basic education

Department:
Basic Education
REPUBLIC OF SOUTH AFRICA

NATIONAL SENIOR CERTIFICATE

GRADE 12

MATHEMATICAL LITERACY P2

NOVEMBER 2013

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/Example
NPR	No penalty for rounding

This memorandum consists of 22 pages.

QUESTION 1 [24 MARKS]			
Ques	**Solution**	**Explanation**	**AS**
1.1	**Amount of juice (in litres)** $= \frac{400\ kg}{2,5\ kg}$ ✓M **OR** 2,5 kg makes 1 ℓ 400 kg makes $\frac{400\,kg}{2,5\,kg/\ell}$ ✓M $= 160$ ✓A $= 160\ \ell$ ✓A Number of 5 ℓ bottles $= \frac{160\,\ell}{5\,\ell}$ $= 32$ ✓CA Number of 5 ℓ bottles $= \frac{160\,\ell}{5\,\ell}$ $= 32$ ✓CA **OR** $1 : 2,5 = x : 400$ $2,5x = 400$ $x = \frac{400}{2,5}$ ✓M $x = 160$ ✓A Number of 5 ℓ bottles $= \frac{160\,\ell}{5\,\ell}$ $= 32$ ✓CA **OR** 5 ℓ juice is made from 5 × 2,5 kg = 12,5 kg fruit ✓A $\therefore$ Number of 5 ℓ bottles $= \frac{400\,kg}{12,5\,kg}$ ✓M $= 32$ ✓CA **OR** $\frac{400\ kg}{5\ell} = 80\ kg/\ell$ ✓A ✓M Number of 5 ℓ bottles $= \frac{80\ kg/\ell}{2,5\,kg/\ell} = 32$ ✓CA	1M dividing by 2,5 1A simplification **OR** 1M using proportion 1A simplification 1CA simplification **OR** 1A mass of fruit 1M dividing by 12,5 1CA simplification **OR** 1A using proportion 1M dividing by 2,5 1CA simplification **Correct answer only: full marks** (3)	12.1.2 L2

Ques	Solution	Explanation	AS
1.2.1	Radius (in mm) = $\frac{90}{2} = 45$ ✓A Surface area (in mm^2) = $4 \times 3{,}14 \times 45^2$ ✓SF $= 25\,434$ ✓CA	1A value of radius 1SF substitution 1CA simplification **Accept 25 446,90 using π** Using diameter max 2 marks **NPR** **Correct answer only: full marks** (3)	12.3.1 L2
1.2.2	Volume (in mm^3) = $\frac{4}{3} \times 3{,}14 \times 45^3$ ✓SF $= 381\,510$ ✓CA	CA from 1.2.1 1SF substitution 1CA simplification **Accept 381 703,51 using π** **NPR** **Correct answer only: full marks** (2)	12.3.1 L2
1.3	Radius of basket = $\frac{30}{2} = 15$ cm ✓A Volume of basket = $3{,}14 \times (15\text{ cm})^2 \times 25\text{ cm}$ ✓SF $= 3{,}14 \times (150\text{ mm})^2 \times 250\text{ mm}$ ✓C $= 17\,662\,500\text{ mm}^3$ ✓CA The number of oranges = $\frac{17\,662\,500\,mm^3 - 113\,040\,mm^3}{381\,510\,mm^3}$ ✓M/A ✓M/CA $= 46$ ∴ Franz's statement is **not correct** ✓CA **OR**	1A radius of basket 1SF substitution 1C converting to mm 1CA volume of basket **Accept 17 671 458,68 using π** 1M/A subtracting space 1 M dividing by volume of an orange CA from 1.2.2 1CA conclusion **OR**	12.3.1 12.1.2 L3(6) L4(1)

Ques	Solution	Explanation	AS
	OR Radius of basket = $\frac{30}{2}$ = 15 cm ✓A Volume of basket = 3,14 × $(15\text{ cm})^2$ × 25 cm ✓SF = 17 662,5 cm^3 ✓CA The number of oranges = $\frac{17\,662{,}5\,\text{cm}^3 - 113\,040\,\text{mm}^3}{381\,510\,\text{mm}^3}$ ✓M = $\frac{17\,662{,}5\,\text{cm}^3 - 113{,}040\,\text{cm}^3}{381{,}51\,\text{cm}^3}$ ✓M ✓C = 46 (46 > 44) ∴ Franz's statement is **not correct** ✓CA **OR** Radius of basket = $\frac{30}{2}$ = 15 cm ✓A Volume of basket = 3,14 × $(15\text{ cm})^2$ × 25 cm ✓SF = 3,14 × $(150\text{ mm})^2$ × 250 mm ✓C = 17 662 500 mm^3 ✓CA Space in the basket for oranges (in mm^3) = 17 662 500 – 113 040 = 17 549 460 ✓M Space occupied by oranges (in mm^3) = 381 510 mm^2 × 44 = 16 786 440 mm^2 ✓A (∴ there is space for more oranges) ∴ Franz's statement is **not correct** ✓CA	1A value of radius 1SF substitution 1CA volume of basket **Accept 17 671,46 using π** 1M dividing by volume of an orange 1M subtracting space 1C converting to cm 1CA conclusion **OR** 1A radius of basket 1SF substitution 1C converting to mm 1CA volume of basket 1M subtracting space 1A calculating the space occupied by the oranges 1CA conclusion **Correct conclusion only: 1 mark** (7)	

Ques	Solution	Explanation	AS
1.4	Trailer length ✓C = 394 × 2,54 cm = 1 000,76 cm **OR** 10,0076 m Trailer breadth ✓C = 119 × 2,54 cm = 302,26 cm **OR** 3,0226 m **Option 1:** Maximum number of boxes packed **lengthwise** along the breadth of the trailer: $= \frac{302,26}{30}$ ✓M **OR** $= \frac{3,0226}{0,3}$ ✓M = 10,075… ≈ 10 Maximum number of boxes packed **breadthwise** along the length of the trailer: $= \frac{1\,000,76}{21,5}$ **OR** $= \frac{10,0076}{0,215}$ = 46,54… ≈ 46 ✓R Maximum number of boxes of oranges = 10 × 46 = 460 ✓CA **Option 2:** Maximum number of boxes packed **breadthwise** along the breadth of the trailer: $= \frac{302,26}{21,5}$ ✓M **OR** $= \frac{3,0226}{0,215}$ ✓M = 14,05… ≈ 14 Maximum number of boxes packed lengthwise along the length of the trailer: $= \frac{1\,000,76}{30}$ **OR** $= \frac{10,0076}{0,3}$ = 33,35… ≈ 33 ✓R Maximum number of boxes = 33 × 14 = 462 ✓CA ∴ **OPTION 2** is the best ✓CA **OR**	1C conversion 1C conversion 1M dividing 1R rounding down 1CA maximum number of boxes 1M dividing 1R rounding down 1CA maximum number of boxes 1CA conclusion	12.1.1 12.3.2 12.3.1 L2(1) L3(3) L4(4)

Ques	Solution	Explanation	AS
	OR Trailer length ✓C = 394 × 2,54 cm = 1 000,76 cm **OR** 10,0076 m Trailer breadth ✓C = 119 × 2,54 cm = 302,26 cm **OR** 3,0226 m Height = 94,6 × 2,54 cm = 24 003 cm **OR** 240,03 m Number of layers of boxes = $\frac{240,03}{0,235}$ = 10,214... ≈ 10 **Option 1:** Maximum number of boxes packed **lengthwise** along the breadth of the trailer: ✓M = $\frac{3,0226}{0,3}$ = 10,075… ≈ 10 Maximum number of boxes packed **breadthwise** along the length of the trailer: = $\frac{10,0076}{0,215}$ = 46,54… ≈ 46 ✓R Number of boxes to be packed in this option = 10 × 10 × 46 = 4 600 ✓CA **Option 2:** Maximum number of boxes packed **breadthwise** along the breadth of the trailer: ✓M = $\frac{3,0226}{0,215}$ = 14,05… ≈ 14 Maximum number of boxes packed **lengthwise** along the length of the trailer: = $\frac{10,0076}{0,3}$ = 33,35… ≈ 33 ✓R Number of boxes to be packed in this option = 14 × 33 × 10 = 4 620 ✓CA ∴ **OPTION 2** is the best. ✓CA	**OR** 1C conversion 1C conversion 1M dividing 1R rounding down 1CA total number of boxes 1M dividing 1R rounding down 1CA total number of boxes 1CA conclusion **Correct conclusion only: 1 mark** (9)	
			[24]

QUESTION 2 [26 MARKS]			
Ques	**Solution**	**Explanation**	**AS**
2.1.1	Amount claimed (in rand) = 4,67 ✓A × number of kilometres travelled ✓A **OR** = 467 **cents** ✓A × number of kilometres travelled ✓A **OR** = 467 ✓A × number of kilometres travelled ÷ 100 ✓A **OR** Amount claimed (in rand) = 4,67 ✓A × n where n = number of kilometres travelled ✓A **OR** Amount claimed (in rand) = 467 **cents** ✓A × n where n = number of kilometres travelled ✓A	**NOTE: No variable (symbol or words), NO marks** 1A correct fuel tariff 1A multiplying tariff in rand by number of kilometres travelled (2)	12.2.1 L3(2)
2.1.2	Amount claimed (in rand) = 4,67 × 1 960 ✓SF = 9 153,20 ✓CA ∴ The amount claimed by Rodney was **incorrect**. ✓CA **OR** The rate of claim used = $\frac{9\,430}{1960}$ ✓M = 4,8112... ✓A (4,8112... is more than the correct rate of 4,67) ∴ The amount claimed by Rodney was **incorrect**. ✓CA **OR** Number of kilometres claimed = $\frac{9\,430}{4,67}$ ✓M = 2019,27... ✓A (2019,27... is more than the 1960 km travelled.) ∴ The amount claimed by Rodney was **incorrect**. ✓CA	1SF substitution in formula from Q 2.1.1 1CA simplification 1CA conclusion **OR** 1M concept 1A calculated rate 1CA conclusion **OR** 1M concept 1A number of km 1CA conclusion **Correct conclusion only: 1 mark** (3)	12.2.1 L4(3)

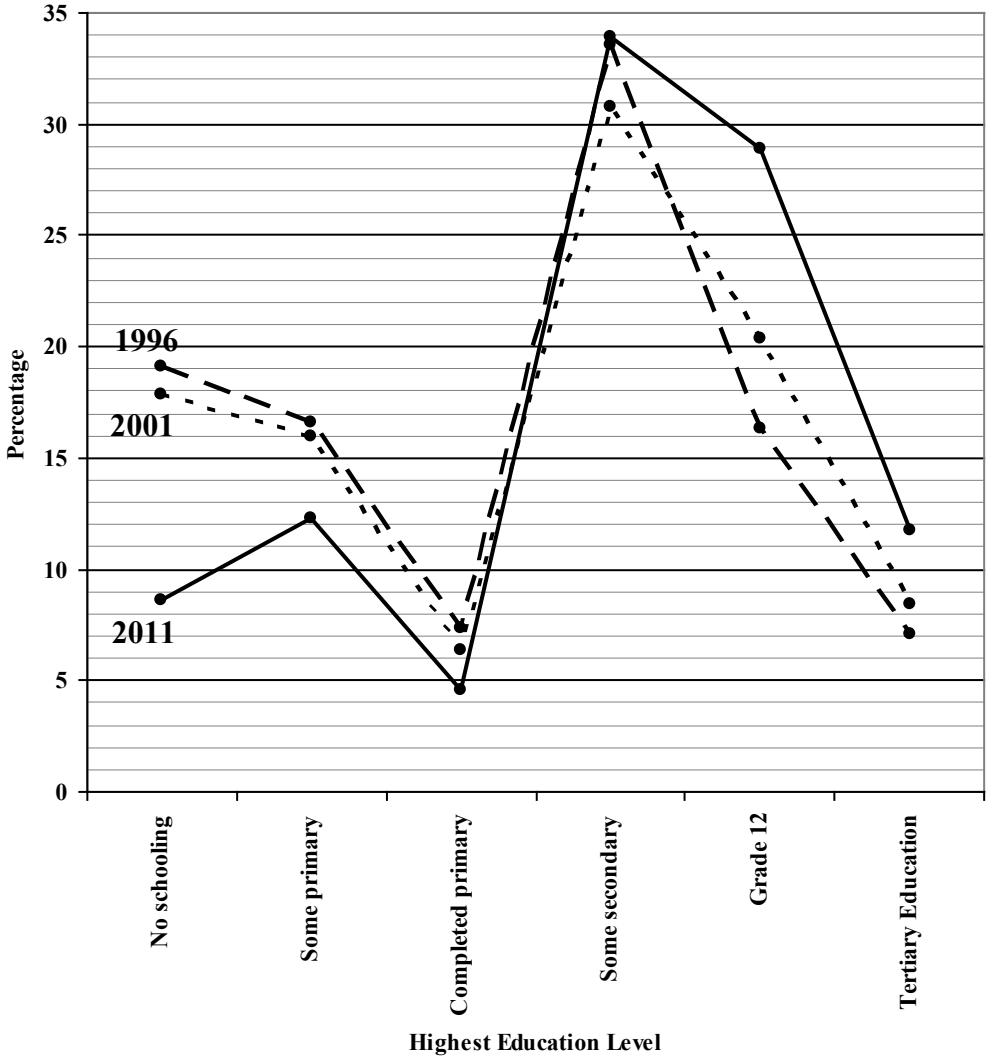
Ques	Solution	Explanation	AS
2.2.1	Petrol cost (in rand) = 1960 × 1,013 = 1 985,48 ✓M/A Maintenance cost (in rand) = 450 + 125 + 500 + 200 = 1 275 ✓M/A Monthly cost (in rand) = 1 985,48 + 1 275 = 3 260,48 ✓CA **OR** Monthly cost (in rand) ✓M/A = (450 + 125 + 500 + 200) + 1 960 × 1,013 ✓M/A = 1 275 + 1 985,48 = 3 260,48 ✓CA	1M/A petrol cost 1M/A maintenance 1CA monthly cost **OR** 1M/A maintenance 1M/A petrol cost 1CA monthly cost **Correct answer only: full marks** (3)	12.1.1 L2
2.2.2	**Finding remaining amount using the 1,5 ℓ vehicle: October** Claim amount ✓M = 2994 **cents** × 1 960 km **OR** ✓M = 586 824 cent = R2,994 × 1 960 km = R5 868,24 ✓CA = R5 868,24 ✓CA Remaining amount = R5 868,24 – R3 260,48 ✓M = R2 607,76 ✓CA	1M multiplying the tariff with distance 1CA claim amount 1M subtracting the monthly cost (Q2.2.1) from a calculated claim amount 1CA remaining amount	12.2.1 12.1.1 L2(3) L3(3) L4(3)
	Finding remaining amount using the 2,3 ℓ vehicle: November Petrol cost (in rand) = 1960 × 1,317 = 2 581,31 ✓M/A Maintenance cost (in rand) = 700 + 210 + 800 + 450 = 2 160 ✓M/A Monthly cost (in rand) = 2 581,31 + 2 160 = 4 741,32 ✓CA Using CORRECT claim amount: Remaining amount = R9 153,20 – R4 741,32 **OR** = R4 411,88 ✓CA ∴ Difference in remaining amounts = R4 411,88 – R2 607,76 = R1 804,12 ✓CA Using RODNEY's claim amount: Remaining amount = R9 430 – R4 741,32 = R4 688,68 ✓CA ∴ Difference in remaining amounts = R4 688,68 – R2 607,76 = R2 080,92 ✓CA	1M/A Petrol cost 1M/A maintenance 1CA monthly cost 1CA remaining amount (Q2.1.2) 1CA difference **NPR except if R2,99 is used then max 8 marks** (9)	

Ques	Solution	Explanation	AS
2.3	$i = 9\%$ pa $\quad n = 24$ months $\quad A = R104\,753,89$ $x = \dfrac{R104\,753,89 \times \dfrac{9\%}{12}}{\left[\left(1+\dfrac{9\%}{12}\right)^{24}-1\right]}$ ✓A ✓SF ✓A $= R4\,000$ ✓CA **OR** $x = \dfrac{R104\,753,89 \times \dfrac{0,09}{12}}{\left[\left(1+\dfrac{0,09}{12}\right)^{24}-1\right]}$ ✓A ✓SF ✓A $= R4\,000$ ✓CA **OR** $x = \dfrac{R104\,753,89 \times 0,0075}{\left[\left(1+\dfrac{0,09}{12}\right)^{24}-1\right]}$ ✓A ✓SF ✓A $x = R4\,000$ ✓CA **OR** $x = \dfrac{R104\,753,89 \times 0,01}{\left[(1+0,01)^{24}-1\right]}$ ✓A ✓SF ✓A $x = R3\,883,59$ ✓CA	1A interest rate per month [**Note: do not penalise if % sign is omitted but calculation is done correctly**] 1SF substitution 1A number of months 1CA simplification **OR** 1A interest rate per month 1SF substitution 1A number of months 1CA simplification **OR** 1A interest rate per month 1SF substitution 1A number of months 1CA simplification **OR** 1A interest rate per month (**NPR**) 1SF substitution 1A number of months 1CA simplification **NPR** **Correct answer only: full marks** (4)	12.1.3 L3

Ques	Solution	Explanation	AS
2.4	Tax(**before rebate**) ✓A ✓M/A = R51 300 + 30% × (R315 054 – R250 000) $= R51\ 300 + \frac{30}{100} \times R65\ 054$ = R51 300 + R19 516,20 = R70 816,20 ✓CA Tax payable (**after rebate**) = R70 816,20 – R11 440,00 – R6 390 ✓M = R52 986,20 ✓CA	1A identifying correct tax interval 1M/A finding amount above R250 000 1CA tax amount 1M subtracting both rebates from the tax amount. 1CA simplification If rebates are subtracted before calculating the tax max 3 marks [If incorrect tax bracket used max 3 marks] **Correct answer only: full marks** (5)	12.1.3 L2(3) L3(2)
			[26]

QUESTION 3 [38 MARKS]			
Ques	**Solution**	**Explanation**	**AS**
3.1.1	Total number of persons 20 years and older in 1996 is 21 251 533 ✓A ✓M Total number of persons 20 years and older in 2001 is 25 472 770 ✓A ∴ The increase in the total population from 1996 to 2001 is greater than the increase in the number of persons with no schooling. ✓✓O **OR explanation with calculation** Total number of persons 20 years and older in 1996 is 21 251 533 ✓A ✓M Total number of persons 20 years and older in 2001 is 25 472 770 ✓A Percentage growth of persons with no schooling in 2001 $= \frac{4\ 567\ 498 - 4\ 055\ 646}{4\ 055\ 646} \times 100\% = 12{,}6207\ldots\%$ Percentage growth of persons 20 years and older in 2001 $= \frac{25\ 472\ 770 - 21\ 251\ 533}{21\ 251\ 533} \times 100\% = 19{,}8632\ldots\%$ ✓CA Percentage growth of persons 20 years and older was more than the percentage growth of people with no schooling. ✓O	1M total 1A population in 1996 1A total number in 2001 2O explanation **OR** 1M total 1A population in 1996 1A total number in 2001 1CA percentage growth 1O explanation (5)	12.4.4 L4
3.1.2	Total number 20 years and older in 2011 = 30 915 706 ✓A 59,7% of population = 30 915 706 Total population $= \frac{30\,915\,706}{59{,}7\%}$ ✓M $= \frac{30\,915\,706}{0{,}597}$ = 51 785 102,18 ≈ 51 785 102 ✓CA Total **younger** than 20 years = 51 785 102 – 30 915 706 = 20 869 396 ✓CA **OR** = 40,3% of 51 785 102 =20 869 396,11 ≈ 20 869 396 ✓CA **OR**	1A total 20 years and older 1M dividing by 59,7% 1CA population 1CA solution	12.4.1 12.1.1 L3

Ques	Solution	Explanation	AS
	OR Total number 20 years and older in 2011 = 30 915 706 ✓A Total **younger** than 20 years $= \frac{30\,915\,706}{59,7\%} \times 40,3\%$ ✓M ✓M = 20 869 396 ✓CA	**OR** 1A total 20 years and older 1M dividing by 59,7% 1M multiplying by 40,3% 1CA solution (4)	
3.1.3	Number of persons with Gr 12 in 2001 = 5 200 602 P(Grade 12) $= \frac{5\,200\,602}{44\,819\,778}$ ✓A ✓A $= \frac{2\,600\,301}{22\,409\,889}$ **OR** $\frac{866\,767}{7\,469\,963}$ **OR** 11,6% **OR** $\approx 0,12$ **OR** $\frac{1}{8,6}$ ✓CA	1A number with Gr 12 1A denominator 1CA simplifying **Correct answer only: full marks** (3)	12.4.4 L3

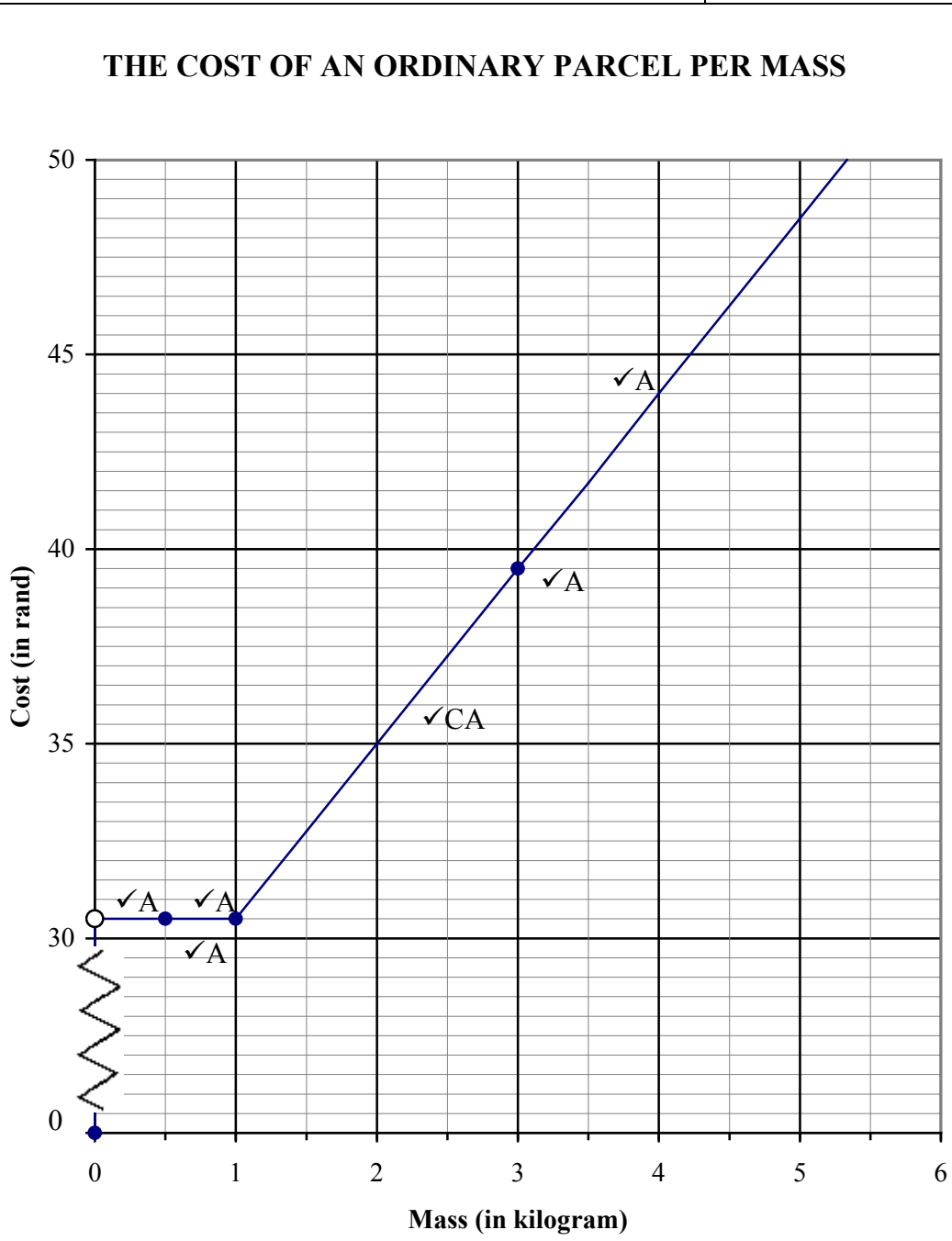
Ques	Solution and Explanation	AS
3.2.1	**PERCENTAGE HIGHEST EDUCATION LEVEL**  ✓A ✓A ✓A ✓A ✓A ✓CA 1 or 2 points plotted incorrectly max 5 marks 3 points plotted incorrectly max 4 marks 4 points plotted incorrectly max 3 marks 5 points plotted incorrectly max 2 marks 1CA joining all the points by means of a line Penalty of one mark if graph is moved either left or right (6)	12.4.2 L2

Ques	Solution	Explanation	AS
3.2.2	ANY TWO possible trends: * From 1996 to 2011 there was an increase in the number of persons with Grade 12. ✓✓CA * From 1996 to 2011 there was an increase in the number of persons with Tertiary education. ✓✓CA * The percentage increase of persons with Grade 12 is higher than that of persons with Tertiary education. ✓✓CA * There are always more persons in Grade 12 than persons with Tertiary education. ✓✓CA	2CA per trend 2CA per trend (4)	12.4.4 L4
3.3.1	The percentages given represent the number of people with Grade 12 as a percentage of the number of people 20 years and older in each province and not nationally. ✓✓O **OR** Data is per province ✓✓O	2O acceptable explanation (2)	12.4.4 L4
3.3.2	The ascending order is ✓M/A 19,8 ; 22,4 ; 22,7 ; 25,2 ; 26,8 ; 28,2 ; 29,0 ; 30,9 ; 34,4 ∴ **Free State** has the median percentage ✓CA **OR** The ascending order is EC; LP; NC; NW; FS; WC; MP; KZN; GP ✓M/A ∴ **Free State** has the median percentage ✓CA	1M/A arranging in ascending order 1CA province **OR** 1M/A ascending order 1CA province **Correct answer only: full marks** (2)	12.4.3 L3(2) L4(1)
3.3.3	✓A Eastern Cape and Limpopo ✓A	1A EC 1A LP (2)	12.4.3 L4
3.3.4(a)	The percentages do not add up to 100% ✓✓J **OR** The degrees to not add up to 360^0 ✓✓J **OR** There are too many sectors ✓✓J	2J explanation (2)	12.4.2 L4

Ques	Solution	Explanation	AS
3.3.4(b)	The histogram cannot be used since the data is qualitative ✓✓J **OR** The data is not continuous ✓✓J **OR** Data is not given in class intervals ✓✓J	2J explanation (2)	12.4.2 L4
3.4.1	✓A ✓A Northern Cape; Gauteng	1A Northern Cape 1A Gauteng Limpopo can also be included (2)	12.3.3 L4
3.4.2	TS ≈ 7 mm ✓A Actual distance ≈ 7 mm × 10 000 000 ✓M = 70 000 000 mm ✓CA = 70 km ✓C **OR** Scale is 1 mm : 10 000 000 mm ∴ 1 mm : 10 km ✓C TS ≈ 7 mm ✓A Actual distance ≈ 7 mm × 10 km/mm ✓M = 70 km ✓CA	1A measurement [**accept answers from 5 mm to 8 mm**] 1M using scale 1CA simplifying 1C converting to km [**accept answers from 50 km to 80 km**] **OR** 1C converting scale to km 1A measurement [**accept answers from 5 mm to 8 mm**] 1M using scale 1CA simplifying [**accept answers from 50 km to 80 km**] **Correct answer only: full marks** (4)	12.3.3 L4
			[38]

QUESTION 4 [34 MARKS]			
Ques	**Solution**	**Explanation**	**AS**
4.1.1	Perimeter = 5 × 270 mm ✓M/A = 1 350 mm ✓A **OR** Perimeter = (270 + 270 + 270 + 270 + 270) mm ✓M/A = 1 350 mm ✓A	1M/A multiplying side by 5 **only** 1A simplification **OR** 1M/A adding 5 sides 1A simplification **Correct answer only: full marks** (2)	12.3.1 L2
4.1.2	Area of rectangle = length × breadth = 360 mm × 270 mm ✓SF = 0,36 m × 0,27 m ✓C = 0,0972 m^2 Surface area of front pentagon (in m^2) = 0,13 – 0,017 – 0,013 = 0,1 ✓M Surface area of rear pentagon (in m^2) = 0,13 – 0,013 = 0,117 ✓M Total surface area (in m^2) = 5 × 0,0972 + 0,1 + 0,117 = 0,703 ✓CA **OR** Total surface area = 2 × pentagons + 5 × rectangles – (letter opening + 2 × newspaper openings) ✓M ✓SF ✓M = 2 × 0,13 m^2 + 5 × 360 mm × 270 mm – (0,017 m^2 + 2 × 0,013 m^2) ✓C = 0,26 m^2 + 5 × 0,36 m × 0,27 m – 0,043 m^2 = 0,26 m^2 + 0,486 m^2 – 0,043 m^2 = 0,703 m^2 ✓CA	1SF substituting into area formula 1C converting 1M subtracting the openings 1M five rectangles 1CA simplification using all faces **OR** 1M five rectangles 1SF substituting area 1M subtracting the openings 1C converting 1CA simplification using all the faces **Correct answer only: full marks** (5)	12.3.1 12.3.2 L3

Ques	Solution	Explanation	AS
4.1.3	Area of a newspaper opening = $\pi \times r^2$ $0{,}013\ m^2 = 3{,}14 \times r^2$ ✓SF $0{,}00414...\ m^2 = r^2$ $41{,}401...\ cm^2 = r^2$ ✓C $r \approx 6{,}434...\ cm$ ✓CA The radius of the newspaper is 6 cm ✓A ∴ The newspaper **will fit**. ✓CA **OR** Newspaper radius (in cm) = $\frac{12}{2} = 6$ ✓A Area of a circle = $\pi \times r^2$ $= 3{,}14 \times (6\ cm)^2$ ✓SF $= 3{,}14 \times (0{,}06\ m)^2$ ✓C $\approx 0{,}0113\ m^2$ ✓CA ∴ The newspaper **will fit**. ✓CA	1SF substitution 1C conversion 1CA value of r 1A radius of newspaper 1CA conclusion **OR** 1A radius 1SF substitution 1C converting 1CA simplification 1CA conclusion **Answer only 1 mark** (5)	12.3.1 L3 (3) L4 (2)
4.2.1	✓A ✓M ✓M Cost = R30,50 + R4,50 × mass of parcel greater than 1kg **OR** ✓A ✓M Cost = R30,50 + R4,50 × a ✓M where a is the mass of a parcel greater than 1 kg **OR** ✓A ✓M ✓M Cost = R30,50 + R4,50 × (mass of parcel – 1)	**NOTE No variable in second term (symbol or words), max 1 mark** 1A basic rate R30,50 1M the rate for more than 1 kg 1M multiplied with the mass greater than 1 kg (3)	12.2.1 L3(3)
4.2.2	✓SF A = R30,50 + R4,50 × (2,5 – 1) = R37,25 ✓CA ✓M Additional mass in kg = $\frac{R70{,}55 - R30{,}50}{R4{,}50}$ ✓M = 8,9 ✓CA ∴ B = 1 + 8,9 = 9,9 ✓CA **OR** ✓SF A = R30,50 + R4,50 × (2,5 – 1) = R37,25 ✓CA R70,55 = R30,50 + R4,50 × a ✓SF R40,05 = R4,50 × a ✓S 8,9 = a ✓CA ∴ B = 1 + 8,9 = 9,9 ✓CA	1SF substitution (CA from question 4.2.1) 1CA value of A 1M subtracting R30,50 1M dividing R4,50 1CA additional mass 1CA value of B **OR** 1SF substitution (CA from question 4.2.1) 1CA value of A 1SF substitution 1S simplification 1CA value of a 1CA value of B **Answer only: full marks** (6)	12.2.1 L2

Ques	Solution	Explanation	AS
4.2.3	 1A plotting points (0,5; 30,50) and (1; 30,5) 1A plotting point (3; 39,50) 1A drawing horizontal line with open circle between 0 and 0,5 1A drawing horizontal line between 0,5 to 1 1CA drawing the line from 1 to 3 1A continue line beyond (3; 39,50) with correct slope (6)		12.2.2 L3
4.3.1	Walmer Health Centre ✓✓✓A	2A correct place across Main Road 1A place on left If DIY Store 2 marks (3)	12.3.4 L3

Ques	Solution	Explanation	AS
4.3.2	The length of the vacant land on the map ≈ 16 mm ✓A The width of the land on the map ≈ 13 mm	1A measurements **(accept lengths from 15 mm to 19 mm; Accept widths from 12 mm to 14 mm)**	12.3.4 L3 (1) L4 (3)
	Area of vacant land on the map = 1,6 cm × 1,3 cm = 2,08 cm^2 ✓CA	1CA area of vacant land	
	Number of sites = $\frac{2{,}08\,\text{cm}^2}{0{,}15\,\text{cm}^2}$ = 13,866 ≈ 13 ✓CA	1CA number of sites	
	She can only get 13 sites on the vacant land		
	∴ Her claim is **not valid** ✓CA	1CA verification	
	OR	**OR**	
	The length of the vacant land on the map ≈ 16 mm ✓A The width of the land on the map ≈ 13 mm	1A measurements **(accept lengths from 15 mm to 19 mm; Accept widths from 12 mm to 14 mm)**	
	Area of vacant land on the map = 1,6 cm × 1,3 cm = 2,08 cm^2 ✓CA	1CA area of vacant land	
	Area covered by the sites = 14 × 0,15 cm^2 = 2,1 cm^2 ✓CA This area is more than the area on the map	1CA area of the sites	
	∴ Her claim is **not valid** ✓CA	1CA verification **Answer only: NO marks** (4)	
			[34]

QUESTION 5 [28 MARKS]			
Ques	**Solution**	**Explanation**	**AS**
5.1.1	Schools and industries are closed therefore more people book their drivers test in December ✓✓O **OR** With schools etc. closed there are less cars on the road during holidays, so less chance to make mistakes and fail the test. ✓✓O **Any other valid explanation**	2O explanation (2)	12.4.4 L4
5.1.2	Minimum = 16 and maximum = 60 ✓M Range = 44 ✓CA	1M identifying min and max values **(accept minimum values of 14 to 18)** 1CA range **(accept values from 42 to 46)** **Correct answer only: full marks** (2)	12.4.3 L2
5.1.3	Toni did not arrange the bars in calendar/chronological order, hence creating the impression that there was an increase. ✓✓J Example: ✓CA January the number of learners was 52 and February was 24 **OR any other suitable example**	2J explanation 1CA example (3)	12.4.6 L4
5.2.1	No change in the cost after 15 hours. ✓✓J **OR** Constant cost from 15 hours onwards. ✓✓J **OR** For 15 hours or more of driving lessons there is a fixed rate of R1 500. ✓✓J	2J correct description (2)	12.2.3 L4

Ques	Solution	Explanation	AS
5.2.2 (a)	No payment for zero lessons. ✓✓J **OR** Payment will only be made once the driving lessons start. ✓✓J	2J correct description (2)	12.2.3 L4
5.2.2 (b)	✓A • A learner driver pays a basic amount of R600 for the first two hours ✓A • Then R50 per hour for every additional hour. ✓A	1A R600 1A time period 1A rate in rand (3)	12.2.3 L4
5.2.3	✓O ✓O At point Q, both Options cost the same at the same time. **OR** ✓O ✓O There were 10 hours of driving that cost R1 000 for both Options.	1O same cost 1O same time **OR** 1O time 1O cost Accept " breakeven point " ONLY 1 mark (2)	12.2.1 L4
5.2.4 (a)	✓A ✓J With **Option B** Zaheera will get 14 hours of driving lessons. **OR** ✓A ✓J Zaheera must choose **Option B** to get 2 more hours of driving lessons than in Option A.	1A correct option 1J justification (2)	12.2.3 L4
5.2.4 (b)	✓A Toni would benefit more from **Option A.** She still gets R1 200 but in a shorter time than Option B ✓J **OR** ✓A ✓J **Option A**, she will have 2 hours to train someone else.	1A correct option 1J justification (2)	12.2.3 L4
5.2.5	✓A ✓✓J **Option A** is cheaper for Zaheera. **OR** ✓A ✓✓J She must choose **Option A** she will pay R600 for the driving lessons.	1A correct option 2J justification (3)	12.2.3 L4

Ques	Solution	Explanation	AS
5.2.6	**Option A**: Cost for 30 hours = R1 500 ✓A **Option B**: ✓A ✓A Cost for 30 hours = R600 + (R50 per hour × 28 hours) = R600 + R1 400 = R2 000 ✓CA ∴ Difference in cost = R2 000 – R1 500 = R500 ✓CA **OR** **Option A**: Cost for 30 hours = R1 500 ✓A **Option B**: Cost for 30 hours ✓A ✓A = R600 + (R100 per two hours × 14 two hour periods) = R600 + R1 400 = R2 000 ✓CA ∴ Difference in cost = R2 000 – R1 500 = R500 ✓CA **OR** **Option B**: For 22 hours it costs R1 600 It is increasing with R100 every 2 hours ✓A ∴ Extra cost = 4 × R100 = R400 ✓A Cost for 30 hours = R1 600 + R400 = R2 000 ✓CA **Option A**: Cost for 30 hours = R1 500 ✓A ∴ Difference in cost = R2 000 – R1 500 = R500 ✓CA	1A cost option A 1A basic rate 1A rate multiplied by hours 1CA cost 1CA difference in cost **OR** 1A cost option A 1A basic rate 1A rate multiplied by period 1CA cost 1CA difference in cost **OR** 1A rate 1A extra cost 1CA cost 1A cost option A 1CA difference in cost **Correct answer only: full marks** (5)	12.2.3 L3(3) L4(2)
			[28]
		Total: 150	