basic education

Department:
Basic Education
REPUBLIC OF SOUTH AFRICA

NATIONAL SENIOR CERTIFICATE

GRADE 12

MATHEMATICAL LITERACY P 1

FEBRUARY/MARCH 2018

MARKING GUIDELINES

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
NPR	No penalty rounding or omitting units
AO	Answer only, full marks

These marking guidelines consist of 12 pages.

Question 1 [30Marks] AO			
Ques	**Solution**	**Explanation**	**Topic/L**
1.1.1	$3\frac{1}{2}$ years ✓✓A **OR** Three and half a years ✓✓A **OR** 3,5 years ✓✓A	2A numerical period **OR** 2A period in words 3 years 6 months (only 1 mark) (2)	M L1
1.1.2	Total Repayment Cost = R1 078,26 × 42 ✓M/A = 45 286,92 ✓CA	1MA multiply term by instalment 1CA Total cost From Q1.1.1. (2)	F L1
1.1.3	✓M Discount = R29 999,00 × 15% = R4 499,85 ✓A	1M calc. discount 1A saving (2)	F L1
1.2.1	AD : CB = 10,9 : 9,45 ✓M = 218 : 189 ✓ CA	1M ratio form 1CA simplified form Accept unit ratio (1: 0,87) OR (1,15 : 1) (2)	MP L1
1.2.2	✓ M/A CD = 125,92m – (57,5 + 10,9 + 9,45) = 48,07m ✓CA	1M/A subtracting all lengths 1CA length (2)	M L1
1.2.3	Radius = $\frac{4,73}{2}$ m ✓ M = 2,365 m ✓A	1M dividing by 2 1A simplification NPR (2)	M L1
1.2.4	✓M/A Total Cost = R97,56/m × 57,5m = R5 609,70 ✓CA	1M/**A** multiply cost by correct distance 1CA simplification (2)	F L1
1.3.1	C ✓✓A	2A city (2)	D L1
1.3.2	Range = $8^oC – (– 7^oC)$ ✓MA = 15^oC ✓CA	1MA subtracting correct values 1CA temperature (2)	D L1

Ques	Solution	Explanation	Topic/L
1.3.3 (a)	B ✓✓A	2A city (2)	P L1
1.3.3 (b)	Likely **OR** less likely ✓✓A	2A correct words (2)	P L1
1.4.1	Bar graph ✓✓A **OR** Single bar graph. ✓✓A **OR** Vertical bar graph ✓✓A **OR** Column graph ✓✓A	2A correct type (2)	D L1
1.4.2	✓✓A Three hundred and sixty one thousand nine hundred and forty eight.	2A number in words (2)	M L1
1.4.3	Q 5 ✓✓A	2A correct question (2)	D L1
1.4.4	Average time per mark = $\frac{180}{150}$ min ✓MA = 1,2 min ✓CA **OR** Average time per mark = $\frac{3\ hours}{150}$ ✓MA = 0,02 × 60 min = 1,2 min ✓CA **OR** 150 marks : 180 min ✓MA 1mark : 1,2 min ✓CA	1MA numerator and denominator 1CA simplification **OR** 1MA numerator and denominator 1CA simplification **OR** 1MA correct ratio 1CA simplification (2)	D L1
			[30]

Question 2 [44 Marks]			
Ques	**Solution**	**Explanation**	**Topic/L**
2.1.1	**Stop order:** an instruction to an employer or bank to pay / divert monthly or transfer regularly a certain amount to a person or an account. ✓✓ O **OR** **Stop order:** an instruction that an employee (individual) issue to the employer (bank) to make a series of future dated regular deductions ✓✓ O OR **Stop order:** Future dated regular monthly deductions ✓✓ O	2O explanation (2)	F L1
2.1.2	Difference = R940 465,89 – R536 523,25 ✓ M/A = R403 942,64 ✓ C/A	1M/A subtraction of correct value 1CA simplification AO (2)	F L1
2.1.3	Number of years (2017 – 2029) = 12 ✓ M/A Number of months in 12 years = 12 × 12 = 144 ✓ C Number of months from 10 May to 1 November = 6 ✓ A Total number of contributions = 144 + 6 = 150 ✓ CA	1M/A calculating years 1C converting years to months 1A additional months 1CA total number of months. **AO** (4)	F L2
2.1.4	Total contribution value ✓ M/A = (5 × 12) × R740,22 ✓ RT = R44 413,20 ✓CA	1M/A multiplying (5 and 12) 1RT reading monthly contribution 1CA total contribution **AO** NPR (3)	F L2
2.1.5	a greater / an increased/ a higher / more/ bigger/ larger/ inflated / better ✓✓A	2A correct missing words (2)	F L1

Ques	Solution	Explanation	Topic/L
2.1.6	✓MA R740,22 + R740,22 × 8,5% = R740,22 + R62,9187 ✓M = R803,14 **OR** ✓M R740,22 × 108,5% ✓MA = R803,14 **OR** $740{,}22 \times 8{,}5\% = 62{,}9187$ ✓MA $\therefore 803{,}14 - 62{,}9187 = 740{,}22$ ✓M	1MA percentage 1M adding two values **OR** 1M multiplying 1MA 108,5% **OR** 1MA percentage 1M subtracting values (2)	F L1
2.2.1	Hourly overtime rate = R17,76 ×1 $\frac{1}{3}$ ✓MA = R23,68 ✓CA	1MA hours 1CA rate **AO** (2)	F L1
2.2.2	✓MA ✓A 2017 Sunday wage rate = 19,39 × 150% = R29,09 ✓A Total wage = 3 × 9 × R29,09 ✓M = R785,43 ✓CA **OR** ✓MA ✓A 2016 Sunday wage rate = R17,90 × 150% = R26.85 ✓A Total wage = 3 × 9 × R26,85 ✓M = R724,95 ✓CA	1MA increasing by 150% 1A Sunday hourly rate 1A hours per day 1M multiplying 1CA wage **AO** 1MA increasing by 150% 1ASunday hourly rate 1A hours per day 1M multiplying 1CA wage NPR (5)	F L2

Ques	Solution	Explanation	Topic/L
2.2.3 (a)	✓A $\%\text{ increase} = \frac{17{,}76 - 16{,}40}{16{,}40} \times 100\%$ ✓M $= 8{,}29268\ldots\%$ $\approx 8{,}3\%$ OR ✓A $\%\text{ increase} = \frac{19{,}39 - 17{,}90}{17{,}90} \times 100\%$ ✓M $= 8{,}324\ldots\%$ $\approx 8{,}3\%$ OR ✓A R16,40 × 1,083 = R17,76 ✓M OR ✓A R17,90× 1,083 = R19,39 ✓M OR ✓A R17,76 ÷ 1,083 = R16,40 ✓M OR ✓A R19,39 ÷ 1,083 = R17,90 ✓M	1M percentage 1A correct values used OR 1M percentage 1A correct values used OR 1M percentage 1A correct values used OR 1M percentage 1A correct values used OR 1M percentage 1A correct values used (2)	F L1
2.2.3 (b)	A × 108,3% = 21,93 ✓RT $A = \frac{21{,}93}{108{,}3\%}$ ✓M = R20,25 ✓CA **OR** ✓RT $A = \frac{21{,}93}{1{,}083}$ ✓M = R20,25 ✓CA	1RT reading values 1M dividing by 108,3% 1CA amount **OR** 1RT reading values 1M dividing by 108,3% 1CA amount **AO** (3)	F L2

Ques	Solution	Explanation	Topic/L
2.2.4	2017 Total Weekly Wage ✓MA ✓RT = (6 × 9 × R17,76) + (9 × 150% × R17,76) = R959,04 + R239,76 = R1 198,80 ✓CA **OR** **2016** Total weekly wage ✓MA ✓RT = (6 × 9 ×R16,40) + (9 × 150% × R16,40) =R1 107,00 ✓CA	1RT reading value from the table 1MA multiply with no. of days and hours 1CA simplification **OR** 1RT reading value from the table 1MA multiply with no. of days and hours 1CA simplification (3)	F L2
2.3	Total Income for the day = 7 × R70 + 35 × R50 + 4 × R75 ✓✓RT ✓M = R490 + R1 750 + R300 = R2 540 ✓CA **OR** Income from bakkies = 7 × R70 = R490 ✓A Income from Cars = 35 × R50 = R1 750 ✓A Income from minibus = 4 × R75 = R300 ✓A Total Income = R2 540 ✓CA	2RT correct values 1M multiply price by vehicle type 1CA total income **OR** 1A bakkies 1A cars 1A minibus 1CA total income AO (4)	F L1

Ques	Solution	Explanation	Topic/L
2.4.1	Employer provides people job/work for pay ✓✓O **OR** Employer is the company/individual who offers work opportunities for pay. ✓✓O OR Employer owner of the company ✓✓O	2O explanation (2)	F L1
2.4.2	✓O ✓O Get a few months reduced income after termination of work. **OR** ✓O To give employee a **short-term financial relief** should he/she become **unemployed.** ✓O ✓O **OR** ✓O **Make provision** for some income when a person becomes **unemployed or retrenched** or retired from work.	2O reason (2)	F L1
2.4.3 (a)	✓RT ✓M B = R6 272,16 – (R1 184,40 + R350,88) = R4 736,88✓CA ✓M **OR** B = 9 × 6 × 4 × 21,93 ✓RT = R4 736,88✓CA	1RT amounts 1M subtracting 1CA value of B **OR** 1RT amounts 1M multiplying all values 1CA value of B Accept B = (R5 131,62 If 26 days used) (3)	F L1
2.4.3 (b)	1% of gross salary = R6 272,16 – R6 209,44 ✓MA = R62,72 ✓A Total UIF amount = 2 × R62,72 = R125,44 ✓CA **OR** ✓A Total UIF amount = 2 × (1% of R6 272,16) = 2 × R62,7216 ✓MA = R125,44 ✓CA **OR** Total UIF amount = 2% of R6 272,16 ✓✓ MA = R125,44 ✓CA	1MA subtracting correct values 1A simplification 1CA total amount payable **OR** 1A calculating 1% 1MA 2 contributions 1CA amount **OR** 2MA Calculating 2% of salary 1CA amount **AO** (3)	F L2
			[44]

QUESTION 3 [25 MARKS]			
Ques	**Solution**	**Explanation**	**Topic/L**
3.1.1	✓RT ✓RT ✓RT ✓RT 6 months to 2 years. OR (½ year to 2 years) OR 6 months to 24 months ✓RT ✓RT	2RT age Accept 23-24 months (2)	M L1
3.1.2	8 kg ✓✓RT	2RT mass/weight (2)	M L1
3.1.3	12 months to 15 months ✓✓ RT	2RT (one age in this range) (2)	M L1
3.1.4	February ✓✓A	2Acorrect month (2)	M L1
3.1.5	$\text{BMI} = \frac{\text{weight (in kg)}}{(\text{height in m})^2}$ $19{,}5\ \text{kg/m}^2 = \frac{11{,}2}{(\text{height in m})^2}$ ✓ SF ✓ M $\text{Height} = \sqrt{\frac{11{,}2}{19{,}5}}$ ✓ M $= 0{,}758$ m ✓ CA	1SF correct values 1M new subject 1M finding sq. root 1CA simplification AO (4)	M L2
3.2.1	$\text{Distance} = \frac{55\ \text{litre}}{7{,}6\ \text{litre}} \times 100$ km ✓ MA ✓ MA $= 723{,}68$ ≈ 724 km ✓ R	1MA multiply by 100 1MA divide by 7,6 1R distance **AO** (3)	M L2
3.2.2	$\text{Average speed} = \frac{189}{01\text{h}45}$ ✓ SF $= \frac{189}{1{,}75}$ ✓ C = 108 km/h ✓ CA	1C to hours 1SF correct values 1CA Average speed **AO** (3)	M L2
3.3.1	Volume = 53,34cm × 17,78cm ✓ SF × 42,32 cm = 40 135,66 cm^3 ✓ CA $= \frac{40\,135{,}66}{1000}$ litres ✓ MA = 40 litres ✓ R	1SF correct substitution 1CA volume 1MA dividing by 1 000 1R volume in litres (4)	M L3
3.3.2	$P_{(U)} = \frac{3}{12}$ **or** $\frac{12}{48}$ ✓ A ✓ A = 0,25 ✓ CA	1A numerator 1A denominator 1CA decimal **AO** (3)	P L2
			[25]

QUESTION 4 [19 MARKS]			
Ques	**Solution**	**Explanation**	**Topic/L**
4.1.1	✓A ✓A N10 and N2	1A N10 1A N2 (2)	MP L1
4.1.2	✓✓ RT Mountain Zebra N.P	2RTcorrect name (2)	MP L1
4.1.3	Kirkwood ✓✓A	2A correct hometown (2)	MP L2
4.1.4	✓ RT ✓ M Distance = 25 km + (207 km – 22 km) + 24 km = 234 km ✓ CA **OR** ✓ RT ✓ M Distance = 24 km + (380 km – 195 km) + 25 km = 234 km ✓ CA	1RT correct distances 1M adding 1CA difference **OR** 1RT correct distances 1M adding 1CA difference **AO** (3)	MP L2
4.2.1	3750 mm ✓✓ A	2A distance (2)	MP L1
4.2.2	Total exterior length of western wall = 3 550 mm + 3750 mm✓A = 7 300 mm = 7,3 m ✓C **OR** Total exterior length of western wall = 3, 55 m + 1, 7 m + 2, 05 m ✓A = 7, 3 m ✓C	1A adding 3 correct distances 1C conversion to m **OR** 1A adding correct distances of Eastern wall (opp. Side //) 1C conversion to m **AO** (2)	MP L1
4.2.3	Living room. ✓✓ A	2A (Passage and/or Kitchen maximum 1 mark) (2)	MP L1
4.2.4	Bedroom 2 ✓✓ A	2A room (2)	MP L1
4.2.5	Wash basin/sink/water basin **OR** Shower **OR** ✓✓ A Cupboard	2A any item (2)	MP L1
			[19]

QUESTION 5 [32MARKS]			
Ques	**Solution**	**Explanation**	**Topic/L**
5.1.1	Numerical ✓✓A	2A answer (2)	D L1
5.1.2	50% ✓✓A	2A answer (2)	D L1
5.1.3	Range = Maximum - minimum ✓M 34 = 90 – **F** ✓RT **F** = 90 – 34 = 56 ✓CA	1M range concept (can be implied) 1RT correct values 1CA simplification **AO** (3)	D L2
5.1.4	Median % = $\frac{67+69}{2}$ ✓M = 68 ✓A	1M concept of median 1A median **AO** (2)	D L2
5.1.5	Inter-quartile range = $Q_3 - Q_1$ ✓M Inter-quartile range = 70 – 20 ✓RT = 50 ✓ CA	1M IQR concept(implied) 1RT correct values 1CA simplification **AO** (3)	D L2
5.1.6	66 ✓✓A	2A mode (2)	D L1
5.1.7	Mean = $\frac{\text{sum of the marks}}{\text{total number of learners}}$ ✓A 70 = $\frac{1741+H}{26}$ ✓MA 1 820 = 1 741 + H H = 79 ✓CA	1MA mean concept (implied) 1A adding values 1CA value of H **AO** (3)	D L3
5.1.8	P (equal marks) = $\frac{13}{26}$ ✓A ✓ A = $\frac{1}{2}$ ✓CA	1A numerator 1A denominator 1CA simplification **AO** (3)	P L3

Ques	Solution	Explanation	Topic/L
5.2.1	✓MA Q = 288 912 + 393 954 + 94 552 + 192 933 + 650 033 + 299 994 + 575 371 + 312 273 + 372 090 = 3 180 118 ✓CA **OR** ✓MA Q = 15 353 036 – 12 172 919 = 3180 118 ✓CA	1MA adding all Non-literate adults 1CA Simplification **OR** 1MA subtracting Literate from Total 1CA simplification **AO** (2)	D L1
5.2.2	✓ RT % literate = $\frac{12172919}{15353036} \times 100$ ✓M ≈ 79,3 ✓ CA **OR** ✓ RT % literate = 100 - $\left(\frac{3\,180\,118}{15\,353\,036} \times 100\right)$ ✓M ≈ 100 - 20,71 ≈ 79,3 ✓ CA	1RT numerator and denominator 1M multiply by 100 1CA answer **AO** 1RT numerator and denominator 1M multiply by 100 1CA answer NPR (3)	D L2
5.2.3	Non Literate: Literacy = 650 033:1 956 497 ✓ RT = $\frac{650\,033}{650\,033} : \frac{1956\,497}{650\,033}$ ✓MA = 1 : 3,009842577 ≈1 : 3 or 1 : 3,01 or 1 : 3,0099 ✓ CA	1RT both values 1MA ratio in correct order CA unit ratio NPR (3)	D L2
5.2.4	✓✓MA 244 282; 609 029; 760 029;784 347; 922 171; 1 120 567; 1 762 494; 1 956 497; 4 013 463	2MA arranging (2) (Descending 1 Mark; Omitting 1 value 1 mark)	D L1
5.2.5	Northern Cape (NC) ✓✓A	2A correct province (2)	D L1
			[32]

TOTAL: 150