basic education

Department:
Basic Education
REPUBLIC OF SOUTH AFRICA

NATIONAL SENIOR CERTIFICATE

GRADE 12

MATHEMATICAL LITERACY P1

FEBRUARY/MARCH 2015

MEMORANDUM

MARKS: 150

SYMBOL	EXPLANATION
M	Method
MA	Method with accuracy
CA	Consistent accuracy
A	Accuracy
C	Conversion
D	Define
E	Explain
S	Simplification
RT/RG/RD	Reading from table/Reading from graph/Reading from diagram
F	Choosing the correct formula
SF	Substitution in a formula
O	Opinion
P	Penalty, e.g. for no units, incorrect rounding off, etc.
R	Reason
RO	Rounding off
J	Justification

KEY TO TOPIC SYMBOLS:
F = Finance; M = Measurement; MP = Maps, Plans and other representations
DH = Data Handling; P = Probability

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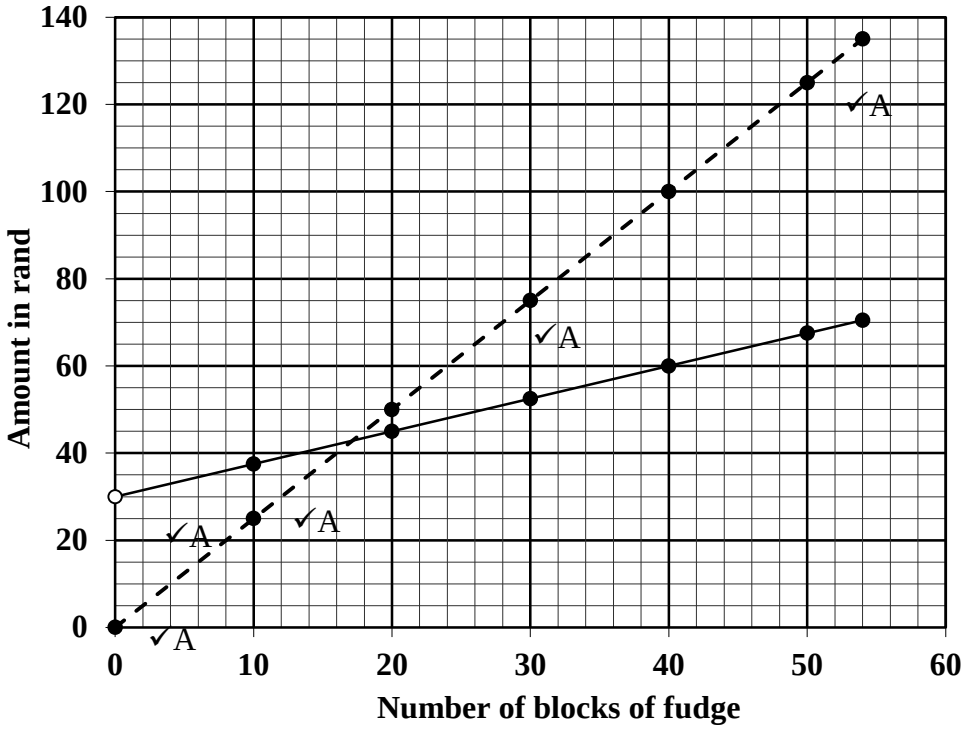
QUESTION 1 [35]			
Ques	**Solution**	**Explanation**	**Topic**
1.1.1	This is the 8th month of the new financial year for which she receives a salary advice ✓✓E	2E explanation (2)	**F** L1
1.1.2	✓✓D Gross Income is the Income Earned **before any deductions** are made.	2D definition (2)	**F** L1
1.1.3	Pecentage = $\frac{R500}{R7952} \times 100\%$ ✓M ≈ 6,2877…% ✓A **Also accept 6,29% OR 6,3%**	1M multiply with 100% 1A %UIF contribution (2)	**F** L1
1.1.4	✓M $\frac{7,5}{100} \times R7\,952 = R596,40$ ✓M/A **OR** ✓M ✓M $\frac{596,40}{7952} \times 100\% = 7,5\%$	1M calculating 75% 1M/A calculating accurate value **OR** 1M correct fraction 1M multiply with 100% (2)	**F** L1
1.1.5	R5 981,67 ✓✓RD	1RD total pension (2)	**F** L1
1.1.6	✓M Hourly rate = R7 452 ÷ 172,5 = R43,20 ✓A	1M Division by 172,5 1AHourly rate (2)	**F** L1
1.1.7	✓M Difference in rate : R120,45 – R75,80 = R44,65 ✓A	1M subtraction 1A difference in rate (2)	**F** L1

Ques	Solution	Explanation	Topic
1.2.1	Total income (in rand) ✓A ✓A = 2,50 × number of blocks of fudge **OR** ✓A ✓A Total income (in rand) = 2,50 × x (x = number of blocks of fudge)	1A R2,50 1A No of blocks of fudge 1A × R2,50 1A variable with explanation (2)	**F** L2
1.2.2	✓M **B** = R30 ÷ R2,50 = 12✓A	1M multiplying by R2,50 1A simplify AO (2)	**F** L2
1.2.3 (a)	✓M R24,99 ÷ 2.5 = R9,996 ≈R10,00 ✓M **OR** ✓M Shanté took the cost price of the 2,5 kg sugar and ✓M divided it by the quantity to determine the price of 1 kg of sugar.	1M dividing by 2,5 1A cost **OR** 1M Cost Price 1M dividing by 2,5 (2)	**F** L1
1.2.3 (b)	✓M Number of batches = 1 000 ÷ 250 = 4✓A	1M division by 250 1A no of batches AO (2)	**M** L1
1.2.3 (c)	100 mℓ ÷ 5 = 20 mℓ ✓M **C**= R0,95 × 20 = R11,80 ✓CA **OR** ✓M **C** = $\frac{100}{5}$ × R0,59 = R11,80 ✓CA **OR** 100 : 5 C : 0,59 ✓M C = R100 × 0,59 ÷ 5 = R11,80 ✓CA	1M dividing by 5 1CA cost of item **OR** 1M correct fraction 1CA cost of item **OR** 1M ratio 1CA simplify AO (2)	**F** L1

Ques	Solution	Explanation	Topic
1.2.3 (d)	Cost of one block of fudge = R40,50 ÷ 54 ✓M = R0,75 ✓A	1M division 1A cost price AO (2)	**F** L1
1.2.4 (a)	R30 ✓✓RG	2RG Reading from graph (2)	**F** L1
1.2.4 (b)	**Income and expenses for making one batch of fudge**  1A point (0;0) 3A plotting of any other 3 correct points 1A joining the points (5)		**F** L2
1.2.5	Break-even point – it is the point where the income and and expenses are exactly the same. ✓✓E **OR** No profit or loss is made ✓✓E **Explanation only (without using the word break-even point)** **Full marks**	2E explanation of point on intersection (2)	**F** L1
			[35]

QUESTION 2 [26]			
Ques	**Solution**	**Explanation**	**Topic**
2.1.1	Radius = 8,5 cm ÷ 2 = 4,25 cm ✓M Volume of a cylinder = $3,142 \times 4,25^2 \times 10,5\ cm^3$ ✓SF $= 595,899\ cm^3$ ✓CA $\approx 595,9\ cm^3$ ✓A	1M radius 1SF substitution 1CA volume 1A unit in cm^3 (4)	**M** L2
2.1.2	✓ M Volume of empty space = $595,9 - 500\ cm^3$ $= 95,9\ cm^3$ ✓ CA	1M subtracting 500 1CA volume (2)	**M** L3
2.1.3	Height of motor oil in can = $\frac{500\ cm^3}{3,142 \times 4,25\,(cm)^2}$ ✓SF $= \frac{500\,cm^3}{56,752375}$ ✓A $\approx 8,8\ cm$ ✓CA	1SF substitution 1A simplification 1CA height (3)	**M** L2

Ques	Solution	Explanation	Topic
2.2.1	Area of a triangle $= \frac{1}{2} \times 980 \times 1\,200$ mm² ✓ SF $= 588\,000$ mm² ✓ CA	1SF substitution 1CA area of triangle (2)	**M** L2
2.2.2	Area of trapezium side $= (2 \times 588\,000) + 2\,088\,000$ mm² ✓ SF $= 1\,176\,000 + 2\,088\,000$ mm² ✓ S $= 3\,264\,000$ mm² ✓ A Total area in m² $= 3\,264\,000 \div 1\,000\,000$ ✓ C $= 3{,}264$ ✓ CA	1SF substitution 1S simplification 1A area 1C conversion 1CA total area (5)	**M** L2
2.2.3	Area of slanted side $= \frac{11{,}676 - 2 \times 3{,}264}{2}$ m² ✓ M ✓ M $= 2{,}574$ m² ✓ CA	1M subtraction 1M division by 2 1CA area (3)	**M** L3
2.3.1	Total area $= 11{,}676 \times 25$ m² ✓ M $= 291{,}9$ m² ✓ CA	1M multiply by 25 1CA total area (2)	**M** L1
2.3.2	Total number of coats $= 25 \times 2$ ✓ M $= 50$ ✓ A	1M multiply 1A coats of paint (2)	**M** L1
2.3.3	Minimum number of tins $= 585 \div 25$ tins ✓ M $= 23{,}352$ tins ✓ CA ≈ 24 tins ✓ R	1M division by 25 1CA simplification 1R rounding up (3)	**M** L1
			[26]

QUESTION 3 [21]			
Ques	**Solution**	**Explanation**	**Topic**
3.1	✓A ✓A Perdeberg and Petrusburg	1A Perdeberg 1A Petrusburg (2)	**MP** L1
3.2	South East ✓✓A	2A Directions (2)	**MP** L1
3.3	Time = $\frac{165\,km}{97{,}3\,km/h}$ ✓SF = 1,695 hours ✓A But 0, 695 hours × 60 minutes ✓C = 41,7 minutes ✓A Time ≈ 1 hour 42 minutes ✓CA	1SF substitution 1A simplification 1C multiply × 60 1A minutes 1CA time (5)	**MP** L2
3.4	✓RD ✓RD Provincial road number 31 and 64	1RD Road 31 1RD Road 64 (2)	**MP** L1
3.5	Phillippolis ✓✓✓A	3A finding the correct town (3)	**MP** L2
3.6	✓RD ✓M ✓M Distance = 145 – (39 + 19 + 33 + 12) km = 42 km ✓A	1M Identify 145 km 1M subtracting 1M adding distances 1A distance AO (4)	**MP** L2
3.7	5,4 cm on map = 2,7 km in reality 2,7 km × 100 000 = 270 000 cm ✓C 5,4 : 270 000 ✓M 1 : 50 000 ✓S	1C convert km to cm 1M write as a ratio 1S simplify (3)	**MP** L3
			[21]

QUESTION 4 [36]			
Ques	**Solution**	**Explanation**	**Topic**
4.1.1	✓M ✓ A 300 ; 256; 249; 182; 173; 169; 163; 155; 145; 144; 141	1 M descending order 1A arrange all (2)	**DH** L1
4.1.2	Jacques Kallis ✓✓ A	2A name of player (2)	**DH** L1
4.1.3	Mean = ✓M $\frac{300+256+249+182+173+169+163+155+145+144+141}{11}$ ✓ M $= \frac{2077}{11}$ ✓ CA $\approx$ 188,8181 ***Also accept 189 runs***	1M adding of values 1M division by 11 1CA mean (3)	**DH** L2
4.1.4	Strike rate = $\frac{145}{121} \times 100$ ✓SF = 119,83✓ A	1SF substitution 1A strike rate rounded in context (2)	**DH** L2
4.1.5	$\frac{5}{11}$ ✓ A ✓ A	1A numerator 1A denominator (2)	**P** L2
4.2.1	C ✓✓ A	2A (2)	**DH** L1
4.2.2	E ✓✓ A	2A (2)	**DH** L1
4.2.3	A ✓✓ A	2A (2)	**DH** L1

Ques	Solution	Explanation	Topic
4.3.1	✓M 1 100 000 – 1 098 959 = 1 041 ✓A ✓CA Therefore 2007 is the closest	1M number format 1A difference 1CA identify year AO (3)	**DH** L1
4.3.2	2005 ✓✓ RT	2RT reading from table (2)	**DH** L1
4.3.3 (a)	$P = \frac{33,5}{100} \times 572\,600$ ✓M $\approx$ 191 821 ✓A	1M % of 572 600 1A value P AO (2)	**DH** L1
4.3.3 (b)	$Q = \frac{178373 \checkmark A}{559631 \checkmark A} \times 100$ $\approx$ 31,9 ✓A ✓RT ✓M	1A numerator 1A denominator 1A percentage AO (3)	**DH** L1
4.3.4	559 631 – 178 373 = 381 258✓CA	1RT correct values 1M subtracting 1CA no of deaths (3)	**DH** L1
4.3.5	2004✓RT and 2006 ✓RT	1RT 2004 1RT 2006 (2)	**DH** L1
4.3.6	2003 ✓RT and 2010 ✓RT	1RT 2003 1RT 2010 (2)	**DH** L1
4.3.7	✓RT 579 371 : 1 109 926 ✓M	1RT reading correct values 1A correct ratio (2)	**DH** L1
			[36]

QUESTION 5 [32]			
Ques	**Solution**	**Explanation**	**Topic**
5.1.1	✓M Amount = R9 247,95 – R4 000 = R5 247,95 ✓A	1M subtracting 1A amount (2)	**F** L1
5.1.2 (a)	$\frac{R350}{R10\,000}$ ✓A ✓M x 100 % = 3,5% ✓A	1A correct fraction 1M multiply by 100% 1A percentage (3)	**F** L1
5.1.2 (b)	✓M Total monthly amount = R764,84 + R75,00 + R20,50 = R860,34 ✓A	1M adding 1A simplify (2)	**F** L1
5.1.2 (c)	✓RT ✓M Total amount of loan = R764,84 × 36 months = R27 534,24 ✓CA ✓M Interest = R27 534,24 – R10 000 = R17 534,24 ✓CA	1RT reading values 1M multiply 1CA simplify 1M subtract 1CA interest (4)	**F** L2
5.2.1	✓RD ✓M Amount = R149 995,00 – R25 000 = R124 995,00 ✓CA	1RT reading values 1M subtract 1CA amount (3)	**F** L1
5.2.2	Total monthly repayments = R4 068,06 × 36 ✓M ✓CA = R146 450,16	1M multiplying 1CA correct amounts (2)	**F** L1
5.2.3	✓RD ✓M Difference = R5 819,44 – R4068,06 = R1 751,38 ✓A	1RD reading values 1M subtracting 1A difference (3)	**F** L1

Ques	Solution	Explanation	Topic
5.3.1	✓M Width = 5 inch ÷ 0,394 cm = 12,69 cm ✓A Length = 7 inch ÷ 0,394 cm = 17,77 cm ✓A	1M dividing by 0,394 1A simplification 1 A simplification (3)	**M** L2
5.3.2	✓M Length = 17,77 – 15 cm = 2,77 cm ✓CA Width = 12,69 – 10 cm = 2,69 cm ✓CA	1M subtracting 1CA length 1 CA width (3)	**M** L1
5.4.1	30 – 39 years ✓✓A	2Adetermining the modal age group (2)	**D** L2
5.4.2 (a)	✓RT ✓A Age group 80+	1RT reading table 1A age group (2)	**P** L2
5.4.2 (b)	Probability = $\frac{2\,953\,490}{25\,362\,194}$ ✓RT ✓RT ≈ 0,12 ✓CA ***(Also accept 0,1 or 0,116)***	1RT reading numerator 1RT reading denominator 1CA decimal fraction (3)	**P** L2
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