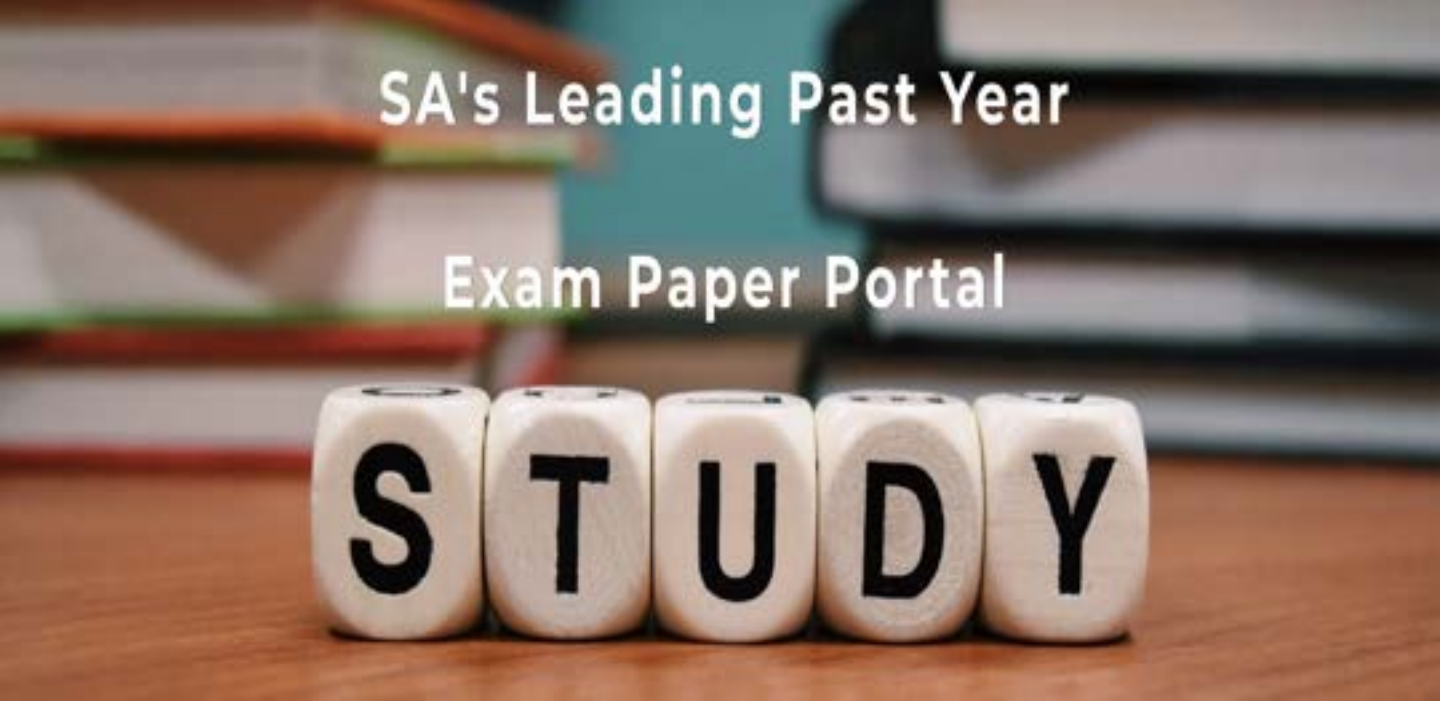

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GRADE 12

SEPTEMBER 2021

MATHEMATICAL LITERACY P1
MARKING GUIDELINE

MARKS:

Symbol	Explanation
M	Method
MA	Method with accuracy
CA	Consistent accuracy
A	Accuracy
C	Conversion
S	Simplification
RT/RG/RM	Reading from a table/Reading from a graph/Reading from a map
F	Choosing the correct formula
SF	Substitution in a formula
J	Justification
P	Penalty, e.g., for no units, incorrect rounding off etc.
R	Rounding Off/Reason
AO	Answer only
NPR	No penalty for rounding

This marking guideline consists of 13 pages.

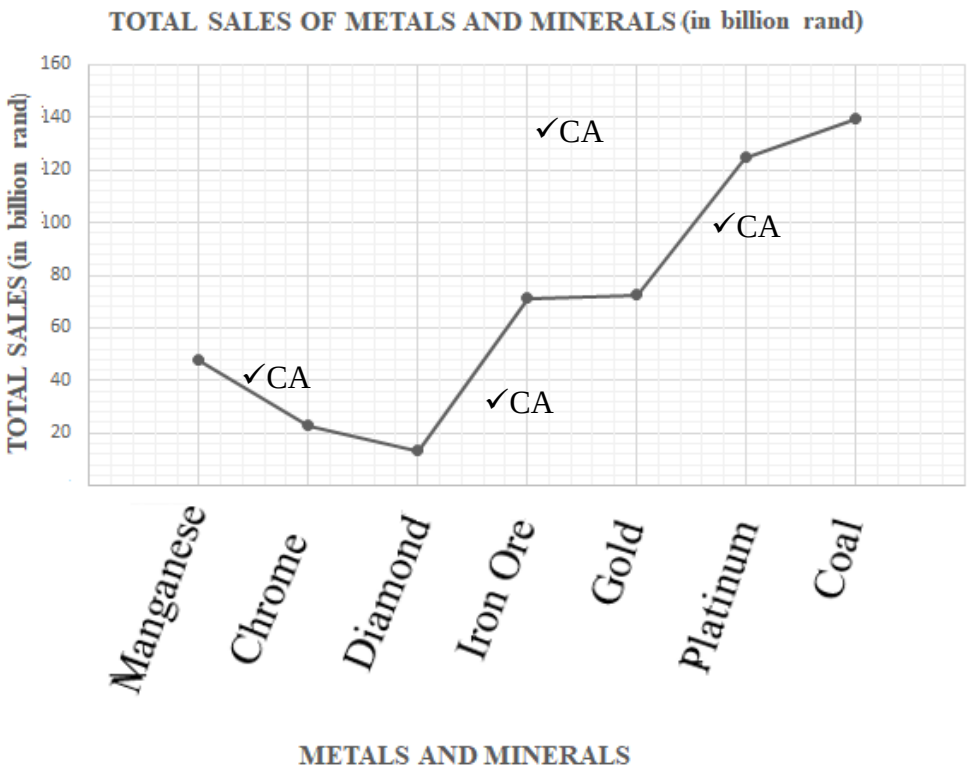
QUESTION 1 [30 MARKS]			
Ques	**Solution**	**Explanation** **AO: FULL MARKS**	**T&L**
1.1.1	Deposit as % of lay-bye price = $\frac{1200}{4800} \times 100\%$ ✓M = 25% ✓CA	1M percentage calculation 1CA answer (2)	F L1
1.1.2	Months = $\frac{3\ 600}{400}$ ✓A ✓M = 9 months ✓CA	1A identifying use of R3 600 1M divide by 400 1CA number of months (3)	F L1
1.1.3	Balance = R3 600 – (R400 × 7) ✓M = R800,00 ✓CA **OR** Balance of months = 2 Amount = 2 × 400 ✓M = R800 ✓A	1M for subtracting 7 instalments from R3 600 1CA answer 1M method for multiplying 2 months by instalments 1A answer (2)	F L1
1.2.1	Cost price = R60 + R45 + R5 ✓M = R110 ✓A	1M adding correct values 1A answer (2)	F L1
1.2.2	Profit = R176 – R110 ✓M = R66,00 ✓A	1M subtracting cost price from selling price 1A correct amount (2)	F L1
1.2.3	✓✓RT Income (Rands) = **R176n**, where n stands for the number of t-shirts sold.	2RT for the R176n (2)	F L1
1.2.4	Cash discount = $\frac{15}{100} \times \frac{176}{1}$ ✓MA = R26,40 ✓S = R27,00 **OR** R26,00 ✓R	1MA discounted percentage calculation 1S simplification 1R rounding to the nearest Rand. (3)	F L1

Ques	Solution	Explanation	T&L
1.3.1	Cost of a dozen = $\frac{110}{60} \times 12$ ✓MA = R22,00 ✓A **OR** Dozens = $\frac{60}{12}$ = 5 ✓M Cost price of a dozen = $\frac{110}{5}$ = R22 ✓MA	1MA divide by 60 and multiply by 12 1A dozen cost 1M divide by 12 to get number of dozens. 1MA cost of a dozen answer (2)	F L1
1.3.2	Profit = R125 – R110 = R15 ✓M Average profit per egg = $\frac{R15}{60}$ ✓M = R0,25 ✓A	1M profit calculation 1M average calculation $\frac{15}{60}$ 1A answer (**Accept 25 cents**). (3)	F L1
1.4.1	Total population in 2001(44 819 778): ✓✓A Forty-four million, eight hundred and nineteen thousand seven hundred and seventy-eight.	2A correct value in words (2)	D L1
1.4.2	Increase in total population = 51 770 560 – 40 583 573 ✓M = 11 186 987 ✓CA	1M subtraction correct values 1CA answer (2)	D L1
1.4.3	Difference in population between KZN and NC in 1996 ✓RT = 8 572 302 - 1 011 864 ✓M = 7 560 438 ✓CA	1RT correct values 1M subtraction 1CA difference (3)	D L1
1.4.4	Northern Cape ✓✓RT	2RT correct province (2)	D L1
		[30]	

QUESTION 2 [31 MARKS] FINANCE			
Ques	**Solution**	**Explanation/Marks AO: FULL MARKS**	**T/L**
2.1.1	Amoti: Dan = 3 : 5 [8 shares] Dan invested = $\frac{3}{8} \times 16\,000$ ✓MA = R6 000 ✓CA	1MA $\frac{3}{8}$ of the investment. 1CA Dan's amount (2)	F L2
2.1.2	Dan's share of profit = $\frac{3}{8} \times 2\,880$ ✓M = R1 080,00 ✓CA	1M fraction of the profit 1CA Simplification Dan's share of profit (2)	F L1
2.1.3	Amoti's interest: R2880 – R1080 = R1800 ✓MA Mary's interest: 1st year = $\frac{108,5}{100} \times 10\,000$ = R10 850,00 ✓MA 2nd year = $\frac{108,5}{100} \times 10\,850$ = R11 772,25 ✓MA Total interest in 2 years = R11 772,25 – 10 000 ✓M = R1 772,25 ✓CA Amoti had better investment by R27,75. ✓J **OR** Amoti's investment = $\frac{16\,000}{8} \times 5$ = R10 000 ✓A ✓M Return on investment = $\frac{1\,800}{10\,000} \times 100\%$ Interest in 2 years = 18% ✓S Mary's return in two years =[(1,085 × 1,085) – 1]×100 = 17,7225% ✓M Difference is 18% – 17,7225% = 0,2775% ✓A Earnings in favour of Amoti ✓J	1MA Amoti's interest 1MA Mary's amount at end of 1st year. 1MA Mary's amount in 2nd year 1M subtracting from R10 000 1CA interest 1J better in favour of Amoti **OR** 1A investment amount 1M return on interest in 2 years R1 800 1S simplification for interest in 2 years for Amoti 1M interest rate in 2 years 1A difference in interest amounts. 1J Amoti had better investment (6)	F L4

Ques	Solution	Explanation	T&L
2.2.1	R147,74 ✓✓RT	2RT correct amount (2)	F L1
2.2.2	Block 1: Cost 550 × 124,49 = 68 469,5 cents ✓M = R 684,70 ✓C Block 2: Cost 140 × 141,43 = 19 800,2cents = R198,00 ✓A Total Cost = R684,70 + R198,00 + R147,74 + 435,24 ✓M = R1 465,68 ✓CA	1M cost of 550 kWh 1C conversion cents to Rands 1A cost of 140 kWh 1M adding the values 1CA total answer (5)	F L3
2.2.3	VAT amount included = $\frac{15}{115} \times R1\,465{,}68$ ✓M ✓M = R191,18 ✓CA **OR** VAT exclusive amount = R1 465,68 ÷ 1,15 ✓M = R1 274,50 ✓CA VAT amount = R1 465,68 – R1 274,50 = R191,18 ✓CA	**CA from 2.2.2** 1M for the fraction 1M multiplication 1CA simplification and Ans. (concept of money) 1M dividing by 1,15 1CA VAT exclusive amount 1CA VAT amount (3)	F L2
2.3.1	12 Months ✓✓RT	2RT correct months (2)	F L1
2.3.2	Total income = R101 677 + R91 785 + R453 000 = R646 462 ✓M Total expenses = 114 859 + 123 567 + 14 600 + 23 982 + 3 679 + 1 650 + 1 080 + 146 912 + 17 244 + 43 432 + 12 456 + 23 678 ✓M = R527 139 ✓CA Difference = Income – Expenses = R646 462 – R527 139 ✓M = R119 323 ✓CA It is a surplus ✓J	1M finding total income 1M addition 1CA total expenses 1M subtraction 1CA difference J justification (6)	F L3
2.3.3	Monthly charges = $\frac{1080}{12}$ ✓RT ✓M = R90 ✓CA	1RT yearly charges 1M divide by 12 1CA monthly charge (3)	F L2
		[31]	

QUESTION 3 [29 MARKS]			
Ques	**Solution**	**Explanation**	**T&L**
3.1	Gold ✓ ✓RT	2RT correct mineral (2)	D L1
3.2	Median (Total sales): ✓A ✓M 13,3 ; 22,8 ; 47,6 ; **71,4** ; 72,6 ; 124,6 ; 139,3 = R71,4 billion rand ✓A **OR** = 71 400 000 000	1M arranging in order 1A middle value 1A answer in actual value format (3)	D L2
3.3	Q1 = 22,8 ✓M Q2 = 71,4 Q3 = 124,6 ✓M IQR = 124,6 – 22,8 ✓M = 101,8 billion rand ✓S Therefore, IQR is greater than 101 billion ✓J	1M for Q1 1M for Q3 1M subtraction Q3 – Q1 1S simplification 1J answer (5)	D L3
3.4	Mean = 10 846 + 19 693 + 15 728 + 19 092 + 95 130 + 164 513 + 92 230 ✓M = 417 232 ÷ 7 ✓M = 59 604,57 ✓S = 60 000 ✓R	1M adding all values 1M total divide by 7/concept of mean 1S simplification 1R rounding (4)	D L2
3.5	Modal value = 2,1 billion ✓M = 2 100 000 000 ✓CA	1M value of modal value 1CA value in number format (2)	D L2

Ques	Solution	Explanation	T&L
3.6	802 000 000 + 362 000 000 + 2 100 000 000 + 288 000 000 + 1 120 000 000 + 2 100 000 000 = 6 772 000 000 ✓M $= \frac{288\ 000\ 000}{6\ 772\ 000\ 000} \times 100\%$ ✓M = 4,25% ✓CA **OR** 0,802 + 0,362 + 2,1 + 0,288 + 1,12 + 2,1 = 6,772 billion ✓MA % for Gold = $\frac{0,288}{6,772} \times 100\%$ ✓M = 4,25% ✓A	1MA finding total royalties 1M percentage calculation 1CA correct % 1MA finding total royalties 1M percentage calculation 1A correct % (3)	D L2
3.7	P = $\frac{3}{7} \times 100\%$ ✓A ✓M = 42,86% ✓CA	1A numerator 1M percentage calculation 1CA % **NPR** (3)	P L2
3.8	 First 2 minerals/metals correctly plotted; 1CA Any other 2 minerals correctly plotted: 1CA Any other 2 minerals correctly plotted: 1CA Joining the points: 1CA (4)		D L2

3.9	✓RT Difference = 70,5 million tons – 101,3 tons = 70 500 000 – 101,3 ✓M = 70 499 898,7 tons ✓CA	1RT correct values 1M subtraction of correct values 1CA difference (3)	D L2
		[29]	

QUESTION 4:[32 MARKS] FINANCE			
Ques.	**Solution**	**Explanation/Marks**	**T&L**
4.1.1	Option 1: B ✓RT Option 2: A ✓RT **OR** A: Option 2 ✓RT B: Option 1 ✓RT	1RT correct option 1RT correct option (2)	F L2
4.1.2	Breakeven point is where the income under option 1 is equal to the income under option 2. ✓✓A	2A explanation (2)	F L1
4.1.3	<u>Use of calculations</u> Option 1: Income = R20 × 12 ✓SF = R240 ✓S Option 2. Income = R200 + (10 × 12) ✓SF = R320 ✓S Difference = R320 – R240 = R80 ✓MA Statement was correct he would have earned less R80 ✓J **OR From Graph** **Option 1** Income = R240 ✓✓RT **Option 2** Income = R320 ✓✓RT Difference = R320 – R240 = R80 ✓CA Statement was correct he would have earned less R80 ✓J	1SF substitution in formula 1S value for income for the day under option 1 1SF substitution in formula 1S value for income for the day under option 2 1MA finding the difference 1J Justification 2RT value of income form graph option1 2RT value of income form graph option 2 1CA finding the difference 1J Justification (6)	F L4

Ques,	Solution	Explanation/Marks	T&L
4.2.1	Average Inflation rate because it involves an increase of different goods over a period of time. ✓✓O	2O Reasoning (2)	F L1
4.2.2	✓RT Inflation rate decreased from 2016 to 2017 and prices of goods increased at a lower rate. ✓O ✓RT Inflation rate increased from 2017 to 2019 and prices of goods increased at a higher rate. ✓O	1RT rate decreased from 2016 to 2017 1O prices of goods increase at lower rate 1RT rate increased from 2017 to 2019 1O prices of goods increases slightly faster (4)	F L4
4.2.3	New price = old price × (100% + Inflation rate%) ✓SF R5356 = price in 2017 × (100% + 5,94%) Price in 2017 = $\frac{5356}{1.0594}$ ✓M = R 5 055,69 ✓S ✓SF Price in 2019 = 5356 × (100% + 8,63%) = R5 818,22 ✓S Difference = R5 818,22 – R5 055,69 ✓M = R762,53 ✓CA	1SF substitution 1M changing subject of the formula 1S simplification 1SF substitution 1S simplification 1M subtraction 1CA answer (7)	F L3

Ques.	Solution	Explanation/Marks	T&L
4.3.1	Nigeria ✓✓RT	2RT correct answer (2)	D L2
4.3.2	✓RT ✓RT Closest in May 2020 and March 2021	1RT correct month and year 1RT correct month and year (2)	D L2
4.3.3	✓✓J (a) Trend: Nigeria's CPI increases steadily from CPI of about 12,2 in April 2020 to CPI of about 18,0 in March 2021.	2J increasing from April 2020 to May 2021. (2)	D L4
	✓J (b) Trend for South Africa: Decreased from March 2020 ✓J to May, remained steady May to June 2020, and increased from June to July 2020. ✓J	1J decreasing from March to May 1J remaining steady May to June 1J increasing from June to July. (3)	D L4
		[32]	

QUESTION 5: [28 MARKS] FINANCE; DATA HANDLING AND PROBABILITY			
Ques	**Solution**	**Explanation**	**T&L**
5.1.1	Basic annual salary = R27 678 × 12 ✓M = R332 136 ✓CA Taxable Income = R332 136 – (7,5% of 332 136) ✓M = R332 136 – 24 910,20 = R307 225,80 ✓S Annual tax before rebates. = 37 062 + 26% of taxable income above 205 900 = 37 062 + 26% × (307 225,80 – 205 900) ✓SF = R63 406,50 or R63 406,71 ✓CA Annual tax after rebates = R63 406,50 ─ 14 958 = R48 448,50 ✓MA Monthly tax after rebates = $\frac{48\ 448{,}50}{12}$ ✓MA = R4 037,38	1M multiply by 12 1CA annual salary 1M calculating income taxable. 1S simplification 1SF correct bracket 1CA annual tax 1MA finding tax after rebates 1MA finding monthly tax **NPR** (8)	F L3
5.1.2	Monthly pension = 24 910,20 ÷ 12 = R2 075,85 ✓M ✓M R27 678 ─ (4 037,38 + 2 075,85 + 106,00 + 585,64) = R27 678 ─ (6 804,87) ✓S =R20 873,13 ✓CA	1M monthly pension 1M subtraction of total deductions 1S simplification 1CA answer **NPR** (4)	F L2

Ques.	Solution	Explanation	T&L
5.2.1	✓ RT Mary: age 16 years and BMI = 29 from graph gives 95% percentile Jolly: age 18 years and BMI = 30 from graph gives about 93% percentile. ✓ RT Checking from the status: Mary is overweight ✓ RT Jolly is at risk of overweight. ✓ RT Both wrong. ✓ J	1RT reading from the growth chart 1RT reading from the growth chart 1RT reading status table 1RT reading from status table 1J justification. (5)	D L4
5.2.2	From the Growth chart: 19 years and 35% give BMI = 26 ✓✓RT Mary now at 16 years with at BMI = 29 She must lose = 29 – 26 ✓ M = 3 ✓ CA	2RT using the 19 and 85% to get BMI = 26 1M subtracting 26 from 29 1CA answer. (4)	D L4
5.3.1	✓ M Total = 1 063 038 + 130 092 + 129 056 + 784 314 = 2 106 500 ✓ A **OR** ✓ M Total = 757 105 + 1 349 395 = 2 106 500 ✓ A	1M adding all values 1A correct answer 1M adding all values 1A correct answer (2)	D L1
5.3.2	Probablity is the chances or likelihood of an event occurring. ✓✓ A	2A explanation (2)	P L1
5.3.3	$P_{(\text{Black African with a degree})} = \frac{613\,820}{1\,349\,395}$ ✓ A ✓ A = 0,45 ✓ CA	1A numerator 1A denominator 1CA answer. **NPR** (3)	P L2
		[28]	
	TOTAL: 150		

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