basic education

Department:
Basic Education
REPUBLIC OF SOUTH AFRICA

NATIONAL SENIOR CERTIFICATE

GRADE 12

MATHEMATICAL LITERACY P1

EXEMPLAR 2014

MEMORANDUM

MARKS: 150

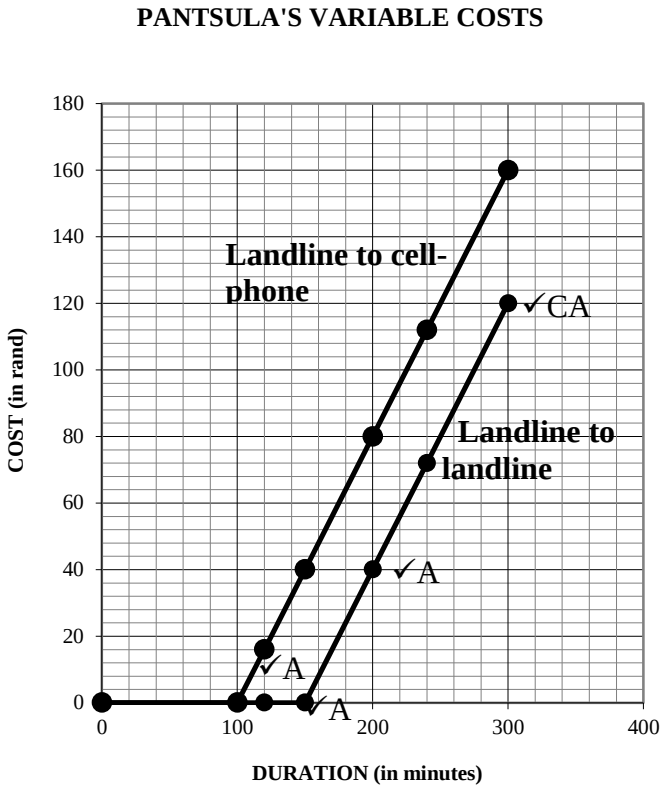
Symbol	Explanation
M	Method
MA	Method with Accuracy
CA	Consistent Accuracy
A	Accuracy
C	Conversion
S	Simplification
RT /RG	Reading from a table/Reading from a graph
F	Choosing the correct formula
SF	Substitution in a formula
O	Opinion
P	Penalty, e.g. for no units, incorrect rounding off etc.
R	Rounding Off/Reason

This memorandum consists of 11 pages.

KEY TO TOPIC SYMBOL:

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

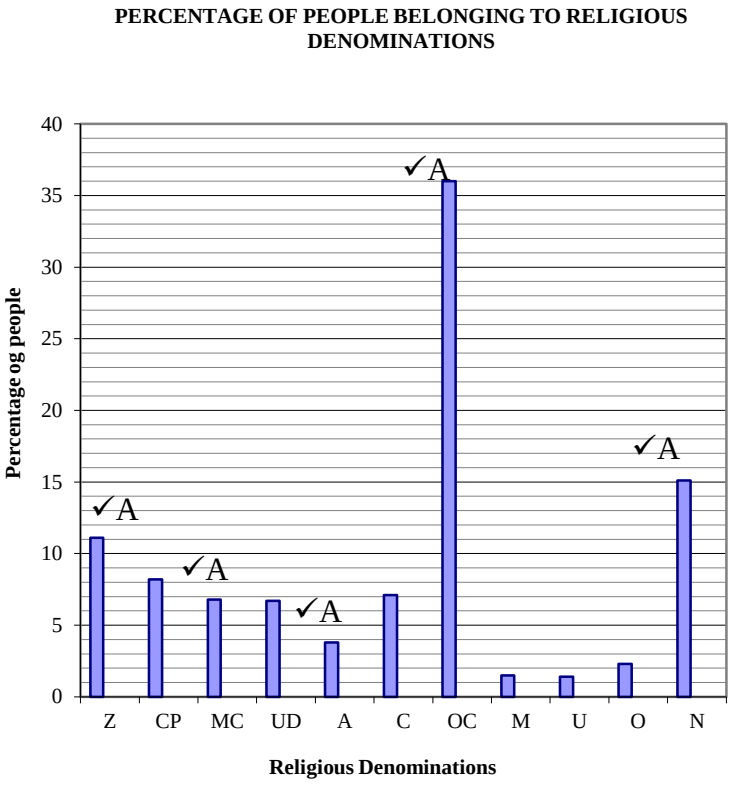
QUESTION 1 [36]			
Ques	**Solution**	**Explanation**	**Topic**
1.1.1	R28 955,47 ✓A	1A answer (1)	**F** L1
1.1.2	Amount (in rand) = 2 39,10 + 3 100,00 + 110,00 ✓M + 500,00 = 5 949,10 ✓A	1M adding correct amounts 1A answer (2)	**F** L1
1.1.3	A = R31 194,57 – R850,00 ✓M = R30 344,57 ✓A B = R33 798,11 – R33 540,64 ✓M = R257,47 ✓A	1M subtracting correct amounts 1A value of A 1M subtracting correct amounts 1A value of B (4)	**F** L1
1.1.4	Percentage = $\frac{\text{R31,74}}{\text{R2 239,10}} \times 100\%$ ✓M ✓M = 1,42% ✓A	1M using correct values 1M calculating percentage 1A answer (3)	**F** L1
1.1.5	2 weeks ✓✓A	2A answer (2)	**M** L1

Ques	Solution	Explanation	Topic
1.2.1	Cost = 80c + $\frac{30}{60}$ ✓M × 80c = 80c + 40c = 120c ✓S = R1,20 ✓CA OR Cost = 1,5 × 80c ✓M = 120c ✓S = R1,20 ✓CA	1M writing 90 seconds in minutes 1S simplification 1CA converting (3)	**F** **M** L1 (2) L2 (1)
1.2.2(a)	P = 50 × 80c ✓M/A = 4 000c = R40,00 ✓CA OR P = 50 × R0,8 ✓M/A = R40,00 ✓CA Q = 90 × 80c ✓M/A = 7 200c = R72,00 ✓CA OR Q = 90 × R0,8 ✓M/A = R72,00 ✓CA R = 150 + $\frac{120}{0,8}$ ✓M/A = 150 + 150 ✓S = 300 ✓CA OR R = 100 + $\frac{160}{0,8}$ ✓M/A = 100 + 200 ✓S = 300 ✓CA	1M/A multiplying chargeable minutes by 80c/R0,8 1CA value of P 1M/A multiplying chargeable minutes by 80c/R0,8 1CA value of Q 1M/A adding free minutes and minutes charged 1S simplifying 1CA value of R (7)	**F** L1 (4) L2 (3)
1.2.2(b)		1A horizontal line from 100 to 150 1A point (150; 0) 1A point (200; 40) 1CA point (300; 120) (4)	**F** L1 (2) L2 (2)

Ques	Solution	Explanation	Topic
1.2.2(c)	✓SF ✓A ✓A Total monthly cost = R299,00 + (50 + 40) × R0,80 = R299,00 + R72,00✓S = R371,00 ✓CA	1SF fixed monthly cost 1A landline to landline minutes 1A landline to cellphone 1S simplification 1CA total cost (5)	**F** L1 (1) L2 (2) L3 (1)
1.3.1	✓M Amount = R25 000,00 +R1 140,00 = R26 140,00 ✓A	1M adding 1A answer (2)	**F** L1 (2)
1.3.2	✓SF ✓A I = R26 140,00 × 0,246 × 4 = R25 721,76 ✓CA	1SF substitution 1A value of r 1CA answer (3)	**F** L1 (2) L2 (1)

QUESTION 2 [26]			
Ques	**Solution**	**Explanation**	**Topic**
2.1.1	✓SF °C = $(356^{o} - 32^{o}) \div 1,8$ = 180^{o} ✓A	1SF substitution 1A answer (2)	**M** L1 (2)
2.1.2	250 g = 2 × 125 g ✓A Cost = 2 × R8,99 = R17,98✓CA	1A multiplying by 2 1CA answer (2)	**F** L1 (2)
2.1.3	Ratio = 25 g : 75 g ✓M = 1 :3 ✓A	1M using correct values 1A answer (2)	**M** L1 (2)
2.1.4	Reading = 116 g + 140 g ✓M = 256 g ✓A	1M adding 1A answer (2)	**M** L1 (2)
2.1.5	Time = 14:40 + 0:35 ✓M = 14:75 = 15:15 Time = 15:15 ✓A	1M adding 1A correct time (2)	**M** L1 (2)
2.1.6	140 g = $\frac{140}{1000}$ × 2,2 lb. ✓M = 0,308 lb. ✓A	1M multiplying 1A answer (2)	**M** L1 (1) L2 (1)
2.1.7	15 espresso cups = 75 g mixed frozen berries 20 espresso cups = $\frac{20 \times 75}{15}$ g mixed frozen berries ✓M = 100 g mixed frozen berries ✓A **OR** 20 espresso cups = $15 \times 1\frac{1}{3}$ = 75 g × $1\frac{1}{3}$ ✓M = 100 g ✓A	1M using ratio 1A answer **OR** 1M multiplying 1A answer (2)	**M** L1 (1) L2 (1)

Ques	Solution	Explanation	Topic
2.2.1	$P = 3{,}142 \times 2{,}2\ m$ ✓SF $= 6{,}9124\ m$ ✓S $\approx 6{,}91\ m$ ✓CA	1SF substitution 1S simplification 1R rounding (3)	**M** L1 (3)
2.2.2	✓SF ✓SF Surface Area $= 3{,}142 \times (2{,}2\ m)^2 + 6{,}91\ m \times 6{,}5\ m$ $= 15{,}20728\ m^2 + 44{,}915\ m^2$ ✓S $= 60{,}12\ m^2$ ✓CA	2SF substitution 1S simplification 1CA answer (4)	**M** L1 (2) L2 (2)
2.2.3	Perimeter $= 2 \times (6{,}5\ m + 4{,}4\ m)$ ✓SF $= 21{,}8\ m$ ✓A	1SF substitution 1A answer (2)	**M** L1 (2)
2.2.4	✓SF Volume $= 6{,}5\ m \times 4{,}4\ m \times 0{,}05\ m$ $= 1{,}43\ m^3$ ✓S ✓A	1SF substitution 1S simplification 1A correct unit (3)	**M** L1 (3)

QUESTION 3 [29]			
Ques	**Solution**	**Explanation**	**Topic**
3.1.1	Other Christian churches ✓✓A	2A answer (2)	**DH** L1 (2)
3.1.2	Total = 11,1 + 8,2 + 6,8 + 6,7 + 3,8 + 7,1 + 36 ✓M = 79,7 ✓A	1M adding correct values 1A answer (2)	**DH** L1 (2)
3.1.3	Range = 36 – 1,4✓M = 34,6 ✓A	1M subtracting correct values 1A answer (2)	**DH** L2 (2)
3.1.4	U; M; O; A; UD; MC; C; CP; Z; N; OC ✓✓A	2A answer (2)	**DH** L1 (2)
3.1.5		1A point Z 1A point MC 1A point A 1A point OC 1A point N (5)	**DH** L1 (5)
3.1.6	N = 15,1% of 48 810 427 ✓M $= \frac{15,1}{100} \times 48\ 810\ 427$ = 7 370 374,477 ✓A ≈ 7 370 374	1M using correct percentage 1A answer (2)	**DH** L1 (2)
3.1.7	P(Catholic) = 7,1% ✓✓A = 0,071	2A correct probability (2)	**L** L2 (2)

Ques	Solution	Explanation	Topic
3.2.1	55 years and older ✓✓A	2A answer (2)	**DH** L2 (2)
3.2.2	Percentage = 100 – 21 – 28,4 – 5,9 – 6,8 ✓M = 37,9 ✓A	1M subtracting from 100% 1A answer (2)	**DH** L2 (2)
3.2.3	25 – 54 years ✓✓A	2A answer (2)	**DH** L1 (2)
3.2.4	Median = 50% Median falls in the 25–54 years age group ✓✓A	2A answer (2)	**DH** L2 (2)
3.2.5	$\frac{48810427 - \text{Pop}\,2011}{\text{Pop}\,2011} \times 100\% = -0{,}412\%$ (✓SF, ✓SF) $48\,810\,427 - \text{Pop}\,2011 = -0{,}00412 \times \text{Pop}\,2011$ $48\,810\,427 = 0{,}99588 \times \text{Pop}\,2011$ ✓S $\frac{48810427}{0{,}99588} = \text{Pop}\,2011$ $49\,012\,357{,}91 = \text{Pop}\,2011$ $\therefore$ Population in 2011 $\approx$ 49 012 358 ✓CA	2SF substitution 1S simplification 1CA answer (4)	**DH** L3 (4)

QUESTION 4 [21]			
Ques	**Solution**	**Explanation**	**Topic**
4.1.1	9 ✓✓A	2A answer (2)	**P** L1 (2)
4.1.2	✓A ✓A ✓A Lounge and Bedroom 3	1A understanding direction 1A Lounge 1A Bedroom 3 (3)	**P** L1 (2) L2 (1)
4.1.3	✓A ✓A 1 unit of measure on the plan represents 110 units on the ground	1A unit of measure 1A representation on the ground (2)	**P** L1 (1) L2 (1)
4.1.4	7,6 cm ✓✓A	2A answer (2)	**P** L1 (1) L2 (1)
4.1.5	Actual length = 8,6 cm × 110 cm ✓M = 946 cm ✓S = 9,46 cm ✓C	1M using the scale 1S simplification 1C conversion (3)	**P** L1 (1) L2 (2)
4.2.1	De Beers ✓✓A	2A answer (2)	**P** L1 (2)
4.2.2	From Chapel Street: • Turn left into York ✓A • Turn right into Jones ✓A • After passing Old Main, Jones becomes Transvaal • Turn right into Cemetery ✓A • Turn left into Evans ✓A • Enter the cemetery on the right ✓A **OR** From Chapel Street: • Proceed with Chapel until Chapel becomes Crossman ✓A • Turn left into Carr and proceed until the junction with Goodwin ✓A • At the junction turn left into Cemetery ✓A • Turn right into Evans ✓A • Enter the cemetry on the right ✓A Any other feasible set of directions	5A as per directions 5A as per directions (5)	**P** L2 (3) L3 (2)
4.2.3	South Circular/New Main ✓✓A	2A answer (2)	**P** L2 (2)

QUESTION 5 [38]			
Ques	**Solution**	**Explanation**	**Topic**
5.1.1	Pension = 7,5% of R28 754,50 ✓M $= \frac{7,5}{100} \times$ R28 754,50 = R2 156,5875 ✓S ≈R2 156,59 ✓A	1M finding percentage 1S simplification 1A answer correct to the nearest cent (3)	**F** L1 (3)
5.1.2	Annual medical aid = 12 × R1 434,70 ✓M = R17 216,40 ✓A	1M multiplying by 12 1A answer (2)	**F** L1 (2)
5.1.3	Calculate annual salary ✓A Add 13th cheque to the annual salary ✓A Subtract annual medical aid contribution and ✓A Subtract pension contribution ✓A Balance gives taxable income ✓A	1A annual salary 1A 13th cheque 1A medical aid 1A pension 1A balance (5)	**F** L2 (5)
5.1.4(a)	R21 200 ✓✓A	2A answer (2)	**F** L1 (2)
5.1.4(b)	After 2 years (Accept: After 3 years) ✓✓✓A	3A answer (3)	**F** L2 (3)
5.1.5(a)	C ✓✓A	2A answer (2)	**F** L1 (2)
5.1.5(b)	R11 440 ✓✓A	2A answer (2)	**F** L2 (2)
5.2.1(a)	Length = 5 cm ✓✓A	2A answer (2)	**M** L1 (2)
5.2.1(b)	Scale = 1 : 7,75 ✓✓A	2A answer (2)	**M** L2 (2)
5.2.2(a)	31 ✓A	1A answer (1)	**DH** L1 (1)
5.2.2(b)	R12,00 ✓A	1A answer (1)	**DH** L1 (1)

Ques	Solution	Explanation	Topic
5.2.2(c)	Mean = $\frac{0+6+6+9+9+10+10+10+11+11+11+11+12+20+25+30}{16}$ ✓M ✓A = R$\frac{191}{16}$ ✓S = R11,9375 ✓CA ≈ R11,94 ✓A	1M adding values 1A number of girls 1S simplifying 1CA answer (4)	**DH** L1 (2) L2 (2)
5.2.2(d)	Median = $\frac{10+11}{2}$ ✓M = R$\frac{21}{2}$ ✓CA = R10,5	1A identifying central values 1M finding mean 1CA answer (3)	**DH** L1 (1) L1 (2)
5.2.2(e)	Difference = R30 – R25 ✓M = R5 ✓A	1M subtracting 1A answer (2)	**DH** L1 (2)
5.2.2(f)	P(R10, boy) = $\frac{2}{15}$ ✓A ✓A	1A numerator 1A denominator (2)	**L** L2 (2)
5.2.2(g)	P(R30) = $\frac{1}{31}$ ✓A ✓A	1A numerator 1A denominator (2)	**L** L2 (2)

TOTAL: 150