly rebate 1S stating that rebate is more than the tax 1J justification (6)	L4
		[35]	

$\checkmark$M

QUESTION 4 [32 MARKS]			
Ques	Solution	Explanation	Level
4.1.1	Sierra Leone = 100% - (31%+38%) ✓M 　　　　= 100% - 69% 　　　　= 31% ✓A Number of deaths = 961 × 31% 　　　　　　= 297,91 ✓CA 　　　　　　≈ 298	1M for adding and subtracting values 1A simplification 1CA for correct number [Accept 297 or 298] 　　　　　　(3)	L2
4.1.2	Solid radius line needs to be shown. ✓✓O	2O solid line from centre of chart 　　　　　　(2)	L2
4.1.3	✓M　✓M 961 ÷ 1 800 × 100% = 53,3888888889 % ≈ 53% ✓A	2M for dividing by 1 800 and multiplying by 100% 1A correct percentage NPR 　　　　　　(3)	L2
4.1.4	No. 　　　　　✓MA 31% × 1 800 = 558 and 　　　　　✓MA 31% × 961 = 297,91 [Accept 297 or 298] 297,91 ≠ 558 Therefore it cannot be said with certainty. ✓✓O	2MA for calculating the 31% and comparing the values 2O for stating that we cannot conclude 　　　　　　(4)	L4
4.2.1	Guinea = $\frac{303}{413}$ × 100% = 73,37% ✓A Sierra Leone = $\frac{99}{239}$ × 100% = 41,42% ✓A Liberia = $\frac{65}{107}$ × 100% = 60,75% ✓A Ascending order of deaths as a percentage of cases: 41% ; 61% ; 73% ✓CA	NPR 1MA calculating percentage 1A correct percentage 1A correct percentage 1A correct percentage 1CA correct ordering of percentages 　　　　　　(5)	L3

Ques	Solution	Explanation	Level
4.2.2	Scale 17 mm = 200 km ✓MA Distance on map = 111 mm ✓A ✓MA ✓MA 111 mm ÷ 17 mm × 200 = 1 305,88 km ✓R The distance is 1 306 km	1MA converting line scale. 1A measuring distance on map [Accept values from 109 mm to 113mm] 2MA using the map measurement and scale to calculate the distance 1R for correct rounding [Accept values from 1282,35 km to 1329,41 km] **[Measure line/scale on map from provincial question paper. Accept ±2mm]** (5)	L3
4.3.1	✓A $0,0001\% = \dfrac{0,0001}{100} = \dfrac{1}{1\,000\,000}$ ✓A	1A correct outcome 1A common fraction (2)	L2
4.3.2	0,0999% + 0,0999% ✓M = 0,1998% ✓A	1M adding correct outcomes 1A probability (2)	L2
4.3.3	School's Current drug test inaccurate results = 1 000 × 3% ✓A = 30 ✓CA Saliva drug test inaccurate result = 1 000 × 0,1% = 1 ✓A ✓CA They will have 29 less inaccurate results. This is a big difference if you are the one who was tested inaccurately. ✓✓O **OR** Current drug test accurate results = 1 000 × 97% = 970 ✓A SDT accurate results = 1 000 × 99,9% = 999 ✓A ✓M ✓CA SDT less inaccurate result = 999 – 970 = 29 Therefore this proves SDT is less inaccurate by 29. ✓✓O	1A percentage inaccurate 1CA for calculating drug test inaccuracy results 1A for calculating SDT inaccuracy results 1CA number of results 2O reasoning **OR** 1A current accurate results 1A SDT accurate results 1M subtracting to get inaccurate results 1CA number of cases 2O reasoning (6)	L4
		[32]	

QUESTION 5 [24]

Ques	Solution	Explanation	Level
5.1	$\checkmark$MA Vacancy = \$2 224 560 – \$2 046 595 = \$177 965 $\checkmark$CA	1MA subtracting the correct values 1CA difference (2)	L3
5.2	The Break-even Occupancy Percentage $\dfrac{\text{Projected total expenses} + \text{Bank loan repayment}}{\text{Possible rental income}} \times 100\%$ $= \dfrac{\overset{\checkmark SF}{\$670\,580} + \$1\,053\,154}{\$2\,184\,000\;\checkmark SF} \times 100\%$ $= 78{,}92554945\%$ $\approx 78{,}93\%\;\checkmark$CA	2SF substituting total expenses, bank loan and rental income 1CA percentage (3)	L2
5.3	Annual rent for bachelor flat in 2018 $= \dfrac{\$318\,271}{40}\;\begin{array}{l}\checkmark RT\\ \checkmark A\end{array}$ $= \$7\,956{,}775\;\checkmark$CA Per month $= \dfrac{\$7\,956{,}775}{12}$ $= \$663{,}06\quad\checkmark$CA	1RT correct amount 1A dividing by the correct number of units 1CA simplification 1CA monthly rent NPR Accept 663,07 (4)	L3
5.4	Income from 2 bachelor flats $= \dfrac{\$321\,454}{40}\times 2$ $= \$16\,072{,}70\quad\checkmark$MA General vacancy for one bedroom flats $= \$138\,483 - \$16\,072{,}70$ $= \$122\,410{,}30\;\;\checkmark$CA Unit price for one bedroom flats $= \dfrac{\$916\,884}{60}$ $= \$15\,281{,}40\quad\checkmark$A Number of vacant one bedroom flats $= \dfrac{\$122\,410{,}30}{\$15\,281{,}40}\approx 8$ $\quad\checkmark$CA $\therefore$ unoccupied bachelor flat : unoccupied one-bedroom flats $\quad\quad = \;2:8$ $\quad\quad = \;1:4\quad\checkmark$CA The prediction is correct $\checkmark$O	1MA income from 2 bachelor flats 1CA vacancy for one bedroom flats 1A Unit price of one bedroom flats 1CA number on one bedroom flats 1CA ratio 1O verification (6)	L4

Solution		Explanation	Level
5.5.1	**Projected Net Operating Income and Expenses** 5A one mark for every point plotted correctly 1CA joining the points (6)		L2
5.5.2	Both income and expenses increases every year ✓O ✓✓O The income increases more per year than the expenses because the line of income goes up more per year (steeper) than the expense. **OR** ✓O The trend is that the potential income growth rate increase at a much higher rate than the total expenses rate. ✓✓O (3)	CA from Q5.5.1 1O mentioning both are increasing 2O A for mentioning that the income is increasing faster	L4
		[24]	
		TOTAL :150	