education

Department:
Education
REPUBLIC OF SOUTH AFRICA

NATIONAL SENIOR CERTIFICATE

GRADE 12

MATHEMATICAL LITERACY P2

NOVEMBER 2009

MEMORANDUM

MARKS: 150

SYMBOL	EXPLANATION
A	Accuracy
CA	Consistent accuracy
C	Conversion
J	Justification (Reason/Opinion)
M	Method
MA	Method with accuracy
P	Penalty, e.g. for no units, incorrect rounding off, etc.
R	Rounding off
RT/RG	Reading from a table/Reading from a graph
S	Simplification
SF	Correct substitution in a formula
O	Own opinion

This memorandum consists of 23 pages.

EXTERNAL MODERATOR
MR M.A. HENDRICKS

INTERNAL MODERATOR
MRS J. SCHEIBER

QUESTION 1 [29]		**Penalise only once for rounding off**	
Ques	**Solution**	**Explanation**	**AS**
1.1.1	✓A ✓A Limpopo and Western Cape Difference = 30,1% – 6,7% = 23,4% ✓CA	2A Solution 1CA Solution (3) **ANSWER ONLY – FULL MARKS** **If name 2 provinces incorrectly but do the subtraction from the computer data correctly :1 mark**	12.4.4 12.1.1
1.1.2	Did not use a computer = (100% – 9,1%) of 911 118 ✓M = 90,9% of 911 118 = 828 206,262 ✓A ≈ 828 206 (or 828 207) ✓CA **OR** 9,1 % of 911 118 = 82 911,738 ✓A Did not use a computers = 911 118 – 82 911,738 ✓M = 828 206,262 ≈ 828 206 (or 828 207) ✓CA	 1M Subtraction of % 1A Solution 1CA Rounding up or rounding down 1A Number using computers (could round off here) 1M Subtraction 1CA Rounding up or rounding down (3) **ANSWER ONLY – FULL MARKS**	12.1.1 12.1.2 12.4.4

Ques	Solution	Explanation	AS
1.1.3	✓A Difference in % = 61,8% – 13,2% = 48,6% Difference in usage = 48,6% of 264 654 ✓M = 128 621,844 ≈ 128 622 ✓CA **OR** No. of cellphone users – No. of computer users = 61,8% of 264 654 – 13,2% of 264 654 ✓M = 163 556,172 – 34 934,328 = 128 621,844 ✓A ≈ 128 622 ✓CA	1A Difference in % 1M Calculating % 1CA Solution 1M Calculating % and subtraction 1A Simplification 1CA Solution (3) **ANSWER ONLY – FULL MARKS**	12.1.1 12.1.2 12.4.4
1.1.4	Total number of households surveyed = 9 × 1 388 957 ✓M = 12 500 613 ✓A Number surveyed in Mpumalanga ✓M ✓M = 12 500 613 – (1 586 739 + 802 872 + 3 175 578 + 2 234 129 +1 215 936 + 911 118 + 264 654 + 1 369 181) = 12 500 613 – 11 560 207 = 940 406 ✓CA **OR** ✓M Mean = $\frac{x+11\,560\,207}{9} = 1\,388\,957$ ✓A $\therefore\ x + 11\,560\,207 = 1\,388\,957 \times 9$ ✓M $x + 11\,560\,207 = 12\,500\,775$ ✓CA $\therefore\ x = 940\,406$ ✓CA	1M Multiplying 1A Total surveyed 1M Subtraction of households 1M Addition of given values 1CA Solution 1M Calculating mean 1A Correct substitution 1M Calculations 1CA Multiplication 1CA Solution (5) **ANSWER ONLY – FULL MARKS**	12.1.1 12.4.4

Ques	Solution	Explanation	AS
1.1.5	✓✓✓✓O The provinces with high cellphone usage have a corresponding relatively high computer usage. **OR** The provinces with a low cellphone usage have a corresponding relatively low computer usage. ✓✓✓✓O **OR** Cellphone usage is more. ✓✓O Give a valid reason or calculation ✓✓O **OR** ✓✓O No trend in NC, MPU and LIM. ✓✓O Any other justification	4O Acceptable/relevant opinion **OR** 2 O Acceptable/relevant opinion 2O Valid reason or calculation **OR** 2O No trend 2O Valid justification (4)	12.4.4
1.2.1	Increase for P500 = 1 520 – 980 = 540 or ✓A Increase for Q600 = 1 500 – 600 = 900 ∴ Q600 has the greatest increase in sales ✓✓A	1A Range of P500 OR Range of Q600 2A Highest range (3) **If give correct answer and no calculations : 2 marks**	12.1.1 12.4.4

Ques	Solution	Explanation	AS
1.2.2	Width of screen on diagram = 18 mm to 20 mm ✓A Length of screen on the diagram = 36mm to 38 mm ✓A Scale is 2:5. This means that the actual width is $\frac{5}{2}$ (or 2,5) times the given width. ✓M Actual width of screen = $\frac{5}{2} \times$ 20 mm = 50 mm ✓CA Actual length of screen = $\frac{5}{2} \times$ 38 mm = 95 mm ✓CA **OR** Scale drawing : width of screen $2 : 5 = 20 : x$ ✓M $2x = 5 \times 20$ ✓A $x = \frac{100}{2} = 50$ mm ∴ width of screen = 50 mm ✓CA Scale drawing : length of screen $2 : 5 = 38 : y$ ✓A $y = \frac{38 \times 5}{2} = 95$ ∴ length of screen = 95 mm ✓CA **NB: Width with 18 mm = 45 mm** **Width with 19 mm = 47,5 mm** **Length with 36 mm = 90 mm** **Length with 37 mm = 92,5 mm**	1A Width on diagram 1A Length on diagram 1M Using the given scale 1CA Actual width 1A Actual length 1M Using the given scale 1A Width on diagram 1CA Actual width 1A Length on diagram 1A Actual length (5) **ANSWERS ONLY – FULL MARKS** **4 marks if correct answer given in cm**	12.3.1 12.3.3
1.2.3	Graph B **OR** Q600 ✓✓A The graph was drawn with the months reversed. ✓O	2A Identifying the graph 1O Support of statement (3)	12.4.6

QUESTION 2 [34]		**Penalise only once for rounding off**	
Ques	**Solution**	**Explanation**	**AS**
2.1.1	Percentage using other languages = 100% – (64,4% + 11,9% + 9,1%) ✓A = 100% – 85,4% = 14,6% ✓CA Number speaking other languages = 14,6% of 2 965 600 ✓M = 432 977,6 ≈ 432 978 ✓CA **OR** Percentage speaking Sesotho = 64,4% of 2 965 600 = 1 909 846,4 ✓A Percentage speaking Afrikaans = 11,9% of 2 965 600 = 352 906,4 ✓A Percentage speaking isiXhosa = 9,1% of 2 965 600 = 269 869,6 ✓A Number speaking Sesotho, Afrikaans and isiXhosa = 1 909 846,4 + 352 906,4 + 269 869,6 = 2 532 622,4 Number NOT speaking Sesotho, Afrikaans and isiXhosa = 2 965 600 – 2 532 622,4 = 432 977,6 ≈ 432 978 ✓CA	1A adding the given percentages 1CA Subtracting from 100% 1M Calculating % of population 1CA Rounding 1A calculating number 1A calculating number 1A calculating number 1CA Rounding (4) **ANSWER ONLY FULL MARKS**	12.1.1 12.1.2 12.4.4

Ques	Solution	Explanation	AS
2.1.2	P(Afrikaans and isiXhosa) = 21% ✓A P(not Afrikaans and isiXhosa) = 100% – 21% ✓M = 79% (or 0,79 or $\frac{79}{100}$ or $\frac{2\ 342\ 824}{2\ 969\ 600}$) ✓CA **OR** Percentage speaking Afrikaans and isiXhosa = 11,9% + 9,1% = 21% ✓A Percentage not speaking Afrikaans and isiXhosa = 100% – 21% = 79% ✓M P(not Afrikaans and IsiXhosa) = 79% ✓CA **OR** Percentage speaking Afrikaans and isiXhosa = 0,21 ✓A Percentage not speaking Afrikaans and isiXhosa = 1 – 0,21 = 0,79 ✓M ✓CA **OR** Percentage not speaking Afrikaans and isiXhosa = % speaking other languages + % speaking Sesotho = 14,6% + 64,4% ✓M ✓A = 79% ✓CA	1A Identifying the percentage 1M Subtraction 1CA Solution 1A Identifying the percentage 1M Subtraction 1CA Solution 1A Identifying the percentage 1M Subtraction 1CA Solution 1A Identifying the percentage 1M Addition 1CA Solution (3) **ANSWER ONLY – FULL MARKS**	12.4.5 12.1.1

Ques	Solution	Explanation	AS
2.1.3(a)	✓A ✓A They are children / the elderly,/people who are sick/ill / don't have an identity document / may not speak the correct language for the area/lack of skills/ lack of qualifications Accept any other possible correct reasons.	2A Any two valid reasons for them being unemployed (2)	12.4.4
2.1.3(b)	Workforce = 60% of 2 965 600 ✓M = 1 779 360 ✓A Unemployed = 26,4% of 1 779 360 ✓M = 469 751,04 ✓S ≈ 469 751 ✓CA **OR** Unemployed = 26,4% ✓M × 60% ✓A × 2 965 600 ✓M = 469 751,04 ✓S ≈ 469 751 ✓CA	1M Calculating % 1A Workforce 1M Calculating % of unemployed 1S Simplifying 1CA Number unemployed (rounded up or down) **OR** 1M Calculating % 1A Workforce 1M Calculating % of unemployed 1S Simplifying 1CA Number unemployed (rounded up or down) (5) **ANSWER ONLY – FULL MARKS** **If only work out 26,4% : 2 marks**	12.1.1 12.1.2 12.4.4
2.2.1	Gauteng has the highest economic activity in the country. It has many mines and most of the large factories, head offices of companies and banks, as well as the Stock Exchange are in Gauteng. ✓✓J	2J Candidates' valid reasons (1 mark per reason; must have sentences; do not accept single words) (2)	12.4.4

Ques	Solution	Explanation	AS
2.2.2 (a)	Total area of South Africa ✓M = (129 370 + 169 580 + 92 100 + 361 830 + 129 480 + 116 320 + 17 010 + 79 490 + 123 910) km^2 = 1 219 090 km^2 ✓A Land for farming ✓M = 80% of 1 219 090 km^2 = 975 272 km^2 ✓CA **OR** Free State = 10,6% of SA = 129 480 ✓M $SA = \frac{129\ 480\ km^2}{10,6\%}$ = 1 221 509,434 km^2 ✓A 80% of 1 221 509,434 km^2 ✓M = 977 207,5472 km^2 ≈ 977 208 km^2 ✓CA	1M Addition 1A Total 1M Calculating 80% 1CA Total area for agriculture 1M Calculating % 1A Area of South Africa 1M Calculating % 1CA Total area for agriculture (4) **ANSWER ONLY – FULL MARKS**	12.4.4 12.3.1 12.1.1

Ques	Solution	Explanation	AS
2.2.2(b)	✓M Arable land = 11% of 975 272 km^2 = 107 279,92 km^2 ✓CA 3 200 000 ha = 3 200 000 × 0,01 km^2 = 32 000 km^2 ✓C % arable land in the Free State $= \frac{32\,000 \text{ km}^2}{107\,279{,}92 \text{ km}^2} \times 100\%$ ✓M = 29,828 …% ≈ 29,83% ✓R **OR** *Continuing from 2nd solution in 2.2.2 (a):* ✓M Arable land = 11% of 977 208 km^2 = 107 492,88 km^2 ✓CA $= \frac{1 \times 107\,492{,}88}{0{,}01}$ ha ✓C = 10 749 288 ha % arable land in the Free State $= \frac{3\,200\,000 \text{ ha}}{10\,749\,288 \text{ ha}} \times \frac{100\%}{1}$ ✓M ≈ 29,77% ✓R	1M Calculating 11% 1CA Arable land in the country 1C Conversion 1M Calculating % 1R Rounding off 1M Calculating % 1CA Arable land in the country 1C Conversion 1M Calculating % 1R Rounding off (5) **ANSWER ONLY – FULL MARKS**	12.1.1 12.3.2 12.4.4

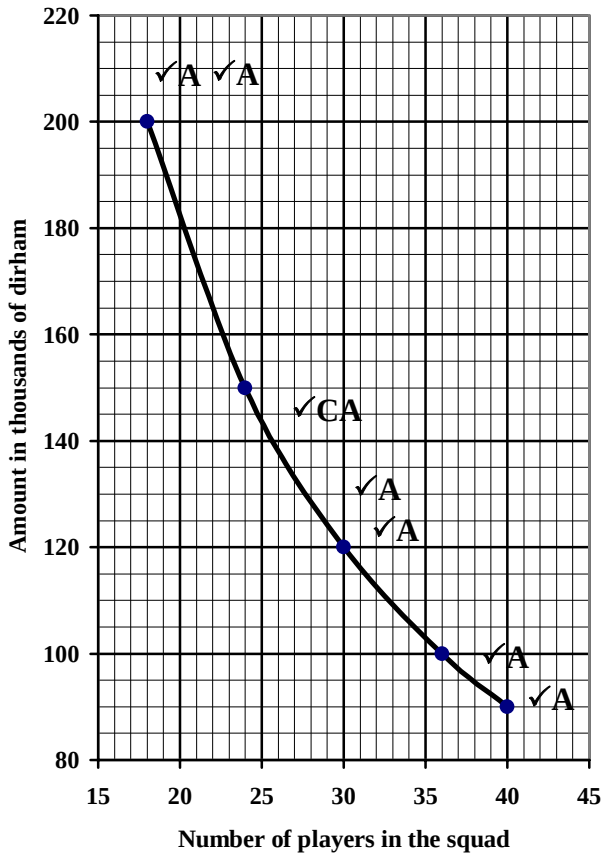
Ques	Solution	Explanation	AS
2.2.3 (a)	The province with the smallest land surface is Gauteng ✓A Population density (GAU) $= \frac{9\ 688\ 100\ \text{people}}{17\ 010\ \text{km}^2}$ ✓M ✓CA $= 569{,}55...\ \text{people/km}^2 \approx 570\ \text{people/km}^2$	1A Identifying Gauteng 1M Substitution in formula 1CA Simplification (3) **ANSWER ONLY – FULL MARKS** **Correct calculation without mentioning Gauteng – full marks** **No rounding off penalty**	12.2.1 12.4.4
2.2.3 (b)	<u>Tebogo's statement:</u> The province with the smallest population is the Northern Cape ✓A Population density (NC) $= \frac{1\ 102\ 200\ \text{people}}{361\ 830\ \text{km}^2}$ ✓M $= 3{,}046\ldots\ \text{people/km}^2$ $\approx 3\ \text{people/km}^2$ ✓CA Tebogo is correct. ✓A The population density of the Northern Cape is less than the population density of Gauteng. ✓✓J **OR** Gauteng has a large population living on a small land surface area. ✓✓J **OR** Northern Cape has a small population living on a large land surface area. ✓✓J **OR** Any other valid explanation. ✓✓J	1A Identifying NC 1M Substitution 1CA Simplification 1A Identifying who is correct 2J Reason (6) **If get the province wrong but the rest of the answer is correct:** **5 marks**	12.2.1 12.1.1 12.4.4

QUESTION 3 [34]			
Ques	**Solution**	**Explanation**	**AS**
3.1.1	Total Income ✓A = (number of Category 1 tickets) × R1 400 ✓A + (number of Category 2 tickets) × R1 050 + (number of Category 3 tickets) × R700 + (number of Category 4 tickets) × R350 ✓A **OR** Total Income ✓A ✓A = (x_1) × R1 400 + (x_2) × R1 050 + (x_3) × R700 + (x_4) × R350 ✓A	1A Naming categories/using a variable 1A Prices of tickets 1A Summing all 4 categories (3) **Ignore the unit.** **Accept variables in the place of words** **Uses 1, 2, 3 and 4 instead of categories : 2 marks** **Uses the same variable or word for all 4 categories : 2 marks**	12.2.1
3.1.2 (a)	Total Income ✓A ✓M = (12 425 × R1 400) + (8 672 × R1 050) + (4 546 × R700) + (14 424 × R350) = R34 731 200 ✓CA	1A Correct number of tickets with corresponding price 1M Summing the products 1CA Total income (3) **ANSWER ONLY – FULL MARKS** **Summing of tickets only – no marks**	12.2.1 12.1.1

Ques	Solution	Explanation	AS
3.1.2 (b)	Total expected number of tickets sold = 40 067 ✓A Number of expected unsold tickets = 42 000 – 40 067 = 1 933 ✓CA Average price ✓A $= R\frac{700+350}{2} = R525$ ✓A 48% of average price = 0,48 × R525 = R252 ✓CA Additional income = R252 × 1 933 ✓CA = R487 116 ✓CA **OR** Number of expected unsold tickets = 42 000 – 40 067 = 1 933 ✓✓C Average price ✓A $= R\frac{700+350}{2} = R525$ ✓A Income from unsold tickets = 1 933 × R525 = R1 014 825 ✓CA ✓CA Additional income after discount = 48% of R1 014 825 = R487 116 ✓CA	1A Number of tickets sold 1CA Number of tickets not sold 1A Finding average price 1A Average price for Cat. 3 & 4 1CA 48% of average price 1CA Calculations 1CA Additional income 2C Number of unsold tickets 2A Average price 2CA Calculations 1CA Additional income (7) **ANSWER ONLY – FULL MARKS** **48% of answer : 6 marks**	12.1.1 12.2.1 12.4.3

Ques	Solution	Explanation	AS
3.2.1	✓A ✓A Total cost = (5 × R1 120) + (1 × R1 400) = R7 000 ✓CA	1A Cost for group matches 1A Cost for round 1 1CA Total cost (3) **ANSWER ONLY – FULL MARKS** **Find the sum off all Category 1 tickets : 0 marks**	12.1.1 12.4.4
3.2.2 (a)	i = 7% ÷ 12 ✓A = 0,5833… % ✓CA = 0,58% or 0,0058 or $\frac{0,58}{100}$	1A Divided by 12 1CA Value of i (2) **ANSWER ONLY – FULL MARKS** **Disregard rounding off to 2 decimal places.** **Relate answer to Quest.3.2.2 (c)**	12.1.3
3.2.2 (b)	14 months ✓A	1A Number of monthly deposits (1) **ANSWER ONLY – FULL MARKS**	12.1.3
3.2.2 (c)	$x = \frac{R7\,000 \times 0,0058}{\left[(1+0,0058)^{14}-1\right]}$ ✓✓SF = R481,422… ✓CA He must save R481,42 monthly. ✓CA	2SF Substituting 1CA Simplification 1CA Rounding off (4) **ANSWER ONLY – FULL MARKS** **Substitute 3 values correct : 2 SF marks** **Substitute 2 values correct : 1 SF mark**	12.1.3 12.2.1

Ques	Solution	Explanation	AS
3.3	150 US dollars = 150 × 0,72025 euros ✓M = 108,0375 euros ✓A 108,0375 euros = 108,0375 ÷ 0,0230344 rouble ✓M = 4 690,27 rouble ✓CA **OR** 150 US dollars ✓M = 150 × 0,72025÷ 0,0230344 rouble ✓A ✓M = 4 690,27 rouble ✓CA **OR** Conversion factor: 0,72025÷ 0,0230344 ✓M = 31,26845...✓A 150 US dollars = 150 × 31,26845... ✓M = 4 690,27 rouble ✓CA **OR** Conversion factor : 0,0230344 ÷ 0,72025 ✓M = 0,031981... ✓A 150 US dollars = 150 ÷ 0,031981 ✓M = 4 690,28 roubles ✓A	1M Using conversion to euro 1A Amount in euro 1M Conversion to rouble 1CA Amount in rouble 1M Multiplication 1M Division 1A Correct values 1CA Amount in rouble 1M calculating conversion factor 1A correct value 1M multiplying 1CA Amount in rouble 1M calculating conversion factor 1A correct value 1M Dividing 1CA Amount in rouble (4) **ANSWER ONLY – FULL MARKS** **Penalise only once for rounding off**	12.1.3

Quest	Solution	Explanation	AS
3.4	**PLAYERS' SHARE OF THE BONUS OF 3,6 MILLION DIRHAM**  	1A 18 players (*x*-intercept) 1A 200 000 (*y*-intercept) 1A 40 players (*x*-intercept) 1A 90 000 (*y*-intercept) 1A Any other point calculated 1A Correct plotting of point 1A Joining the points (7) **If join maximum and minimum point with a straight line : 5 marks** **Plot 2 points and draw a curve : 6 marks** **Work out all the points and join the points with straight lines – 7 marks** **Bar graph where vertical bars are drawn as straight lines for every value between 18 and 40 : 6 marks**	12.2.1 12.2.2

QUESTION 4 [32]			
Ques	**Solution**	**Explanation**	**AS**
4.1.1	P(boy in Grade 12) = $\frac{60}{302}$ ✓A ✓A = $\frac{30}{151}$ (≈ 0,20 or 19,87%)	1A Numerator 1A Denominator (2) **ANSWER ONLY – FULL MARKS**	12.4.5
4.1.2	Number of learners NOT in Grade 10 = 77 + 60 = 137 ✓A P(not in Grade 10) = $\frac{137}{302}$ ✓A ✓A (≈ 0,45 or 45,36%) **OR** ✓A P(not in Grade 10) = $1 - \frac{165}{302} = \frac{137}{302}$ ✓A ✓A **OR** Number not in Grade 10 = Total number – Number in Grade 10 = 302 – 165 = 137 ✓A P(not in Grade 10) = $\frac{137}{302}$ ✓A ✓A	1A Number not in Grade 10 1A Numerator 1A Denominator 1A Number not in Grade 10 1A Numerator 1A Denominator 1A Number not in Grade 10 1A Numerator 1A Denominator (3) **ANSWER ONLY – FULL MARKS**	12.4.5
4.2.1(a)	The return distance = 2 × 45 km = 90 km ✓M 90 km is between 50 km and 100 km Cost = R800 ✓CA	1M Correct distance 1CA Cost for return distance between 50 km and 100 km (2) **ANSWER ONLY – FULL MARKS** **Write R600: 1 mark**	12.2.1 12.3.1

Ques	Solution	Explanation	AS
4.2.1 (b)	Return distance = 100 km + 36 km ✓M Cost in rand = R800 + 36 × R5 ✓A = R980 ✓CA **OR** Cost in Rand = R800 + R5 (136 – 100) ✓M ✓A = R800 + R180 = R980 ✓CA	1M Adding 1A Distance above 100 km 1CA Cost (3) **ANSWER ONLY – FULL MARKS**	12.2.1 12.3.1
4.2.2	Cost (in rand) = R800 ✓A + (return distance travelled – 100 km) ✓A × R5/km ✓A **OR** Cost in Rand = R800 + no. Of km over 100) ✓M × R5 ✓CA ✓A	1A Basic cost up to 100 km 1A Return distance travelled 1A Rate per km (3) **Can use a variable in the formula** **Formula without "Cost in rand" : full marks**	12.2.1
4.2.3	R1 650 = R800 + (return distance travelled – 100) ✓SF × R5 1 650 – 800 = (return distance travelled – 100) ✓CA × 5 $\frac{850}{5}$ + 100 = distance travelled 170 + 100 = distance travelled ✓CA Distance travelled = 270 km ✓CA **OR** Distance travelled = $\frac{\text{R1650 - R800}}{\text{R5}}$ ✓SF km + 100 km ✓CA ✓CA = 270 km ✓CA	1SF Substitution into own formula (from 4.2.2) 1CA Dividing by 5 1CA Adding 100 km 1CA Distance travelled (4) **ANSWER ONLY – FULL MARKS** **If do not add 100 : 3 marks**	12.2.1 12.3.1

Ques	Solution	Explanation	AS
4.3.1 (a)	77 ÷ 15 = 5 remainder 2 ✓A The minimum number of minibuses needed is 6 ✓CA	1A Division 1CA Solution (2) **ANSWER ONLY – FULL MARKS** **Answer of 5 only – 1 mark** **Answer of 5 with a good explanation : 2 marks**	12.2.1
4.3.1 (b)	Possible arrangement of passengers in the minibuses: 3 minibuses with 15 passengers each and 2 with 10 passengers and 1 with 12 passengers ✓✓O **OR** 5 minibuses with 13 passengers in each and 1 minibus with 12 passengers ✓✓O **OR** Accept any suitable combination as long as there are 10 or more passengers in a minibus, and a maximum of 15.✓✓O	**Explanation here must follow on from 4.3.1 (a)** 2O For combination of minibuses **OR** 2O For combination of minibuses **OR** 2O For combination of minibuses (2)	12.2.1
4.3.2	One bus holds 50 passengers, so two buses are needed ✓A Cost of using buses = 2 × R600 = R1 200 ✓CA Cost of using minibuses = 77 × R14 ✓A = R1 078 ✓CA The minibus option is cheaper ✓CA **OR** Cost of one bus with 50 learners = R600 ✓A Cost of 2 minibus holding 27 learners = 27 × R14 ✓CA = R378 ✓CA Total cost = R600 + R378 ✓M = R978 ✓CA 1 Bus + 2 minibus taxis is the cheapest	1A Number of buses 1CA Cost of bus 1A Multiplying no. of learners by cost 1CA Taxi cost 1CA Decision 1A cost for 1 bus 1CA number of learners 1CA cost for learners 1M adding 1CA Total cost (5)	12.1.3 12.2.1

Ques	Solution	Explanation	AS
4.4	Radius of bus tyre = 60 cm Radius of minibus tyre = $\frac{7}{12} \times 60$ cm $= 35$ cm ✓A Circumference of minibus tyre $= 2 \times 3{,}14 \times 35$ cm ✓SF $= 219{,}8$ cm ✓CA $= 0{,}002198$ km ✓CA $1\,862 = \frac{\text{distance travelled}}{0{,}002198 \text{ km}}$ ✓SF Distance travelled $= 1\,862 \times 0{,}002198$ km $= 4{,}092676$ ≈ 4 km ✓CA **OR** Diameter of minibus tyre = $\frac{7}{12} \times 120$ cm ✓A $= 70$ cm Circumference of minibus tyre $= 3{,}14 \times 70$ cm ✓SF $= 219{,}8$ cm ✓A $= 0{,}002198$ km ✓CA $1\,862 = \frac{\text{distance travelled}}{0{,}002198 \text{ km}}$ ✓SF Distance travelled $= 1\,862 \times 0{,}002198$ km $= 4{,}092676$ ≈ 4 km ✓CA **OR**	1A Radius of minibus tyre 1SF Radius = ½ diameter 1CA Circumference of minibus tyre in cm 1CA Converting to km 1SF Substitution into formula 1CA Distance travelled 1A Diameter of minibus tyre 1SF Substitution into formula 1A Circumference of minibus tyre in cm 1CA Converting to km 1SF Substitution into formula 1CA Distance travelled **OR**	12.3.1 12.1.1 12.2.1

Ques	Solution	Explanation	AS
	Radius of bus tyre = 60 cm Radius of minibus tyre = $\frac{7}{12} \times 60$ cm = 35 cm ✓A Distance = Rotation × Circumference ✓SF = 1 862 × 2 × 3,14× 35 cm ✓A ✓SF = 409 267,6 cm ✓C = 4,092646 km ≈ 4 km ✓CA	1A Radius of minibus tyre 1SF Substitution into formula 1A Circumference of minibus tyre in cm 1CA Converting to km 1SF Substitution into formula 1CA Distance travelled (6) **ANSWER ONLY – FULL MARKS**	

QUESTION 5 [21]			
Ques	**Solution**	**Explanation**	**AS**
5.1.1	**Volume of a round cake *(Ronwyn)***	***No penalty for lack of units***	12.3.1
	$= \pi \times (\text{radius})^2 \times \text{height}$ ✓F ✓SF ✓A $= 3{,}14 \times (\frac{50}{2}\ \text{cm})^2 \times 15\ \text{cm}$	1 F Identifying correct formula 1SF Substitution 1A Correct radius	
	$= 29\ 437{,}5\ \text{cm}^3$ ✓CA	1CA Volume of round cake **Answer using π on the calculator $= 29\ 452{,}43\ \text{cm}^3$** **Answer using $\frac{22}{7} = 29\ 464{,}29\ \text{cm}^3$**	
	Volume of a ring cake *(Bronwyn)* $= \pi \times (R^2 - r^2) \times \text{height}$ ✓F ✓SF ✓A $= 3{,}14 \times [(28\ \text{cm})^2 - (9\ \text{cm})^2] \times 14\ \text{cm}$ $= 30\ 903{,}88\ \text{cm}^3$ ✓CA	1F Identifying correct formula 1A Correct R and r 1SF Substitution into formula **Answer using π on the calculator $= 30\ 919{,}55{,}7\ \text{cm}^3$** **Answer using $\frac{22}{7} = 30\ 932\ \text{cm}^3$**	
	The ring cake as it is the cake with the largest volume ✓✓CA	1CA Volume of ring cake 2CA Cake with bigger volume (10)	

Ques	Solution	Explanation	AS
5.1.2	Total outer surface area ✓F $= \pi \times (\text{radius})^2 + 2\ \pi \times \text{radius} \times \text{height}$ ✓SF ✓A ✓A $= 3{,}14 \times (25\,\text{cm})^2 + 2 \times 3{,}14 \times 25\,\text{cm} \times 15\,\text{cm}$ $= 1\,962{,}5\ \text{cm}^2 + 2\,355\ \text{cm}^2$ $= 4\,317{,}5\ \text{cm}^2$ ✓CA ✓A	1F Identifying formula 1SF Substitution into formula 1A Value of radius 1A Value of height 1CA Surface area 1A Correct units (6) **Answer using π on the calculator = 4 319,7 cm²** **Answer using $\frac{22}{7}$ = 4 321,4 cm²** **ANSWER ONLY – FULL MARKS**	12.3.1
5.2	**Cost for Option 1:** ✓A Cost for 100 people $= 100 \times \text{R}120 + \text{R}12\,000 \times \frac{14}{100}$ $= \text{R}12\,000 + \text{R}1\,680$ $= \text{R}13\,680$ ✓CA **OR** ✓A Cost for 100 people = $\text{R}120 \times \frac{114}{100} \times 100$ $= \text{R}13\,680$ ✓CA **OR** ✓A Cost per head = $\text{R}120 \times \frac{14}{100} + \text{R}120$ $= \text{R}136{,}80$ ✓CA Cost for 100 people = $\text{R}136{,}80 \times 100$ $= \text{R}13\,680$ **Cost for Option 2:** ✓M Cost for 100 people = $\text{R}3\,200 + 100 \times \text{R}80$ ✓CA $= \text{R}11\,200$ Option 2 is the cheaper option ✓O	1A Multiplication/adding VAT 1CA Simplification 1A Multiplication/adding VA 1CA Simplification 1A Multiplication/adding VAT 1CA Simplification 1M Addition/multiplication 1CA Simplification 1O Own opinion (5)	12.1.3 12.1.2
		TOTAL:	**150**