basic education

Department:
Basic Education
REPUBLIC OF SOUTH AFRICA

NATIONAL SENIOR CERTIFICATE

GRADE 12

MATHEMATICAL LITERACY P1

FEBRUARY/MARCH 2012

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

This memorandum consists of 12 pages.

QUESTION 1 [33 MARKS]			
Ques	**Solution**	**Explanation**	**AS**
1.1.1	$\frac{3}{4}$ of $\sqrt{9\ 673} - 0,5\ (5,9352 + 2,16937)$ $= 73,763\ 558.. - 4,052\ 285$ $= 69,711\ 273..$ ✓A $\approx 69,71$ ✓R	1A simplifying 1R rounding off **Answer only full marks** (2)	12.1.1
1.1.2	22,25% of R136,00 $= \frac{22,25}{100} \times R136$ ✓M $= R30,26$ ✓CA **OR** $\frac{22,25}{100} \times R136$ ✓M $= R30,26$ ✓CA **OR** ✓M $0,2225 \times R136$ $= R30,26$ ✓CA	1M using percentage 1CA simplification **Answer only full marks** (2)	12.1.1
1.1.3	$450\ m = (450 \div 1\ 000)\ km$ $= 0,45\ km$ ✓A	1A answer (1)	12.3.2
1.1.4	$5,34\ million = 5,34 \times 1\ 000\ 000$ $= 5\ 340\ 000$ ✓A	1A solution (1)	12.1.1
1.1.5	Price per egg = $\frac{R7,92}{6}$ ✓M $= R1,32$ ✓CA	1M dividing by 6 1 CA simplification **Answer only full marks** (2)	12.3.2 12.1.1
1.1.6	Total number of days from Jan. to Jul. $= 31 + 28 + 31 + 30 + 31 + 30 + 31$ $= 212$ ✓A So, the 200th day is in July ✓CA	1A total days 1CA month **Answer only full marks** (2)	12.1.2 12.3.2

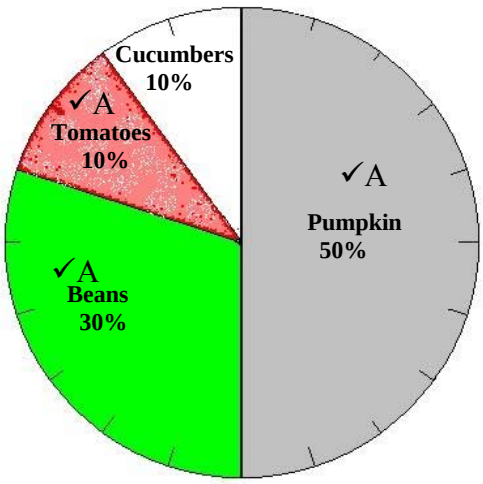
Ques	Solution	Explanation	AS
1.2.1	19:00 **OR** 7 pm **OR** 19H00 ✓✓A	2A answer (2)	12.1.1 12.3.1
1.2.2	Wage = R18,00 × 12 × $2\frac{1}{2}$ ✓ SF = R540 ✓CA	1 SF substitution 1CA simplification **Answer only full marks** (2)	12.2.1
1.3.1	**Total Income = profit + expenses** = R135 400 + R235 656 ✓ SF = R371 056 ✓CA	1SF substitution 1CA simplification **Answer only full marks** (2)	12.2.1 12.1.1
1.3.2	Sihle's share = R135 400 – R54 160 = R81 240 ✓ A Ratio = 54 160 : 81 240 ✓M = 2 : 3 **OR** 1 : 1,5 ✓CA **OR** 27 080 : 40 620 **OR** 13 540 : 20 310 **OR** 5 416 : 8 124	1A Sihle's share 1M Writing as a ratio 1CA simplified ratio **Accept any simplified form of the ratio** (3)	12.1.1
1.3.3	An increase of 8% implies 108 % ✓M Profit in 2011 = $\frac{108}{100}$ × R135 400 ✓A **OR** 1,08 × R135 400 = R146 232 ✓CA **OR** Increased amount = $\frac{8}{100}$ × R135 400 **OR** 0,08 × R135 400 = R10 832 ✓A Profit in 2011 = R135 400 + R10 832 ✓M = R146 232 ✓CA	1M concept of increase 1A simplification 1CA solution 1A simplification 1M concept of increase 1CA solution **Answer only full marks** (3)	12.1.1

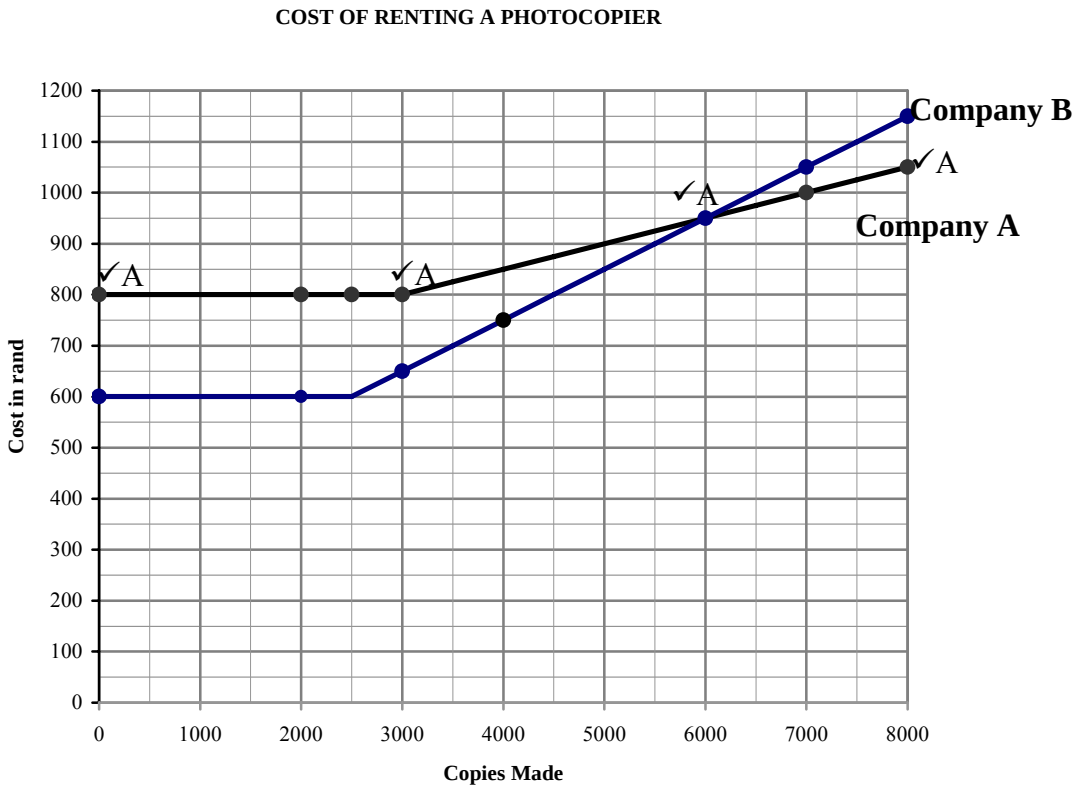
Ques	Solution	Explanation	AS
1.4.1	0; 24; 38; 38; 42; 50; 52; 56; 86 ✓A	1A answer (1)	12.4.2
1.4.2	38 ✓A	1A answer (1)	12.4.3
1.4.3	✓ M Mean = $\frac{52+86+24+38+56+42+0+50+38}{9}$ = $\frac{386}{9}$ ✓A = 42,8888… ≈ 42,89 ✓R	1M finding mean 1A adding 1R rounding **Answer only full marks** (3)	12.4.3
1.5.1	Internet ✓RG	1RG reading from the graph (1)	12.4.4
1.5.2	Difference = 60,5% – 48,4% ✓ M = 12,1% ✓A	1M subtracting 1A solution **Answer only full marks** (2)	12.4.4 12.1.1
1.5.3	Computers ✓RG	1RG reading from the graph (1)	12.4.4
1.5.4	Number of schools = $\frac{24,6}{100} \times 2\,500$ ✓M = 0,246 × 2 500 = 615 ✓CA	1 M % calculation 1 CA simplification **Answer only full marks** (2)	12.1.1

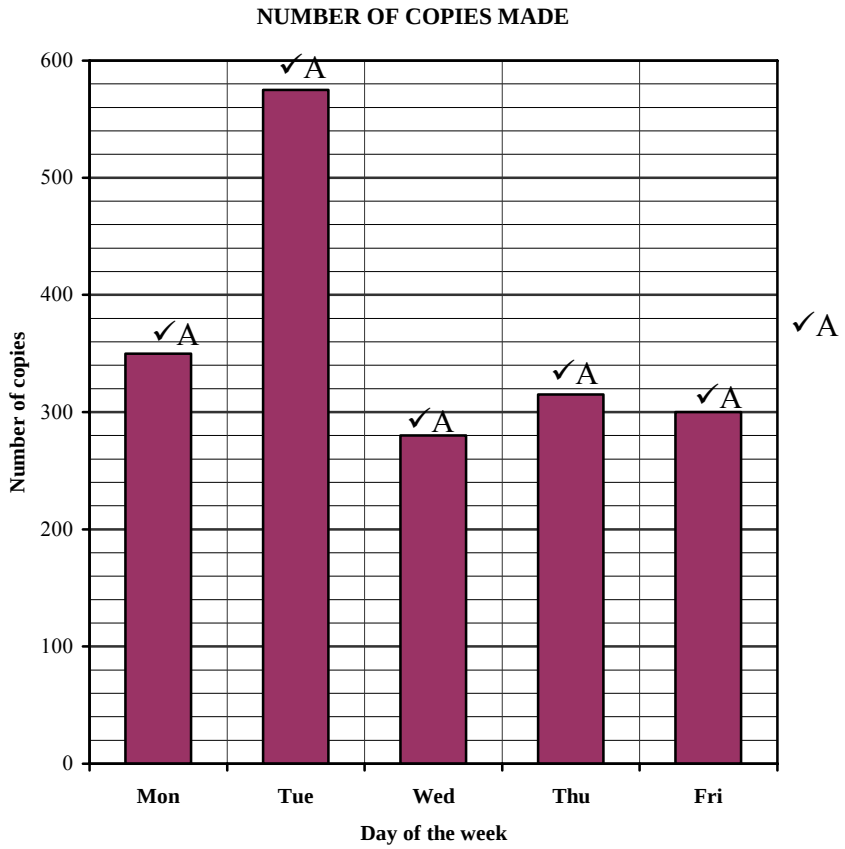
QUESTION 2 [32 MARKS]			
Ques	**Solution**	**Explanation**	**AS**
2.1.1	**A** = R150 000$(1+0,066)^3$ ✓SF ✓SF = R181 703,32 ✓CA	2 SF substitution 1 CA solution (3)	12.1.1
2.1.2	R1,00 (ZAR) = ¥ 0,89 (CNY) Amount = 15 000 × 0,89 ✓M = ¥ 13 350 CNY ✓A	1M multiplying 1 A solution (2)	12.1.1
2.2.1 a	Number of coloureds = 4 424 100 ✓RT ✓A	1RT reading from table 1A writing correctly (2)	12.4.1
2.2.1 b	Number of white females = 2 277 400 ✓RT ✓A	1RT reading from table 1A writing correctly (2)	12.4.1
2.2.2	A = 24 329 000 – (19 314 500 + 646 600 + 2 243000) ✓M = 2 124 900 ✓A **OR** A = 4 424 100 – 2 299 200 ✓M = 2 124 900 ✓A ✓M B = 49 320 500 – (39 136 200 + 4 433 100 + 4 472 100) = 1 279 100 ✓A **OR** B = 635 700 + 643 400 ✓M = 1 279 100 ✓A ✓M C = 39 682 600 + 4 424 100 + 1 299 900 + 4 584 700 = 49 991 300 ✓A **OR** C = 24 329 000 + 25 662 300 ✓M = 49 991 300 ✓A	1M subtracting 1A value of A OR 1M subtracting 1A value of A 1M subtracting 1A value of B OR 1M adding 1A value of B 1M adding 1A value of C OR 1M adding 1A value of C **Answer only full marks** (6)	12.4.1 12.1.1

Ques	Solution	Explanation	AS
2.2.3	Difference = 19 314 500 – 18 901 000 ✓RT = 413 500 ✓A	1RT reading values from table 1A answer **Answer only full marks** (2)	12.4.1 12.1.1
2.2.4	Asian females = $\frac{653\ 300}{25\ 662\ 300}$ ✓RT × 100% = 2,546% = 2,55% ✓A	1RT reading values from table 1A simplification (2)	12.4.1 12.1.1
2.2.5	Male increase = 460 300 ✓A Female increase = 210 500 ✓A ∴ Males had the greatest increase ✓A	1A increase in males 1A increase in females 1A answer (3)	
2.3.1	R75 ✓ ✓RG (accept any amount between R73 and R77)	2RG reading from the graph (2)	12.2.3
2.3.2	24 single trips ✓✓RG	2RG reading from the graph (2)	12.2.3
2.3.3	Number of single trips = 3 × 2 = 6 ✓ A Cost = R 45 ✓✓RG (accept any amount between R43 and R47) **OR** ✓✓RG Cost of 3 single trips = R22,50 (accept any amount between R22 and R23) Cost of 3 return trips/6 single trips = 2 × R22,50 = R45,00 ✓ A (accept any amount between R43 and R47)	1A number of single trips 2RG reading from the graph OR 2RG reading from the graph 1A solution (3)	12.1.1 12.2.3
2.3.4	Cost of 22 single trips = R165,00 ✓✓RG (accept any amount between R163 and R167) Cost of 44 single trips /22 return trips = 2 × R165 ✓ A = R330 (accept any amount between R326 and R334)	2RG reading from the graph 1A solution (3)	12.1.1 12.2.3

QUESTION 3 [17 MARKS]			
Ques	**Solution**	**Explanation**	**AS**
3.1.1	Cost = 3 × R5,75 + 5 × R1,25 ✓ SF = R23,50 ✓ CA	1SF substitution in formula 1CA solution (2)	12.2.1
3.1.2	Number of carrots = $\frac{\text{R31,75} - (4 \times \text{R5,75})}{\text{R1,25}}$ ✓ SF = $\frac{\text{R8,75}}{\text{R1,25}}$ = 7 ✓ CA	1SF substitution in formula 1CA simplification (2)	12.2.1
3.2.1	Area = 2,5 m × 1,5 m ✓ SF = 3,75 m^2 ✓ CA	1SF substitution in formula 1CA solution (2)	12.3.1
3.2.2	Volume = 2,5 m × 1,5 m × 7,5 cm ✓ SF = 2,5 m × 1,5 m × 0,075 m ✓ C = 0,28125 m^3 ≈ 0,28 m^3 ✓ CA **OR** Volume = 3,75 m^2 × 7,5 cm ✓ SF = 3,75 m^2 × 0,075 m ✓ C = 0,28125 m^3 ≈ 0,28 m^3 ✓ CA	1SF substitution in formula 1C conversion 1CA solution 1SF substitution in formula 1C conversion 1CA solution (3)	12.3.1 12.3.2

Ques	Solution	Explanation	AS
3.3.1 (a)	A = 100 % – (48 % + 10,6 % + 2,7 % + 31,5 %) ✓M = 7,2 % ✓CA	1M adding to 100% 1CA solution (2)	12.4.1
3.3.1 (b)	Packets of cabbage seeds = 48% of 525 ✓M = 0,48 × 525 = 252 ✓CA	1M calculating % 1Ca solution (2)	12.4.4 12.1.1
3.3.2	✓A  ✓A ✓A ✓A ✓M	1A for pumpkin 1A beans 1A for tomatoes 1A for cucumbers 1M labelling (5)	12.4.2

QUESTION 4 [28 MARKS]			
Ques	**Solution**	**Explanation**	**AS**
4.1.1	**P** = R600,00 ✓✓ A **Q** = R800,00 + 1 000 × R0,05 ✓ SF = R850 ✓A	2 A value of P 1SF substitution 1 A solution (4)	12.2.1
4.1.2	Cost per month ✓ A ✓ A ✓ A = R600,00 + (number of copies more than 2 500) ×R0,10 ✓ A ✓ A **OR** ✓ A Cost = R600 + (n – 2 500) × R0,10 Where n is the number of copies more than 2 500	1A R600 1A more than 2 500 1A cost per copy **OR** 1A R600 1A more than 2 500 1A cost per copy (3)	12.2.1
4.1.3	 1A straight line starting at (0 ; 800) to (3 000 ; 800) 1A straight line from (3 000 ; 800) to (8 000 ; 1 050) 1A all points plotted correctly 1A label (4)	12.2.2

Ques	Solution	Explanation	AS
4.1.4	6 000 copies ✓✓RT/ RG	2RG/RT reading from graph/table (2)	12.2.3
4.1.5	Saving = R1 050 – R1 000 ✓RG/RT = R50 ✓CA Company A ✓A	1RT/RG reading 1 CA answer 1A answer (3)	12.2.3 12.1.1
4.2.1	Stationery room ✓A Kitchen ✓A	1A correct 1A correct (2)	12.3.4
4.2.2	Actual width = 1,33 cm × 300 ✓M = 399 cm ✓A = 3,99 m ✓C	1M using the scale 1A actual width 1C conversion (3)	12.3.3 12.3.2
4.3.1		5A mark for each bar correctly plotted 1A correct graph (6)	12.4.2
4.3.2	Wednesday ✓A	1A solution (1)	12.4.4

QUESTION 5 [18 MARKS]			
Ques	**Solution**	**Explanation**	**AS**
5.1.1 a	✓A Volume = $3{,}14 \times (0{,}998\ \text{m})^2 \times 2{,}498\ \text{m}$ ✓SF $= 7{,}81237\ldots \text{m}^3$ $\approx 7{,}812\ \text{m}^3$ ✓CA	1A value of radius 1SF substitution into formula 1CA simplification (3)	12.3.1
5.1.1 b	Height = $\frac{80}{100} \times 2{,}498\ \text{m}$ ✓M **OR** $0{,}80 \times 2{,}498\ \text{m}$ ✓M $= 1{,}9984\ \text{m}$ $= 1{,}9984\ \text{m}$ $\approx 1{,}998\ \text{m}$ ✓CA $\approx 1{,}998\ \text{m}$ ✓CA	1M calculating % 1CA solution (2)	12.1.1
5.1.2	Surface area of the tank ✓A ✓A $= 3{,}14 \times 1\ \text{m} \times (2 \times 2{,}5\ \text{m} + 1\ \text{m})$ $= 3{,}14\ \text{m} \times 6\ \text{m}$ ✓S $= 18{,}84\ \text{m}^2$ ✓CA ✓A	1A substituting height 1A substituting radius 1S simplification 1CA answer 1A correct unit (5)	12.3.1
5.1.3	5 mm in 1 minute, so average rate = 5 mm/min ✓SF Time taken = $\frac{1\,200\ \text{mm}}{5\ \text{mm/min}}$ **OR** $\frac{1\,200\ \textbf{mm}}{5 \times 60\ \textbf{mm/hour}}$ ✓SF $= 240$ min ✓CA $= 4$ hours ✓CA $= 4$ hours ✓C	1SF substituting 1CA solution 1 C conversion (3)	12.1.1 12.2.1 12.3.2
5.2.1	$7{,}5 \times A = 30$ ✓M $A = \frac{30}{7{,}5}$ workers $= 4$ workers ✓CA $B \times 8 = 30$ ✓M $B = \frac{30}{8}$ hours $= 3{,}75$ hours ✓CA	1M multiplying/dividing 1CA simplification 1M multiplying/dividing 1CA simplification (4)	12.2.1
5.2.2	Inverse proportion **OR** indirect proportion ✓A	1A answer (1)	12.2.1

QUESTION 6 [21 MARKS]			
Ques	**Solution**	**Explanation**	**AS**
6.1.1	2 tanks = 2 × 26 gallons = 52 gallons ✓A	1A solution (1)	12.1.1
6.1.2	16 gallons ✓✓A (accept values more than 15 but less than 17,5)	2A reading value (2)	12.3.3
6.1.3	3 gallons ✓✓A (accept any value from 3 to 5)	2A reading value (2)	12.3.3
6.1.4	18 gallons = 18 × 4,546 litres = 81,83 litres ✓A	1M multiplying by conversion factor 1A solution (2)	12.3.2
6.1.5	Cost = 15,76 litres × R9,92 per litre ✓M = R156,34 ✓A	1M multiplying 1A solution (2)	12.1.1
6.1.6	Percentage decrease = $\frac{0,86}{9,92} \times 100\%$ ✓F ✓SF = 8,66935.. % ≈ 8,67 % ✓A	1F correct formula 1SF substitution 1A solution (3)	12.1.1
6.2.1	B 2 or 2 B ✓✓A	2A correct grid reference (2)	12.3.4
6.2.2	Karoo National Park ✓A Bontebok National Park ✓A	2A for two names (2)	12.3.4
6.2.3	North West ✓✓A	2 A direction (2)	12.3.4
6.2.4	**Average speed** = $\frac{153 \text{ km}}{\frac{1}{2} \text{ hour}}$ ✓SF ✓M = 306 km per hour ✓CA	1SF substitution 1M dividing by $\frac{1}{2}$ 1CA solution (3)	12.2.1 12.3.2