basic education

Department:
Basic Education
REPUBLIC OF SOUTH AFRICA

NATIONAL SENIOR CERTIFICATE

GRADE 12

MATHEMATICAL LITERACY P1

NOVEMBER 2015

MEMORANDUM

MARKS: 150

Codes	Explanation
M	Method
MA	Method with Accuracy
CA	Consistent Accuracy
A	Accuracy
C	Conversion
D	Define
J	Justification/Reason/Explain
S	Simplification
RD	Reading from a table OR a graph OR a diagram OR a map OR a plan
F	Choosing the correct formula
SF	Substitution in a formula
O	Opinion
P	Penalty, e.g. for no units, incorrect rounding off, etc.
R	Rounding Off
NP	No penalty for rounding OR omitting units

This memorandum consists of 17 pages.

KEY TO TOPIC SYMBOL:

F = Finance; M = Measurement; MP = Maps, Plans and other representations
DH = Data Handling; P = Probability

QUESTION 1 [38]			
Ques	**Solution**	**Explanation**	**Level**
1.1.1	$67 \times 2 + 16$ ✓MA $= 150$ ✓CA	1MA multiply by 2 and adding 16 1CA simplifying **Answer only full marks** (2)	L1
1.1.2	Cost = R225,00 ✓M × 152 ✓A = R34 200 **OR** Number of persons = R34 200 ✓M ÷ R225 = 152 ✓A (150 guests + bridal couple) **OR** Cost per person = R34 200 ÷ 152 ✓M = R225 ✓A	1M multiply by R225 1A for 152 **OR** 1M divide by R225 1A number of persons **OR** 1M divide by 152 1A cost per person (2)	L1
1.1.3	% Reception costs $= \frac{\text{R66 450}}{\text{R125 000}} \times 100\%$ ✓M $= 53{,}16\%$ ✓CA	1M correct fraction 1CA percentage **Answer only full marks** **NP – rounding** (2)	L1
1.1.4	Flowers and decor = 1,8% × R125 000 ✓M = R2 250 ✓A	1M percentage 1A amount **Answer only full marks** (2)	L1

Ques	Solution	Explanation	Level
1.1.5	Rand value = GHS 30 000 ÷ 0,32253 ✓M ≈ R93 014,60 ✓A Shortfall = R125 000 – R93 014,60 ✓M = R31 985,40 ✓CA **OR** Cedi value = R125 000 × 0,32253 ✓MA = GHS 40316,25 Shortfall = GHS 40 316,25 – GHS 30 000 ✓M = GHS 10 316,25 ✓A Rand value = GHS 10 316,25 ÷ 0,32253 = R31 985,40 ✓CA	1M divide 1A correct rounding 1M subtraction 1CA amount **OR** 1MA multiply 1M subtraction 1A shortfall amount 1CA amount **Answer only full marks** **NP – rounding** (4)	L2
1.1.6	$\frac{14}{100}$ × R1 349 = R188,86 ✓A Cost including VAT = R1 349 + R188,86 ✓M = R1 537,86 ✓A Selling price in cedi = R1 537,86 × 0,32253 ✓M ≈ 496 ✓CA **OR** VAT inclusive cost = R1 349 × 1,14 ✓A ✓M = R1 537,86 ✓A Selling price in cedi = 1 537,86 × 0,32253 ✓M ≈ 496 ✓CA **OR** Price in cedi = 1 349 × 0,32253 ✓M = 435,09 ✓A Selling price including VAT in cedi = 435,09329 × 1,14 ✓A ✓M ≈ 496 ✓CA	1A multiply by 14% 1M adding amount 1A amount with VAT 1M multiply by 0,32253 1CA value to nearest cedi **OR** 1A working with 14% 1M multiply by 1,14 1A amount with VAT 1M multiply by 0,32253 1CA value to nearest cedi **OR** 1M multiply by 0,32253 1A cedi price 1A working with 14% 1M multiply by 1,14 1CA value to nearest cedi **Answer only full marks** (5)	L1

Ques	Solution	Explanation	Level
1.1.7	✓A ✓J • Photographer (video) to create memories of the wedding day • Wedding attire – usually special wedding attire are required • Wedding contract to pay for the lawyer's fees for drawing up the contract • Gifts as a token for members who serve • DJ to provide for the music at the reception (accept any valid wedding expense with an explanation)	1A wedding expense 1J explanation (2)	L1 L2
1.2.1	**Employee** works and receives money for the work done ✓D **Employer** is a person or institution that hires workers and pays wages/salary for work done ✓D	1D employee 1D employer (2)	L1
1.2.2	Unemployment Insurance Fund ✓✓D	2D expanding (2)	L1
1.2.3	R15 521 ✓✓A	2A amount (2)	L1
1.2.4	✓A No No amount allocated ✓E	1A correct statement 1E reason (2)	L1
1.2.5	Monthly tax credit = R2 760 ÷ 12 ✓MA = R230 ✓CA	1MA divide correct value by 12 1CA monthly tax credit **Answer only full marks** (2)	L1
1.2.6	**A** = R13 909 + R20 013 + R8 640 ✓M = R42 562 ✓CA	1M correct values 1CA total deductions **Answer only full marks** (2)	L1

Ques	Solution	Explanation	Level
1.2.7	Gross non-retirement funding income = R15 521 + R26 188 + R8 640 ✓M✓A = R50 349 **OR** Adding the amounts with source codes 3605, 3713 and 3810 **OR** Adding the annual payment other allowances and medical aid contributions	1M using the correct values/codes/words 1A addition (2)	L1
1.2.8	Remaining monthly contributions ✓A = R13 909 – R4 975,25 = R8 933,75 ✓CA ✓M Average monthly contribution = R8 933,75 ÷ 7 ✓A = R1 276,25✓CA	1A R13 909 1CA subtracting R4 975,25 1M dividing the remaining amount 1A by 7 1CA pension per month (only if division by 4,5,6,7) **Answer only full marks** (5)	L2
			[38]

QUESTION 2 [31]			
Ques	**Solution**	**Explanation**	**Level**
2.1.1	Total area of a rectangular piece = 30 cm ✓SF × 12 cm = 360 cm² ✓ A Off-cut piece = 360 cm² ✓M – 355,25 cm² = 4,75 cm²✓CA Total off-cut piece for both sides = 4,75 cm² × 2 ✓M = 9,5 cm² ✓CA **OR** Total area of 2 rectangular pieces = 2 ✓M × 30 cm ✓SF × 12 cm = 720 cm² ✓ A Area of both sides of stocking = 355,25 cm² × 2 ✓M = 710,5 cm² Total off-cut piece = 720 cm² ✓M – 710,5 cm² = 9,5 cm² ✓CA **OR** Total off-cut area = (2 ✓M × 30 cm ✓SF × 12 cm) – (355,25 cm² ✓M × 2) = 720 cm² ✓A – 710,5 cm² ✓M = 9,5 cm²✓CA	1SF substitution 1A simplifying 1M subtraction 1CA area of off-cut 1M multiply by 2 1CA area of off-cut **OR** 1SF substitution 1M multiply by 2 1A simplifying 1M multiply by 2 1M subtraction 1CA area of off-cut **OR** 1SF substitution 1M multiply by 2 1M multiply by 2 1A simplifying 1M subtraction 1CA area of off-cut **Answer only full marks** (6)	L3

Ques	Solution	Explanation	Level
2.1.2	Area of a triangle $= \left(\frac{1}{2} \times 3\,\text{cm} \times 5\,\text{cm}\right)$ ✓SF $= 7{,}5\ \text{cm}^2$ ✓A Area of 6 triangles $= 7{,}5\ \text{cm}^2 \times 6$ ✓M $= 45\ \text{cm}^2$ ✓CA **OR** Area of triangles $= \left(\frac{1}{2} \times 3\,\text{cm} \times 5\,\text{cm}\right) \times 6$ ✓SF ✓M $= 7{,}5\ \text{cm}^2 \times 6$ ✓A $= 45\ \text{cm}^2$ ✓CA	1 SF substitution 1A simplifying 1M multiply by 6 1CA total area **OR** 1 SF substitution 1M multiply by 6 1A simplifying 1CA total area **Answer only full marks** **NP -units** (4)	L2
2.1.3	Time taken = 9 × 18 minutes = 162 minutes ✓MA = 2 h 42 min OR 2,7 h ✓C Finishing time = 08:25 + 2h42✓M = 11:07 ✓CA	1MA time in minutes 1C converting time 1M adding 1CA finishing time correct notation **Answer only full marks** **Two marks for 11: *xx*** (4)	L2

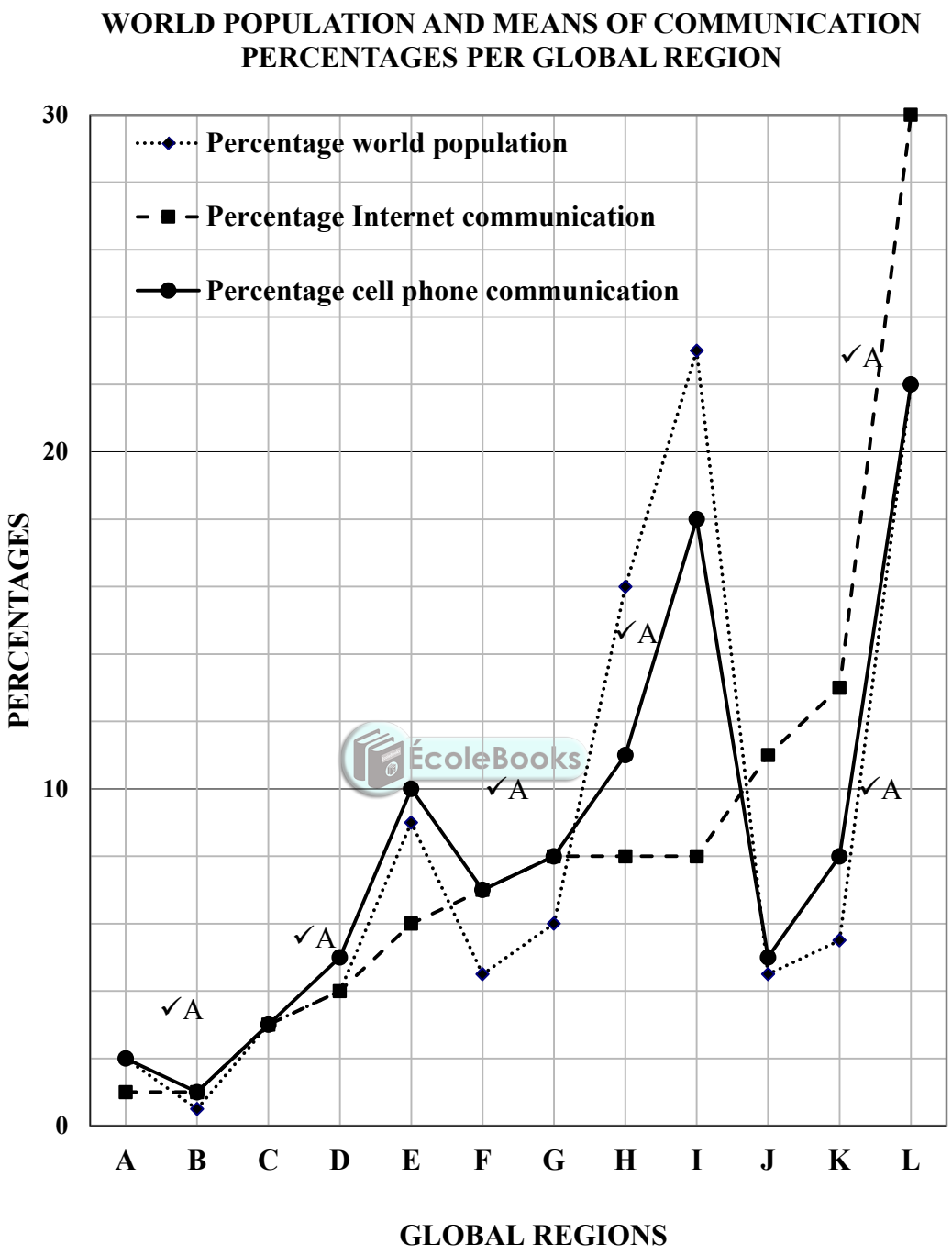
Ques	Solution	Explanation	Level
2.2	✓M ✓A Number of reels along length = 195 mm ÷ 23mm = 8,4782… ≈ 8 ✓R Number of reels along breadth = 120 mm ÷ 23mm = 5,2173… ≈ 5 ✓R Total = 5 × 8 = 40 ✓CA	1M dividing length by diameter 1A diameter 1R number rounded down 1R number rounded down 1CA total number **Full marks for Total = 5 × 8 = 40** **Max of 2 marks if divided by circle's area** **Max of 3 marks if divided by square area** **1 mark for area of rectangle only** (5)	L2
2.3.1	Painted surface area of the lid ✓A ✓SF = 3,142 × 3,6 cm (3,6 + 2 × 0,9) cm ✓C ≈ 61 cm² ✓CA **OR** Painted surface area of the lid ✓A ✓SF = 3,142 × 36 mm (36 + 2 × 9) mm = 6108,05 mm² ✓CA ≈ 61 cm² ✓C	1A radius 1SF substitution 1C conversion 1CA surface area to nearest cm^2 **OR** 1A radius 1SF substitution 1CA surface area to nearest cm^2 1C conversion **Max of 3 marks if inner radius used** **Max of 2 marks if units are mixed** (4)	L2

Ques	Solution	Explanation	Level
2.3.2	Capacity = 75% × 250 mℓ ✓M = 187,5 mℓ ✓CA Volume = 187,5 cm³ Height of the water in the jar $= \frac{\text{Volume of the water (in cm}^3\text{)}}{\pi \times \text{radius}^2}$ $= \frac{187{,}5\,\text{cm}^3}{3{,}142 \times (3{,}25\,\text{cm})^2}$ ✓✓SF $= \frac{187{,}5\,\text{cm}^3}{33{,}187375\,\text{cm}^2}$ = 5,6497… cm ✓CA ≈ 6 cm ✓R **OR** $= \frac{\text{Volume of the water (in cm}^3\text{)}}{\pi \times \text{radius}^2}$ $= \frac{250\,\text{cm}^3}{3{,}142 \times (3{,}25\,\text{cm})^2}$ ✓✓SF $= \frac{250\,\text{cm}^3}{33{,}187375\,\text{cm}^2}$ = 7,532… cm ✓CA Height of the water in the jar = 75% × 7,532...cm ✓M = 5,6497… cm ✓CA ≈ 6 cm ✓R	1M multiply by 75% 1CA capacity in mℓ 2SF substitution 1CA simplification 1R nearest cm **OR** 2SF substitution 1CA simplification 1M multiply by 75% 1CA height of water 1R nearest cm **Answer only full marks** (6)	L2
2.3.3	$2 \times \frac{1}{16} = \frac{2}{16} = \frac{1}{8}$ ✓M ✓A	1M multiply by 2 1A fraction Accept $\frac{2}{16}$ **Answer only full marks** (2)	L1
			[31]

QUESTION 3 [24]			
Ques	**Solution**	**Explanation**	**Level**
3.1.1	Exit 3 ✓✓RD	2RD reading from plan (2)	L1
3.1.2	✓A ✓J No, there is no power outlet available in that seat	1A answer 1J reason (2)	L1
3.1.3	✓RD C 109 ✓RD	1RD correct row 1RD correct seat number (2)	L2
3.1.4	Total seats = seats one side + seats in middle + seats other side = (3+2×6+ 3×7 + 6×8 +5)+(8 +13 + 11×14 + 6) + (3 + 5 + 6 + 3×7 + 5×8) ✓MA ✓MA ✓MA = 89 + 181 + 75 = 345 ✓CA 	3MA adding correct number of seats in each section 1CA total seats **Answer only full marks** **Max 2 marks if answer only 344 or 346** (4)	L1
3.1.5	104 and 110✓✓RD	2RD seat numbers (2)	L1
3.1.6	✓A Number of seats with access to a power supply = 52 Probability = $\frac{52}{345}$ ✓CA ✓CA	1A counting seat 1CA numerator 1CA writing as a denominator from 3.1.4 $\frac{27}{345}$ OR $\frac{9}{115}$ OR $\frac{54}{345}$ OR $\frac{18}{115}$ Max 2 **Answer only full marks** (3)	L2
3.2.1	14 times ✓✓RD [Free State 15 times]	2RD reading from map If 13 one mark (2)	L1

Ques	Solution	Explanation	Level
3.2.2	Distance = 94,7 km – 76 km ✓MA = 18,7 km ✓A	1MA subtracting from 94,7 1A distance **Answer only full marks** (2)	L1
3.2.3	Blue Hills ✓✓RD	2RD reading from map (2)	L1
3.2.4	✓RD ✓RD WP 4, WP 5, WP 6 ✓RD **OR** WP3 to WP4 , WP 4 to WP5 , WP5 to WP6 ✓✓✓RD	3RD reading from map **OR** 3RD reading from map **2 marks for W4 to W6** (3)	L1
			[24]

QUESTION 4 [30]			
Ques	**Solution**	**Explanation**	**Level**
4.1.1	✓✓J The data for the global regions is qualitative. **OR** The global regions cannot be expressed as numerical data ✓✓J	2J explanation **OR** 2J explanation (2)	L1
4.1.2	5% ✓✓RT and 8% ✓RT	3RT Correct modal % **Two marks for first correct answer, one mark for second correct answer** (3)	L1
4.1.3	Median = $\frac{7+8}{2}$% ✓✓M = 7,5% ✓CA	2M for adding correct values and dividing by 2 1CA answer **Answer only full marks** (3)	L2
4.1.4	✓RT Total usage = 3% + 8% + 11% = 22% ✓CA	1RT correct values 1CA total **Answer only full marks** (2)	L1
4.1.5	✓✓M 2% + 9% + 23% + 22% = 56% ✓CA Note: Candidates that add the 4% of the Middle East is also correct.	2M Adding all correct values. 1CA total **Answer only full marks** **Answer only 60% full marks** (3)	L1
4.1.6 (a)	16% ✓✓RG	2RG correct value (2)	L1

Ques	Solution	Explanation	Level
4.1.6 (b)			
	1A mark for every TWO points plotted correctly (Penalty of one mark if points are not joined)	(1 × 6) (6)	L2

Ques	Solution	Explanation	Level
4.1.7	South Asia **OR** I ✓✓RD	2RD reading from graph or table (2)	L1
4.2.1	✓MA Rural Number = 7 095 476 818 × 48%✓A = 3 405 828 873 ✓A **OR** ✓MA Urban number = 7 095 476 818 × 52% = 3 689 647 945 ✓A Rural = 7 095 476 818 – 3 689 647 945 = 3 405 828 873 ✓A	1MA multiplying with % 1A 48 % 1A persons **OR** 1MA multiplying with % 1A urban number 1A persons **Answer only full marks** (3)	L1
4.2.2	Social networking users $= \frac{1\,856\,680\,860}{7\,095\,476\,818} \times 100\%$ ✓SF = 26,167…% ✓CA	1SF dividing the correct value by 7 095 476 818 1CA answer in % **Answer only full marks** **NP - rounding** (2)	L1
4.2.3	6 572 950 124 ✓✓A	2A for correct digits (2)	L1
			[30]

QUESTION 5[27]			
Ques	**Solution**	**Explanation**	**Level**
5.1.1	✓MA M = 2 925 + 1 970 + 1 963 + 1 568 + 1 700 + 1 817 + 1 342 + 2 118 = 15 403 ✓CA	1MA adding all values 1CA value of M **Answer only full marks** **Full marks for 15 404** **Penalty of one if given as 1 000's** (2)	**F** L1
5.1.2	Value for both N ✓M = 12 898 – (2 394 + 1 302 + 1 405 + 1 490 + 1 311 + R1 756) = 3 240 ✓CA Each received = $\frac{\text{R } 3\,240}{2}$ ✓M = R1 620 ✓CA **OR** Sibiya: ✓A ✓M ✓M N = R1 970 – R349 – R1 = R1 620 ✓CA **OR** Magome: ✓A ✓M ✓M N = R1 963 – R342 – R1 = R1 620 ✓CA	1M subtracting from total 1CA cost for both 1M dividing by 2 1CA amount **OR** 1A for R1 970 1M for subtracting R349 1M for subtracting R1 1CA total Sibiya **OR** 1A for R1 963 1M for subtracting R342 1M for subtracting R1 1CA total Magome **Answer only full marks** **Penalty of one if given as 1 000's** (4)	**F** L2
5.1.3	✓M ✓CA Range = R2 925 000 – R 1 342 000 = R1 583 000	1M concept of range 1CA range **Answer only full marks** **Penalty of one if not given as 1 000's** (2)	**D** L2
5.1.4	Songelwa : Magome = 30 : 342 = 5 :57 ✓A = 1 : 11,4 ✓CA	1A correct values 1CA form **NP - rounding** (2)	**F** L1

Ques	Solution	Explanation	Level
5.1.5	Sibiya: Increase = R1 970 000 – R1 872 000 ✓M = R98 000 Phillips: Increase = R1 700 000 – R1 625 000 = R75 000 ✓M Mabilane: Increase = R2 118 000 – R2 032 000 = R86 000 ✓M Magome: Increase = R1 963 000 – R1 861 000 = R102 000 ✓A Magome received the greatest increase ✓✓CA	2M subtracting **any two** of Sibiya, Phillips, Mabilane 1A amount for Magome 2CA correct person **Full marks if only Magome was calculated correctly with conclusion** (5)	**F** L2
5.1.6	Mabunda MD ✓✓A	2A the correct person **Penalty one mark if an extra name is added** (2)	**D** L1
5.2.1	100% ✓✓A	2A correct % Accept 100 (2)	**P** L1
5.2.2	$P = \frac{14}{18}$ ✓A ✓A $= \frac{7}{9}$ ✓CA **OR** $P = 1 - \frac{4}{18}$ ✓M ✓A $= \frac{7}{9}$ ✓CA	1A numerator 1A denominator 1CA simplification **OR** 1M subtracting from 1 1A denominator 1CA simplification **Answer only full marks** (3)	**P** L2

Ques	Solution	Explanation	Level
5.3	✓A Growth 1 st year = 4 705 306 × 5% ≈ 235 265 ✓M Total after the 1st year = 4 705 306 + 235 265 = 4 940 571 ✓CA Growth 2nd year = 4 940 571 × 5,9% = 291 493 OR 291 494 ✓CA Total after 2nd year = 4 940 571 + 291 493 = 5 232 064 OR 5 232 065 ✓CA **OR** 100% + 5% = 105% ✓A Total after 1st year = 4 705 306 × 105%✓M = 4 940 571,3 ✓CA 100% + 5,9% = 105,9% Total after 2nd year = 4 940 571,3 × 105,9% ✓CA = 5 232 065,007 ≈ 5 232 065 ✓CA **OR** Total after 2nd year ✓M ✓A ✓M ✓A = 4 705 306 × 105% × 105,9% = 5 232 065,007 ≈ 5 232 065 ✓CA	1A calculating 5% 1M adding 1CA first year total 1CA calculating 5,9% of total 1CA 2nd year total **OR** 1A increasing with 5% 1M percentage calculation 1CA first year total 1CA increasing with 5,9% 1CA 2nd year total, rounded **OR** 1M percentage calculation 1A increasing by 105% 1M percentage calculation 1A increasing by 105,9% 1CA 2nd year total, rounded **Answer only full marks** (5)	**D** L3
			[27]

TOTAL: 150