basic education

Department:
Basic Education
REPUBLIC OF SOUTH AFRICA

NATIONAL SENIOR CERTIFICATE

GRADE 12

MATHEMATICAL LITERACY P1

NOVEMBER 2016

FINAL MARKING GUIDELINE

MARKS: 150

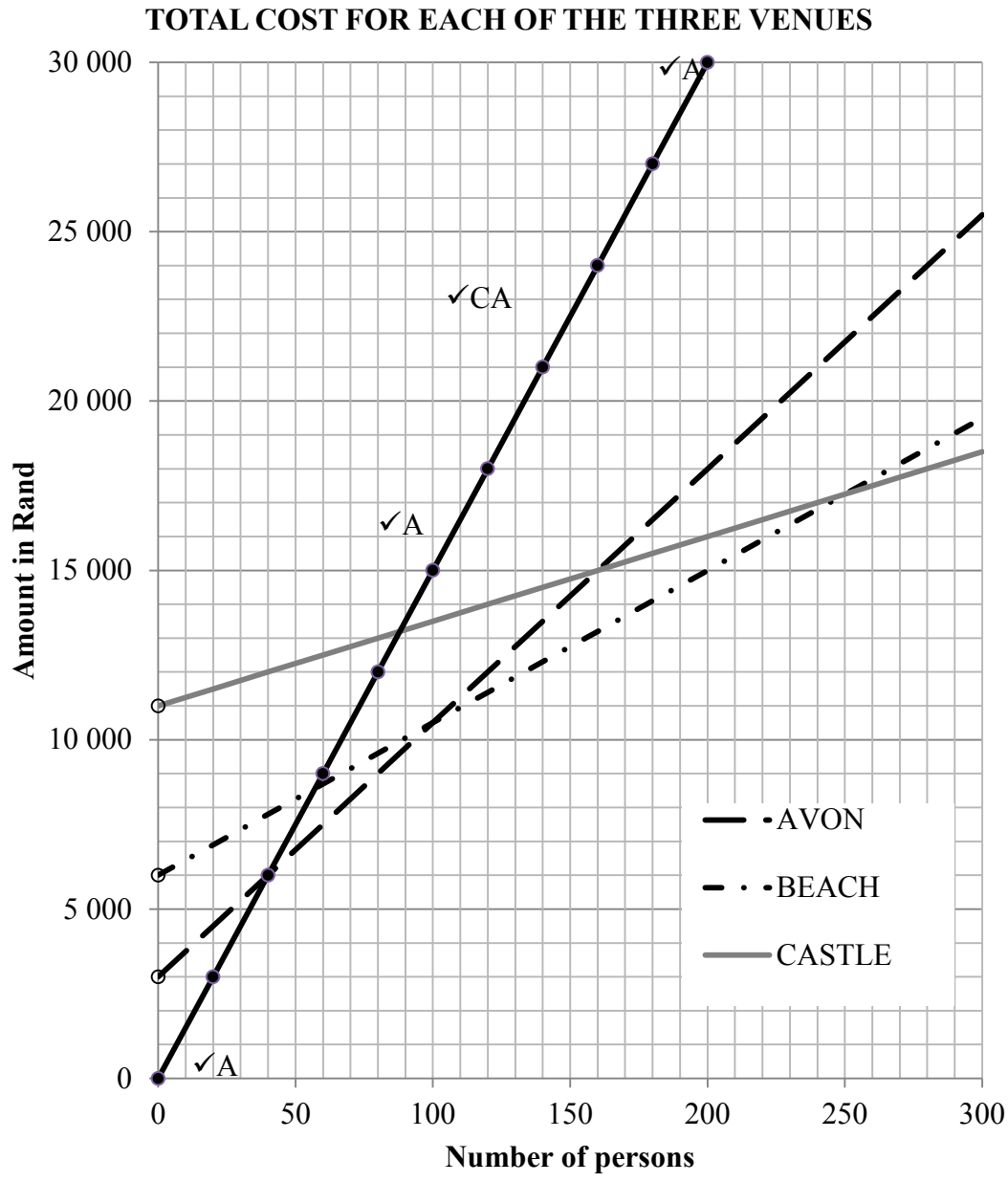
Symbol	Explanation
M	Method
MA	Method with accuracy
CA	Consistent accuracy
A	Accuracy
C	Conversion
S	Simplification
RT/RG	Reading from a table/graph/diagram
SF	Correct substitution in a formula
O	Opinion/Example/Definition/Explanation
P	Penalty, e.g. for no units, incorrect rounding off, etc.
R	Rounding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

This memorandum consists of 15 pages.

Question 1 [43 Marks]			
Ques	**Solution**	**Explanation**	**Topic/L**
1.1.1	Booysen M ✓✓A	2A correct name (2)	F L1
1.1.2	July ✓A 2026 ✓A	1A correct month Accept 7th month 1A correct year Answer Only Full Marks (2)	L1
1.1.3	✓M/A R1 185 627,28 – R466 000,00 =R719 627,28 ✓CA	1M/A subtracting correct values 1CA difference Answer Only Full Marks NP (2)	L1
1.1.4	✓RT ✓M Total Admin. fee = R5,70 × 12 × 20 = R1 368 ✓CA	1RT reading from table 1M multiplying correct total number of months 1CA total fee Answer Only Full Marks NP (3)	L1
1.1.5	✓M 7,25% + 0,5% = 7,75% ✓A	1M adding correct % 1A sum Answer Only Full Marks (2)	L1

Ques	Solution	Explanation	Topic/L
1.1.6	Amount without VAT = $\frac{R5,70}{114\%}$ ✓MA = R5,00 ✓M ∴ VAT amount = R5,70 – R5,00 = R0,70 ✓CA **OR** ✓A VAT amount = $\frac{14\%}{114\%} \times R5,70$ ✓M = R0,70 ✓CA	1MA dividing by 114% 1M subtracting 1CA VAT amount **OR** 1M dividing by 114% 1A multiply by 14% 1CA VAT amount Answer Only Full Marks (3)	L2
1.1.7	✓O An amount advanced/borrowed to buy a house/flat/residential property ✓O **OR** Money borrowed to buy a house	1O Amount borrowed 1O buying a house/flat/residential property (2)	L1
1.1.8	B ✓✓A	2A correct reason Accept C (2)	L1
1.1.9 (a)	✓MA R383 159,13 – R383 158,37 = R0,76 ✓CA	1M/A subtracting correct values 1CA simplification from balance column for October Answer Only Full Marks (2)	L1
1.1.9 (b)	Credit ✓✓A	2A correct column (2)	L1
1.1.10	✓A Interest = $\frac{R378\,123,87 \times 31 \times 7,25\%}{365}$ ✓SF = R2 328,31 ✓CA	1A 31 days 1SF correct balance and % 1CA interest Answer Only Full Marks NP (3)	L2

Ques	Solution	Explanation	Topic/L
1.2.1	✓✓O The cost that changes (not fixed/not constant/differs) depending on the number of persons.	2O explanation (2)	L1
1.2.2	✓A ✓A Total cost (in Rand) = 6 000 + 230 × 45 = 6 000 + 10 350 = 16 350 ✓CA	1A substituting 6 000 1A substituting 45 1CA cost Answer Only Full Marks (3)	L2
1.2.3 (a)	Avon ✓✓RG	2RG reading from graph (2)	L1
1.2.3 (b)	200 ✓✓RG	2RG reading from graph Accept 160 (2)	L1

Ques	Solution	Explanation	Topic/ L
1.2.4 (a)	 1A starting point (0 ; 0) 1A end point of (200 ; 30 000) 1CA joining points 1A straight line (4)		L2

Ques	Solution	Explanation	Topic/L
1.2.4 (b)	Cost for 250 persons = R11 000 + R25 × 250 ✓SF = R17 250 ✓CA Income from 194 tickets = R150 × 194 ✓MA = R29 100 ✓A Profit = R29 100 – R17 250 = R11 850 ✓CA **OR** ✓SF ✓M Profit = (R11 000 + R25 × 250) – (R150 × 194) ✓CA ✓A = R29 100 – R17 250 = R11 850 ✓CA	1SF substitution 1CA cost 1MA multiplication 1A income 1CA profit **OR** 1SF substitution 1M multiplication 1CA cost 1A income 1CA profit	L3
		Note: If readings are taken from graphs then: Cost (accept range from 17 000 to 17 500) - 2 marks Income (accept range from 28 900 to 29 300) - 2 marks Full marks can only be given if the profit is exactly R11 850	
		NP (5)	
		[43]	

QUESTION 2 [29 MARKS]			
Ques	**Solution**	**Explanation**	**Topic/L**
2.1.1 (a)	d = 4,2 m – (1,2 m + 1,8 m) ✓M = 1,2 m ✓A = 1 200 mm ✓C **OR** ✓M ✓C d = 4200 mm – (1 200 mm + 1800 mm) = 1 200 mm ✓A	1M subtracting 1A value 1C conversion **OR** 1M subtracting 1C conversion 1A value Answer Only Full Marks (3)	L1
2.1.1 (b)	✓MA 15m + 1,2 m + 1,2 m + 4,2 m + 1,2 m +1,2 m + 15 m = 39 m ✓CA = 39 000mm ✓C **OR** ✓MA 15 m × 2 + 1,2 m × 4 + 4,2 m = 39 m ✓CA = 39 000 mm ✓C	1M/A adding all values 1CA total length 1C conversion **OR** 1M/A adding all values 1CA total length 1C conversion Answer Only Full Marks (3)	L1
2.1.1 (c)	Total area = 1,8 m × 15 m + 1,2 m × 4,2 m ✓SF = 27 m^2 + 5,04 m^2 ✓S = 32,04 m^2 ✓A ✓A **OR** ✓S ✓SF Total area = 2(1,2 × 1,2) m^2 + [1,8 × (15 + 1,2)] m^2 = 2,88 m^2 + 29,16 m^2 = 32,04 m^2 ✓A ✓A **OR** ✓S ✓SF Total area = [2 (1,2 × 1,2) + (1,8 × 15) + (1,8 × 1,2)] m^2 = [2,88 + 27 + 2,16] m^2 = 32,04 m^2 ✓A ✓A **OR**	1SF substituting 1S simplification 1A area 1A correct unit **OR** 1SF substituting 1S simplification 1A area 1A correct unit **OR** 1SF substituting 1S simplification 1A area 1A correct unit **OR**	L2

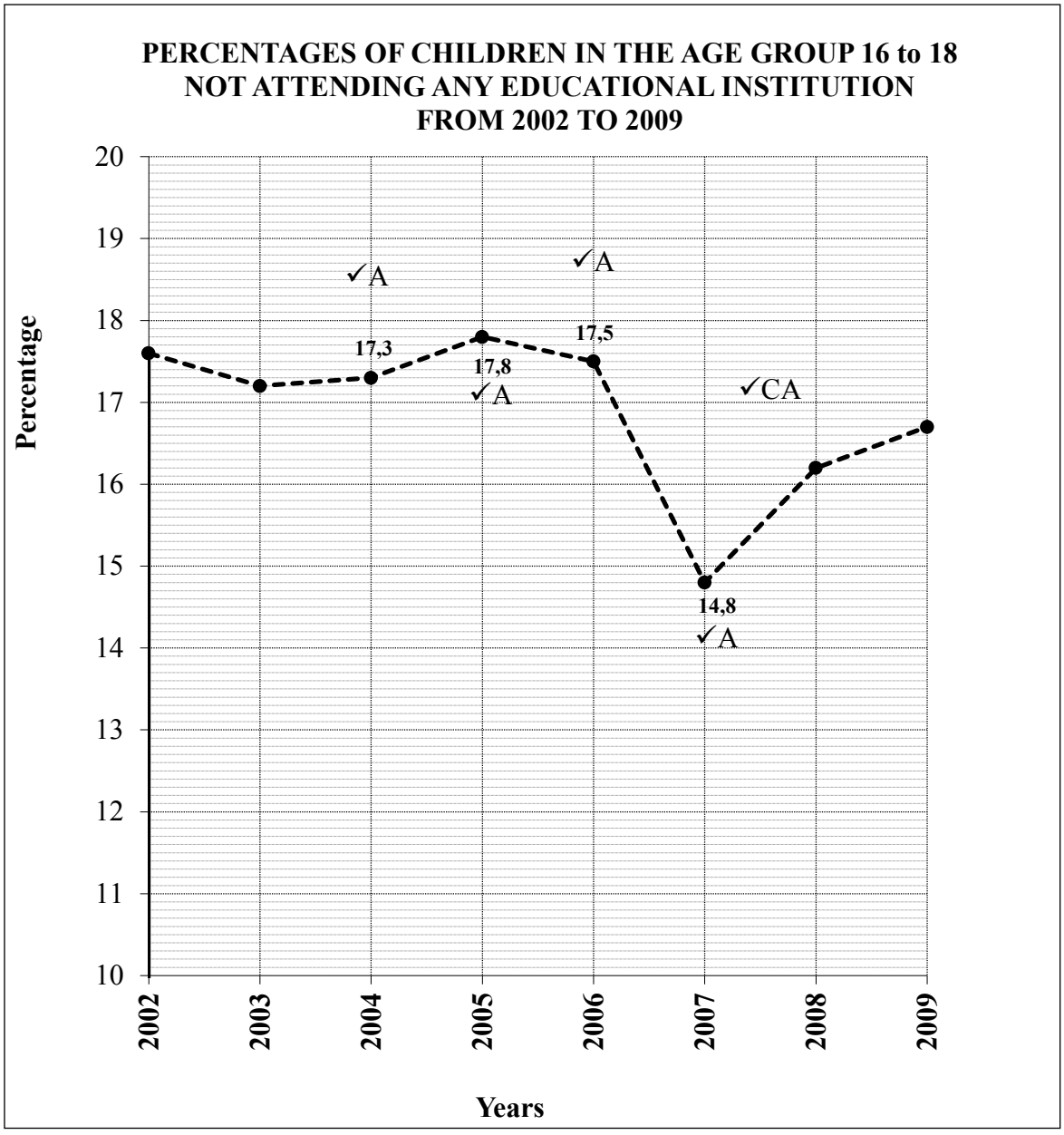
Ques	Solution	Explanation	Topic/L
	✓SF Total area = 16,2 m × 4,2 m – 2 × (1,2 m × 15 m) = 68,04 m^2 – 36 m^2 ✓S = 32,04 m^2 ✓A ✓A	1SF substituting 1S simplification 1A area 1A correct unit Max 2 out of 4 if only one area correctly calculated with unit (4)	
2.1.1 (d)	$\frac{1}{3}$ of the length of the hall = 16,2 m ✓A Length of hall = 16,2 m × 3 OR 16,2 m ÷ $\frac{1}{3}$ ✓M = 48,6 m ✓CA	1A length of runway 1M multiply by 3 1CA length of hall Answer Only Full Marks (3)	L1
2.1.2	✓M 4,2 m = $\frac{4,2}{0,3048}$ feet = 13,7795.. feet ✓S ≈ 13,8 feet ✓R	1M dividing by conversion factor 1S simplification 1R rounding Answer Only Full Marks (3)	L2
2.2.1	✓SF ✓C 3 456 cm³ = A² × 24 cm A² = 3 456 cm³ ÷ 24 cm = 144 cm² ✓CA A = $\sqrt{144}$ cm = 12 cm ✓CA ✓SF **OR** A = $\sqrt{\frac{3\,456}{24}}$ ✓C ✓CA = 12 cm ✓CA	1SF substitute into formula 1C conversion to cm 1CA simplification 1CA length of A **OR** 1SF substitute into formula 1C conversion to cm 1CA simplification 1CA length of A Answer Only Full Marks (4)	L2

Ques	Solution	Explanation	Topic/L
2.2.2	✓SF Area of one label = (1 + 2 ×3,142 × 7) × 24 cm = 1 079,712 cm² ✓A ✓M Total area of labels = 1 079,712 cm² × 76 = 82 058,112 cm² ≈82 058 cm² ✓R **OR** ✓A ✓SF ✓M Total area of labels = [(1 + 2 ×3,142 × 7) × 24 cm] × 76 = 82 058,112 cm² ≈ 82 058 cm² ✓R	1SF substitute into formula 1A area of one label 1M multiply by 76 1R rounding (accept 82 059) **OR** 1SF substitute into formula 1A area of one label 1M multiply by 76 1R rounding (accept 82 059) Penalise with one mark if **π** on calculator is used (4)	L2
2.2.3	Volume of cylinder = 3,142 × 7² × 24 cm³ ✓SF = 3 694,99 cm³ ✓A ✓MA Difference in volume = 3 694,99 cm³ – 3 456 cm³ = 238,99 cm³ **OR** ✓SF ✓A ✓MA Difference in volume = 3,142 × 7² × 24 cm³ – 3 456 cm³ = 238,99 cm³	1SF substitute into formula 1A volume of cylinder 1M/A show how volume was obtained **OR** 1SF substitute into formula 1A volume of cylinder 1M/A show how volume was obtained NP (3)	L2
2.2.4	kilograms or kg or g ✓✓A	2A unit (2)	L1
		[29]	

QUESTION 3 [28 MARKS]			
Ques	**Solution**	**Explanation**	**Topic/L**
3.1.1	Row A = 15 ; Row B = 16 ; Row C = 18 Row D = 19 ; Row E = 21 ; Row F = 22 ✓A Row G = 24 ; Row H = 25 ; Row J = 26 ✓M Total = 15 + 16 + 18 + 19 + 21 + 22 + 24 + 25 + 26 = 186 ✓CA **OR** Total = 432 – total left block – total right block ✓M = 432 – 121 – 125 ✓A = 186 ✓CA **OR** Total ✓A = (32 + 33 + 35 + 36 + 38 + 39 + 41 + 42 + 43) – (17 × 9) = 339 – 153 ✓M = 186 ✓CA	1A number in seats in row A – J 1M adding 1CA total **OR** 1M subtracting 1A totals for both blocks 1CA total **OR** 1A number of seats in right block 1M subtracting additional seats 1CA total Answer Only Full Marks 185 or 187 two marks (3)	L1
3.1.2	North West/NW ✓✓A	2A direction (2)	L1
3.1.3	H30 ✓✓✓A **OR** 8th row from the stage seat 30 **OR** second row from the back seat 30	3A if row AND seat are correct 2A if either row OR seat is correct (3)	L1
3.1.4	Exit towards the left/ aisle ✓A Turn left in the aisle ✓A Walk straight to entrance/exit 1. ✓A At entrance/exit 1 the refreshment stand will be on the right. ✓A	1A Exit to left/ aisle 1A turn left in aisle 1A walk towards entrance/exit 1 1A location of refreshment stand (4)	L2

Ques	Solution	Explanation	Topic/L
3.1.5	$87\frac{1}{2}\% \times 432 = 378$ ✓MA **OR** $0{,}875 \times 432 = 378$ $P = \frac{1}{378}$ ✓A ✓CA **OR** 0,26% **OR** 0,0026	1MA calculating % of 432 (CA from Q 3.1.1) 1A numerator 1CA denominator Answer Only Full Marks (3)	P L2
3.1.6	20% ✓✓A	2A correct decimal (2)	P L1
3.2.1 (a)	Unscrewed ✓✓A	2A unscrewed (2)	L1
3.2.1 (b)	Anti-clockwise **OR** left **OR** counter-clockwise ✓✓A	2A direction (2)	L1
3.2.2	3 ✓✓A	2A 3 screws (2)	L2
3.2.3	3 ✓✓A ✓M	2A correct diagram (2)	L1
3.2.4	Actual length = 62 mm × 30 = 1 860 mm ✓A = 1,86 m ✓C **OR** 6,2 cm × 30 = 186 cm = 1,86 m **OR** Actual length = 0,062 m ✓C × 30 ✓M = 1, 860 m ✓CA	1M multiply by scale 1A length in mm/cm 1C conversion **OR** 1C conversion 1M multiply by scale 1CA length in m Answer Only Full Marks (3)	L2
		[28]	

QUESTION 4 [30 MARKS]			
Ques	**Solution**	**Explanation**	**Topic/L**
4.1.1	✓A ✓M 322,15 – 180,29 mph = 141,86 mile per hour ✓CA	1A identify correct highest and lowest values 1M subtraction 1CA difference Answer Only Full Marks NP (3)	L1
4.1.2	14 ✓✓RT	2RT correct number of riders (2)	L1
4.1.3	✓RT ✓RT 1990 and 2006 16 years ✓CA	1RT first year 1RT second year 1CA number of years Accept 17 years (3)	L1
4.1.4	Ernest J Henne✓✓RT 6 times ✓A	2RT name of rider 1A number of times (3)	L1
4.1.5	$\frac{5}{25}$ ✓A × 100% ✓A = 20% ✓CA	1A number of years in 21st century 1A total number of years 1CA probability as percentage Answer Only Full Marks (3)	P L3
4.2.1	The number of children can only be whole numbers. ✓✓O **OR** The number of children cannot be decimals/fractions ✓✓O	2O explanation **OR** 2O explanation (2)	L1
4.2.2	16 to 18 ✓✓RT	2RT identify correct age group (2)	L1
4.2.3	2007 ✓✓RT	1RT identify correct year (2)	L1

Ques	Solution	Explanation	Topic/L
4.2.4	✓RT A = 209 309 + 539 177 = 748 486 ✓A	1RT correct values 1A value of A Answer Only Full Marks (2)	L1
4.2.5	✓RT ✓M $B = \frac{194\,901}{9\,281\,000} \times 100$ = 2,1 ✓CA	1RT correct values 1M multiply by 100 1CA value of B (3)	L1
4.2.6	 4A (1 for each two correctly plotted point) 1CA joining the points (5)	L2
	[30]		

QUESTION 5 [20 MARKS]			
Ques	**Solution**	**Explanation**	**Topic/L**
5.1	United Kingdom **OR** Britain ✓✓RT	2RT correct country (2)	D L1
5.2	1 South African rand = 0,070 US dollar $\therefore \$1,94 = R\frac{1,94}{0,07}$ ✓M = R27,71 ✓A **OR** R95,57 ÷ \$6,69 = 14,2855… ✓M \$ 1,94 × 14,28855…. = R27,71 ✓A	1M dividing by exchange rate 1A rand value **OR** 1M dividing by price in dollar 1A rand value Answer Only Full Marks (2)	F L2
5.3.1	$A = \frac{113,96}{16,28}$ euro ✓M = 7 euro ✓A	1M dividing by exchange rate 1A euro value with unit Answer Only Full Marks (2)	F L2
5.3.2	$B = \frac{56,07}{267}$ ✓M = 0,21 ✓A 1 Indian Rupee equals 0,21 South African rand	1M dividing by exchange rate 1A rand value Answer Only Full Marks (2)	F L2
5.4	SGD \$ 8,00 **:** SGD \$ 2,50 ✓A ✓MA = 16 **:** 5 ✓CA	1A identifying the correct values 1MA ratio in correct order 1CA simplified ratio Answer Only Full Marks (3)	F L1

Ques	Solution	Explanation	Topic/ L
5.5	✓RT United States of America and Brazil ✓RT	1RT United States of America 1RT Brazil (2)	D L1
5.6	✓O A median is the middle value of the arranged/ordered/sorted data. ✓O	1O middle value 1O arranged/ordered/ sorted (2)	D L1
5.7.1	✓RT R118,75; R113,96; R99,30; R95,57; R95,22; R92,88; R84,21; R69,57; R62,40; R56,07; R50 ✓A	1RT correct values 1A correct order NP (2)	D L1
5.7.2	Mean (in rand) = ✓M $\frac{50 + 56,07 + 62,40 + 69,57 + 84,21 + 92,88 + 95,22 + 95,57 + 99,30 + 113,96 + 118,75}{11}$ ✓A $= \frac{937,93}{11}$ ≈ 85,27 ✓CA	1M adding values 1A dividing by 11 (check CA from Q 5.7.1) 1CA mean Answer Only Full Marks (3)	D L2
		[20]	
		TOTAL	**150**