basic education

Department:
Basic Education
REPUBLIC OF SOUTH AFRICA

NATIONAL SENIOR CERTIFICATE

GRADE 12

MATHEMATICAL LITERACY P1

FEBRUARY/MARCH 2013

MEMORANDUM

MARKS: 150

Symbol	Explanation
M	Method
M/A	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 13 pages.

QUESTION 1 [28 MARKS]			
Ques	**Solution**	**Explanation**	**AS**
1.1.1	$\frac{3}{4}\times(1{,}764 + 2{,}346) - \sqrt{1{,}44 - 0{,}95}$ $= \frac{3}{4}\times 4{,}11 - 0{,}7$ ✓S $= 3{,}0825 - 0{,}7$ $= 2{,}3825$ or $2{,}38$ ✓CA	1S simplification 1CA simplification **Answer only – FULL MARKS** (2)	12.1.1 L1
1.1.2	$6{,}25\% = \frac{6{,}25}{100}$ ✓M $= \frac{625}{10\,000}$ $= \frac{1}{16}$ ✓A	1M writing percentage as a fraction 1A simplification **Answer only – FULL MARKS** (2)	12.1.1 L1
1.1.3	1 260 seconds $= \frac{1260}{60\times 60}$ hours ✓M $= \frac{7}{20}$ hours **OR** 0,35 hours ✓A	1M dividing by 3 600 1A simplification **Answer only – FULL MARKS** (2)	12.3.2 L1 (1) L2 (1)
1.1.4	Price per gram $= \frac{R9{,}96}{200}$ ✓M $= R0{,}0498$ $\approx R0{,}05$ **OR** 5c ✓A	1M dividing by 200 g 1A simplification **Answer only – FULL MARKS** (2)	12.1.3 L1
1.1.5	Breadth $= \frac{150}{2}$ m $- 50$ m ✓SF $= 25$ m ✓CA	1SF substitution 1CA simplification **Answer only – FULL MARKS** (2)	12.3.1 L1

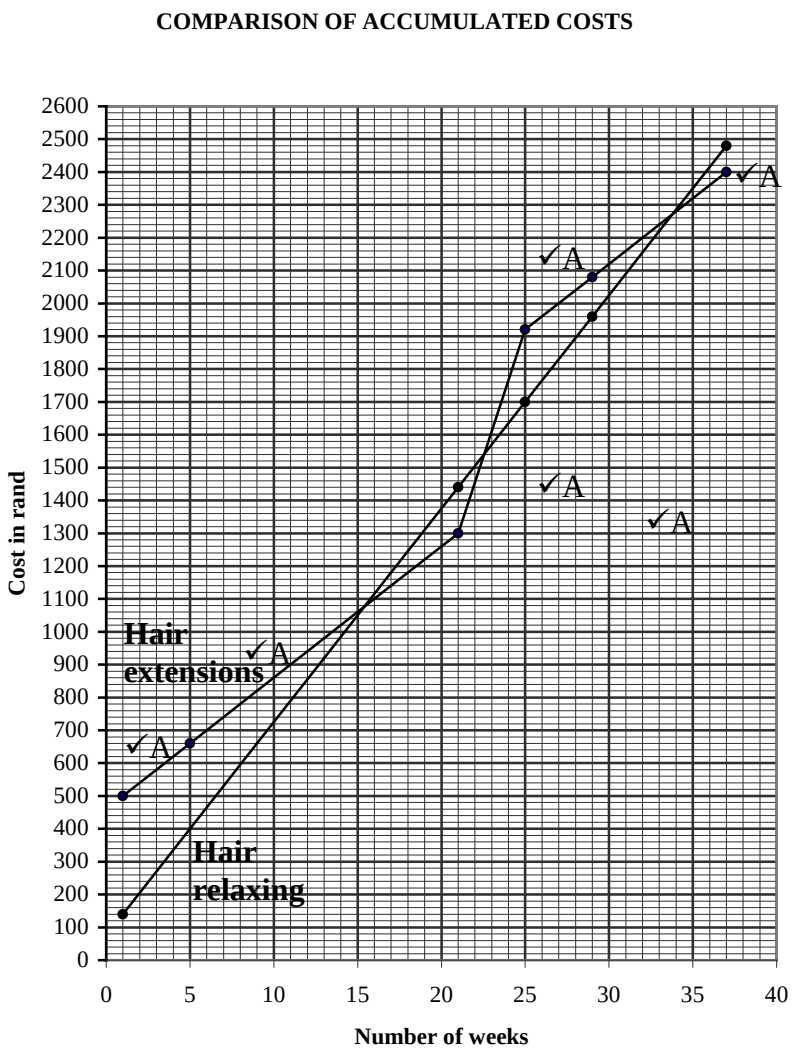
Ques	Solution	Explanation	AS
1.2.1	$\frac{3}{4}$ cup = $\frac{3}{4} \times 250$ mℓ ✓M = 187,5 mℓ ✓A	1M multiplying 1A simplification **Answer only – FULL MARKS** (2)	12.3.2 12.1.1 L1
1.2.2	1 ounce = $\frac{480 \text{ g}}{16}$ = 30 g ✓C ∴ 5 ounces = 5 × 30 g = 150 g ✓CA	1C converting 1CA simplification (2)	12.3.2 L2
1.2.3	Temperature in °C = $\frac{°F - 32°}{1,8}$ = $\frac{360°F - 32°}{1,8}$ ✓SF = 182,222... ✓A ≈ 180 °C ✓R	1SF substitution 1A simplification 1R rounding off **Answer only – FULL MARKS** (3)	12.2.1 L1(1) L2(2)
1.2.4	Amount of cake flour = $4 \times \frac{1}{2} \times 480$ g ✓M ✓C = 960 g ✓CA	1M multiplying by 4 1C converting to grams 1CA simplification (3)	12.1.1 12.3.2 L1 (1) L2 (2)
1.3.1	13 % ✓✓ RG	2RG reading from graph (2)	12.4.4 L2
1.3.2	Switzerland ✓✓RG	2RG reading from graph (2)	12.4.4 L2
1.3.3	Egypt ✓✓RG	2RG reading from graph (2)	12.4.4 L2
1.3.4	South Africa ✓✓RG	2RG reading from graph (2)	12.4.4 L2
			[28]

QUESTION 2 [29 MARKS]			
Ques	**Solution**	**Explanation**	**AS**
2.1.1	Kenya ✓RT	1RT reading from table (1)	12.4.4 L1
2.1.2	Ghanaian cedi ✓✓RT	1RT reading from table (2)	12.1.1 L2
2.1.3	25 976,87 Zambian kwacha = 25 976,87 × US$ 0,000189 ✓M = US$ 4,91 ✓CA	1M multiplying by correct rate 1CA simplification **Answer only – FULL MARKS** (2)	12.1.1 L2
2.1.4	1 345 cedi = 1 345 × R4,41000 ✓M = R5 931,45 ✓CA	1M multiplying by correct rate 1CA simplification **Answer only – FULL MARKS** (2)	12.1.1 L2
2.2.1	Average = $\frac{1\,760}{640}$ shoot days ✓M = 2,75 shoot days ✓CA	1M finding average 1CA simplification **Answer only – FULL MARKS** (2)	12.4.3 L2
2.2.2	Total cost = 219 × R1 349 531 ✓M = R295 547 289 ✓A	1M multiplying by 219 1A simplification **Answer only – FULL MARKS** (2)	12.1.1 L1
2.2.3	640 – 219 ✓M = 421 ✓A	1M subtracting 1A simplification **Answer only – FULL MARKS** (2)	12.1.1 L1

Ques	Solution	Explanation	AS
2.2.4	Hiring cost = 16% of R1 349 531 ✓M $= \frac{16}{100} \times R1\,349\,531$ = R215 924,96 ✓CA	1M multiplying by 16% 1CA simplification **Answer only – FULL MARKS** (2)	12.1.1 L1
2.2.5	Average cost in 2011 = 40% more than average cost in 2005 = 140% × average cost in 2005 ✓M Average cost in 2005 = $\frac{R1\,349\,531}{\left(\frac{140}{100}\right)}$ ✓M = R963 950,71 ✓CA **OR** Average cost = R1 349 531 $\times \frac{100}{140}$ ✓M ✓M = R963 950,71 ✓CA	1M multiplying by 140% 1M dividing by percentage 1CA simplification **OR** 1M dividing 1M 140% 1CA simplification **Answer only – FULL MARKS** (3)	12.1.1 L2
2.3.1	Radius = 72 cm ✓A	1A answer (1)	12.3.1 L1
2.3.2	k = $\frac{(230-144)}{2}$ ✓M ✓M = $\frac{86}{2}$ = 43 cm ✓CA	1M subtraction of distance 1M dividing by 2 1CA simplification **Answer only – FULL MARKS** (3)	12.3.1 L2

Ques	Solution	Explanation	AS
2.3.3	Circumference = $3,14 \times 144$ cm ✓SF = 452,16 cm ✓CA ✓A	1SF substitution 1CA solution 1A unit **Answer only – FULL MARKS** (3)	12.3.1 L1
2.3.4	Area of wall = $(230)^2 - 3,14 \times \left(\frac{144}{2}\right)^2$ ✓SF ✓S = 52 900 – 3,14 × 5 184 = 36 622,24 cm^2 ✓CA ✓A	1SF substituting diameter 1S simplification 1CA solution 1A correct units **Answer only – FULL MARKS** (4)	12.3.1 L1 (3) L2 (1)
			[29]

QUESTION 3 [23 MARKS]			
Ques	**Solution**	**Explanation**	**AS**
3.1.1	Cost for the first four weeks (in rand) = 140 + (3 × 40) ✓SF = 260✓CA	1SF substitution 1CA simplification (2)	12.2.1 L1
3.1.2	Cost for the first four weeks (in rand) = 500 + (3 × 40) ✓SF = 620 ✓CA	1SF substitution 1CA simplification (2)	12.2.1 L1
3.1.3(a)	A = R140 + R260 ✓SF = R400 ✓CA **OR** A = R400 ✓✓RG 920 = 400 + B × 40✓SF 520 = B × 40 13 = B ✓CA **OR** 500 + 40 × (B – 1) = 980 ✓SF 40 × (B – 1) = 480 B – 1 = 12 B = 13 ✓CA **OR** B = 13✓✓RG **OR** 140; 400; 660; 920; 1 180; 1 440; 1 700 ✓A So, B = 1 + 3 × 4 = 13 ✓CA	1SF substitution 1CA value of A **OR** 2RG reading from graph 1SF substitution 1CA value of B **OR** 2RG reading B from graph **OR** 1A list of values 1CA value of B (4)	12.2.3 L1 (4)
3.1.3(b)	Hair extensions ✓✓ RT	2RT conclusion (2)	12.2.3 L1
3.1.3(c)	R2 480 – R2 400 ✓RT = R80 ✓A	1RT correct values 1A simplification (2)	12.2.3 L1

Ques	Solution	Explanation	AS
3.1.3(d)		1A (1 ; 500) 1A (25 ; 1 920) 1A (29 ; 2 080) 1A (37 ; 2 480) 1A joining the points 1A labelling the graph (6)	12.2.2 L1 (3) L2 (3)
3.2.1	Height = $\frac{500}{3{,}14\times 4{,}5^2}$ ✓SF ✓A = 7,86 cm ✓A	1SF substitution 1A simplification 1A units (3)	12.3.1 L1 (3)
3.2.2	Percentage increase = $\frac{600\,\text{m}\ell - 500\,\text{m}\ell}{500\,\text{m}\ell}\times 100\%$ ✓SF = 20% ✓A	1SF substitution 1A simplification (2)	12.1.1 L1
			[23]

QUESTION 4 [25 MARKS]			
Ques	**Solution**	**Explanation**	**AS**
4.1.1	Houses built in 2010 = 100% – (16+15+17+16+18)% ✓M = 100% – 82% = 18% ✓A	1M concept of 100% pie 1A simplification (2)	12.4.2 L2
4.1.2	2006 ✓A	1A solution (1)	12.4.4 L1
4.1.3	2008 ✓A	1A solution (1)	12.4.4 L1
4.1.4	✓RG Number of houses built in 2005 = $\frac{16}{100} \times 909\,275$ ✓M = 145 484 ✓CA	1RG correct values 1M concept of % 1CA simplification (3)	12.4.4 12.1.1 L1 (2) L2 (1)
4.2.1	Weekly wages per employee = 5 × 8 × R40 ✓M = R1 600 ✓A	1M concept 1A simplification (2)	12.2.1 L1
4.2.2(a)	overtime rate : normal rate = R50 : R40 = 50 : 40 ✓M = 5 : 4 ✓A	1M correct values used 1A simplifying (2)	12.1.1 L1
4.2.2(b)	Number of overtime hours = $\frac{\text{R350}}{\text{R50 per hour}}$ ✓M = 7 hours ✓A	1M concept 1A simplification (2)	12.1.1 L1
4.2.3	Number of overtime hours = $\frac{1\,920-(38\times 40)}{50}$ ✓SF $=\frac{400}{50}$ ✓S = 8 ✓A	1SF substitution 1S simplification 1A simplification (3)	12.2.1 L2

Ques	Solution	Explanation	AS
4.3.1(a)	Soccer and volleyball ✓A	1A solution (1)	12.3.3 L1
4.3.1(b)	2 ✓A	1A solution (1)	12.3.3 L1
4.3.1(c)	Merry-go-round ✓✓A	2A solution (2)	12.3.4 L2
4.3.2	1 cm on map represents 250 cm in real life. 15 m = 1 500 cm ✓C 1 500 cm in real life = $\frac{1\,500}{250}$ cm on map = 6 cm on the map ✓CA	1C conversion 1CA simplification (2)	12.3.3 L2
4.3.3	Volume = 2,5 m × 1,5 m × 0,4 m ✓SF = 1,5 m^3 ✓CA ✓A	1SF substitution in formula 1CA simplification 1A unit (3)	12.3.1 L1
			[25]

QUESTION 5 [23 MARKS]			
Ques	**Solution**	**Explanation**	**AS**
5.1.1	15 + 16 = 31 ✓✓A	2A solution (2)	12.4.4 L1
5.1.2	1 (one) ✓A	1A solution (1)	12.4.4 L1
5.1.3	Range = (180 – 30) minutes ✓M = 150 minutes ✓A	1M concept of range 1A simplification (2)	12.4.3 L2
5.1.4	120 minutes ✓ ✓A	2A simplification (2)	12.4.3 L1
5.1.5	Median = 95 minutes ✓A✓A	2A solution (2)	12.4.3 L1
5.1.6	Mean $= \frac{0+30+30+30+40+45+45+50+60+60+60+60+60+150+150+180}{16}$ ✓M ✓M $= \frac{1\,050}{16}$ = 65,63 minutes ✓CA	1M adding 1M dividing by 16 1CA simplification (3)	12.4.3 L2
5.1.7	Probability (a learner watching TV for 45 minutes) $= \frac{2}{16}$ ✓A ✓A **OR** $\frac{1}{8}$ ✓A ✓A **OR** 12,5 % ✓✓A	1A numerator 1A denominator (2)	12.4.5 L2

Ques	Solution	Explanation	AS
5.2.1	36 minutes ✓RG	1RG reading from graph (1)	12.2.3 L1
5.2.2	Total distance = 2 km away + 2 km back ✓RG = 4 km✓A	1RG reading from graph 1A simplification (2)	12.2.3 L2
5.2.3	1,6 km ✓✓RG	2RG reading from graph (2)	12.2.3 L1
5.2.4	Twice/two times ✓✓RG	2RG reading from graph (2)	12.2.3 L1
5.2.5	✓RG At 6 minutes and after 26 minutes ✓RG	2RG reading from graph (2)	12.2.3 L2
			[23]

QUESTION 6 [22 MARKS]			
Ques	**Solution**	**Explanation**	**AS**
6.1.1	11:45 ✓ A	1A correct time (1)	12.4.4 L1
6.1.2	✓ A Cape Argus **and** Pick'n Pay ✓ A	2A correct answer (2)	12.4.4 L1
6.1.3	110 km – 52,2 km ✓M = 57,8 km ✓CA	1M subtraction 1CA simplification (2)	12.3.1 L1
6.1.4	Noordhoek ✓✓A	2A correct answer (2)	12.3.4 L2
6.1.5	Distance = 90,7 km – 31,9 km ✓M = 58,8 km ✓CA	1M subtracting correct values 1CA answer (2)	12.3.1 L1
6.1.6	Time = $\frac{110\text{ km}}{15{,}9\text{ km/h}}$ ✓SF t ≈ 6,918... hrs ≈ 6,92 hrs ✓CA	1SF substitution 1CA simplification (2)	12.2.1 L1
6.2.1	✓✓A 2:29:59 2:31:57 2:34:28 2:36:17 2:37:50 2:39:35 2:39:55	2A solution (2)	12.1.1 L1
6.2.2	2 hours + 36 minutes and 17 seconds = 2 × 3 600 seconds + 36 × 60 seconds + 17 seconds ✓C = 9 377 seconds ✓CA	1C converting 1CA simplification (2)	12.3.2 L2
6.3.1	Minimum volume = 7 × 0,5 ℓ ✓M = 3,5 ℓ ✓A	1M rate/proportion 1A simplification (2)	12.1.1 L1
6.3.2	Surface area = 2 × 3,14 × 3,25 cm × 15,1 cm ✓SF = 308,191 cm^2 ≈ 308,19 cm^2 ✓A	1SF substitution 1A simplification (2)	12.3.1 L2
6.3.3	Number of 750 m ℓ bottles = $\frac{4\,200}{750}$ ✓M = 5,6 ✓S ∴ He will need 6 bottles of water. ✓R	1M dividing 1S simplification 1R rounding (3)	12.1.1 12.1.2 L1(2) L2(1)
			[22]

TOTAL: 150