



basic education

Department:
Basic Education
REPUBLIC OF SOUTH AFRICA

NATIONAL SENIOR CERTIFICATE

GRADE 12

MATHEMATICAL LITERACY P2

NOVEMBER 2010

MEMORANDUM

MARKS: 150

SYMBOL	EXPLANATION
A	Accuracy
CA	Consistent accuracy
C	Conversion
J	Justification (Reason/Opinion)
M	Method
MA	Method with accuracy
P	Penalty 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 21 pages.

QUESTION 1 [26 MARKS]

Ques	Solution	Explanation	AS
1.1.1 (a)	<p style="text-align: center;">OR</p> <p>Diameter of tablecloth $= 4 \times 30 \text{ cm}$ $= 120 \text{ cm}$ ✓M</p> <p>Radius of tablecloth $= 120 \div 2$ $= 60 \text{ cm}$ ✓CA</p> <p>Circumference of table cloth $= 2\pi \times \text{radius}$ $= 2 \times 3,14 \times 60 \text{ cm}$ ✓SF $= 376,8 \text{ cm}$ ✓CA</p>	<p>1M finding diameter or radius</p> <p>1CA radius of tablecloth</p> <p>1SF substitution into correct formula 1CA circumference with correct unit</p> <div style="border: 1px solid black; padding: 5px; width: fit-content; margin: 5px auto;">Using π (376,99 cm)</div> <div style="border: 1px solid black; padding: 5px; width: fit-content; margin: 5px auto;">Using $\frac{22}{7}$ (377,14 cm)</div> <div style="border: 1px solid black; padding: 5px; width: fit-content; margin: 5px auto;">Max 2 marks if incorrect radius Max 1 mark if radius of placemat is used</div> <div style="border: 1px solid black; padding: 5px; width: fit-content; margin: 5px auto; text-align: center;">Answer only full marks</div> <p style="text-align: right;">(4)</p>	12.3. 1
1.1.1 (b)	<p>Number of segments $= \frac{376,8}{4,71}$ ✓M $= 80$ ✓CA</p>	<p>1M dividing by 4,71</p> <p>1CA number of segments</p> <div style="border: 1px solid black; padding: 5px; width: fit-content; margin: 5px auto;">80,04 OR 80,07</div> <div style="border: 1px solid black; padding: 5px; width: fit-content; margin: 5px auto; text-align: center;">No penalty for rounding</div> <div style="border: 1px solid black; padding: 5px; width: fit-content; margin: 5px auto; text-align: center;">Answer only full marks</div> <p style="text-align: right;">(2)</p>	12.3. 1 12.1. 1



Ques	Solution	Explanation	AS
1.2.1 (a)	<p>Total cost $\checkmark A$ $= R300 + R0,50 \times (\text{number of minutes more than } 500)$ $\checkmark A$</p> <p style="text-align: center;">OR</p> <p>Total cost = $R300 + R0,50 \times x$, $\checkmark A$ Where x = number of minutes more than 500</p>	<p>1A constant value R300 1A second term</p> <p>1A constant value R300 1A second term</p> <div style="border: 1px solid black; padding: 2px; width: fit-content; margin: 5px auto;">No penalty if R omitted</div> <p style="text-align: right;">(2)</p>	12.2.1
1.2.1 (b)	<p>Total cost = $R300 + R0,50 \times (510 - 500)$ $\checkmark M$ $\checkmark SF$ $= R300 + R5$ $\checkmark S$ $= R305$ $\checkmark CA$</p> <p style="text-align: center;">OR</p> <p>Cost of calls = $R0,50 \times 10$ $\checkmark M$ $= R5,00$ $\checkmark CA$</p> <p>Total cost = $R300,00 + R5,00$ $\checkmark M$ $= R305,00$ $\checkmark CA$</p>	<p>1M use of formula from 1.2.1(a) 1SF substitution of minutes 1S simplifying 1CA solution</p> <p>1M calculating extra cost 1CA simplifying</p> <p>1M calculating total cost 1CA solution</p> <div style="border: 1px solid black; padding: 2px; width: fit-content; margin: 5px auto;">No penalty for units</div> <div style="border: 1px solid black; padding: 2px; width: fit-content; margin: 5px auto;">Answer only full marks</div> <p style="text-align: right;">(4)</p>	12.2.1


Ques	Solution	Explanation	AS
1.2.2	<p>NOTE: To assist with marking, the graph that the learners have to draw has been given as a dotted line. The learners DO NOT have to draw a dotted line.</p> <p style="text-align: center;">LANDLINE CALL PACKAGES</p> <p>PACKAGE 1: 1A point (0;150) 1A horizontal line from (0;150) to the point (100;150) 1A another correct point 1G for having a break-even point between (100;150) and (500;350) 1A for totally correct straight line that must be up to the point (1000; 600)</p> <p style="border: 1px solid black; padding: 2px; display: inline-block;">No penalty if label is omitted</p>		12.2.2

(5)

Ques	Solution	Explanation	AS
1.2.3(a)	<p>The break-even point is the point where:</p> <ul style="list-style-type: none"> the two graphs intersect. ✓✓M <p style="text-align: center;">OR</p> <ul style="list-style-type: none"> both packages cost the same ✓✓M <p style="text-align: center;">OR</p> <ul style="list-style-type: none"> there is no profit/gain or loss ✓✓M <p style="text-align: center;">OR</p> <ul style="list-style-type: none"> both situations are the same ✓✓M 	<p>2M description of break-even point</p> <p>(other correct definitions)</p> <div style="border: 1px solid black; padding: 2px; width: fit-content; margin: 5px auto;">2 Marks or zero</div> <p style="text-align: right;">(2)</p>	12.2.3
1.2.3(b)	<p>Number of minutes used = 400 ✓RG</p> <p>Total cost = R 300 ✓RG</p>	<div style="border: 1px solid black; padding: 2px; width: fit-content; margin-bottom: 5px;">CA from graph</div> <p>1RG number of minutes</p> <p>1RG cost</p> <div style="border: 1px solid black; padding: 2px; width: fit-content; margin: 5px auto;">Accept (400 ; 300) Point may be calculated algebraically</div> <p style="text-align: right;">(2)</p>	12.2.3
1.2.4	<p>Package 2 ✓✓CA ✓RG Reading 900 minutes and 1 000 minutes Showing difference ✓M</p> <p style="text-align: center;">✓CA Package 2 gives 100 minutes more call time for R550 than Package 1 ✓1J</p> <p style="text-align: center;">OR</p> <p>She must accept Package 2 ✓CA ✓CA</p> <p>Package 1: $550 = 150 + 0,50 \times x$, ✓M $550 - 150 = 0,50 x$ $x = \frac{400}{0,5} = 800$ Total minutes = $100 + 800 = 900$ ✓CA</p> <p>Package 2: $550 = 300 + 0,50 \times x$ $550 - 300 = 0,50 x$ $x = \frac{250}{0,5} = 500$ Total minutes = $500 + 500 = 1\ 000$ ✓CA</p>	<div style="border: 1px solid black; padding: 2px; width: fit-content; margin-bottom: 5px;">CA from graph</div> <p>2CA selecting correct package 1RG reading from the graph 1M difference</p> <p>1J motivation</p> <p>2CA selecting correct package</p> <p>1M using formula</p> <p>1CA simplification</p> <p>1CA simplification</p> <p style="text-align: right;">(5)</p>	12.2.3

QUESTION 2 [28 MARKS]			
Ques	Solution	Explanation	AS
2.1.1	C3 OR 3C ✓A ✓A	1A for C 1A for 3 (2)	12.3.4
2.1.2	SE OR South East OR East of South OR South of East ✓A ✓A	2A correct direction <div style="border: 1px solid black; padding: 2px; width: fit-content; margin: 5px auto;">2 Marks or zero</div> (2)	12.3.4
2.1.3(a)	<ul style="list-style-type: none"> • Carry on along Selby Msimang Road in a (North-Easterly) direction.: ✓A • At the traffic lights turn right into Sutherland Road ✓A • then turn right into F.J. Sithole Road ✓A • then turn left into Nkugwini Road ✓A • entrance to the stadium is on the left. 	1A recognising direction 1A turn into Sutherland Rd 1A turn into F.J. Sithole Rd 1A turn into Nkugwini Rd <div style="border: 1px solid black; padding: 5px; width: fit-content; margin: 5px auto;"> Follow learner's route on map. If direction very long Max 2 marks Max 3 marks if names of roads listed only in correct order </div> (4)	12.3.4
2.1.3(b)	Distance on map = 145 mm ✓A Actual distance = 145 mm × 20 000 ✓M = 2 900 000 mm ✓CA = 2,9 km ✓CA	1A distance on map (Accept 130 mm – 150 mm) 1M multiplying by the scale 1CA distance in mm 1CA distance in km <div style="border: 1px solid black; padding: 2px; width: fit-content; margin: 5px auto;"> Accept measurement in cm Accept 2,6 km – 3,0 km </div> <div style="border: 1px solid black; padding: 2px; width: fit-content; margin: 5px auto;"> Answer only full marks </div> (4)	12.3.1 12.3.3

<p>2.1.4</p>	<p>Average speed = $\frac{\text{distance}}{\text{time}}$</p> <p>$40 \text{ km/h} = \frac{2,9 \text{ km}}{\text{time}} \quad \checkmark \text{SF}$</p> <p>$\text{Time} = \frac{2,9 \text{ km}}{40 \text{ km/h}} \quad \checkmark \text{M}$</p> <p>$= 0,0725 \text{ hours} \quad \checkmark \text{S}$</p> <p>$= 0,0725 \times 60 \text{ minutes} \quad \checkmark \text{C}$</p> <p>$= 4,35 \text{ minutes}$</p> <p>Arrival = 09:15 + 4,35minutes $\checkmark \text{CA}$ $= 09\text{H } 19,35\text{minutes OR } 09:19:21$</p> <p>$\therefore$ the bus driver's estimated time of arrival is correct. $\checkmark \text{CA}$</p> <p style="text-align: center;">OR</p> <p>Speed = $\frac{\text{distance}}{\text{time}}$</p> <p>$40 \text{ km/h} = \frac{\text{distance}}{5 \text{ minutes}} \quad \checkmark \text{SF} \quad \checkmark \text{M}$</p> <p>Distance = $40 \times \frac{5}{60} \text{ km} \quad \checkmark \text{C}$ $= 3,33 \text{ km} \quad \checkmark \text{CA}$</p> <p>$\therefore$ it is possible for him to be at the stadium at 09:20 He can cover a longer distance than he need to cover in 5 minutes $\checkmark \text{CA}$</p> <p style="text-align: center;">OR</p> <p>Speed = $\frac{\text{distance}}{\text{time}}$</p> <p>$= \frac{2,9 \text{ km}}{5 \text{ minutes}} \quad \checkmark \text{CA} \quad \checkmark \text{A}$</p> <p>$= 2,9 \text{ km} \times \frac{60}{5} \text{ hour} \quad \checkmark \text{C}$ $= 34,8 \text{ km/h} \quad \checkmark \text{CA}$</p> <p>$\therefore$ He has 5 minutes to get to the stadium and can travel at 34,8 km/h and still arrive on time $\checkmark \text{CA}$</p>	<p>12.3.1</p> <p>1SF/CA substitution 12.3.2</p> <p>1M rearranging the formula 12.2.1</p> <p>1S simplification</p> <p>1C converting to minutes</p> <div style="border: 1px solid black; padding: 2px; width: fit-content; margin: 5px auto;"> <p>Range from 3,9 to 4,5 minutes</p> </div> <p>1CA time of arrival</p> <p>1CA conclusion</p> <p style="text-align: center;">OR</p> <p>1SF/CA substitution</p> <p>1M rearranging the formula</p> <p>1C converting to minutes</p> <p>1CA simplification</p> <p>1CA conclusion</p> <p style="text-align: center;">OR</p> <p>1CA conclusion</p> <p>1CA substituting distance</p> <p>1A substituting time</p> <p>1C converting to minutes</p> <p>1CA simplification</p> <p>1CA comparison of speed</p> <p>1CA conclusion</p>	<p>12.3.1</p> <p>12.3.2</p> <p>12.2.1</p> <p>(6)</p>
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Ques	Solution	Explanation	AS																																													
2.2.1	<div style="text-align: center;"> <table border="0"> <tr> <td></td> <td>PANTS</td> <td>SHIRT</td> <td>TIE</td> <td>POSSIBLE OUTCOMES</td> </tr> <tr> <td></td> <td></td> <td></td> <td>T</td> <td>→ LP; LS; T</td> </tr> <tr> <td></td> <td></td> <td>LS</td> <td>NT</td> <td>→ LP; LS; NT ✓CA</td> </tr> <tr> <td></td> <td>LP</td> <td></td> <td>T</td> <td>→ LP; SS; T</td> </tr> <tr> <td></td> <td></td> <td>SS</td> <td>NT</td> <td>→ L□; SS; NT ✓CA</td> </tr> <tr> <td></td> <td></td> <td></td> <td>T</td> <td>→ SP; LS; T</td> </tr> <tr> <td></td> <td></td> <td>LS</td> <td>NT</td> <td>→ SP; LS; NT ✓CA</td> </tr> <tr> <td></td> <td>SP</td> <td></td> <td>T</td> <td>→ SP; SS; T</td> </tr> <tr> <td></td> <td></td> <td>SS</td> <td>NT</td> <td>→ SP; SS; NT ✓CA</td> </tr> </table> </div> <p>1A LS and SS 2A T and NT</p> <div style="border: 1px solid black; padding: 5px; margin: 10px 0;"> <p>4A POSSIBLE OUTCOMES Max 1 mark if only 1 or 2 possible outcomes are correct Max 2 marks if 3 or 4 possible outcomes are correct Max 3 marks if 5 or 6 possible outcomes are correct Max 4 marks if all 7 possible outcomes are correct</p> </div> <div style="border: 1px solid black; padding: 5px; margin: 10px 0;"> <p>Order of outcomes not important in this solution</p> </div> <div style="text-align: right;">(7)</div>		PANTS	SHIRT	TIE	POSSIBLE OUTCOMES				T	→ LP; LS; T			LS	NT	→ LP; LS; NT ✓CA		LP		T	→ LP; SS; T			SS	NT	→ L□; SS; NT ✓CA				T	→ SP; LS; T			LS	NT	→ SP; LS; NT ✓CA		SP		T	→ SP; SS; T			SS	NT	→ SP; SS; NT ✓CA	<div style="text-align: center;">  </div>	12.4.5
	PANTS	SHIRT	TIE	POSSIBLE OUTCOMES																																												
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2.2.2	$P(\text{correct uniform}) = \frac{2}{8} \checkmark_A \quad \text{OR} \quad \frac{1}{4}$ $= 0,25 \checkmark_{CA}$	<p>1A number of actual outcomes (numerator) 1A number of possible outcomes (denominator) 1CA decimal form</p> <div style="border: 1px solid black; padding: 5px; margin: 10px 0;"> <p>Max 2 marks if $\frac{1}{4}$ or 25%</p> </div> <div style="border: 1px solid black; padding: 5px; margin: 10px 0;"> <p>Answer only full marks</p> </div> <div style="text-align: right;">(3)</div>	12.4.5																																													

Ques	Solution	Explanation ASs																		
3.1.2 (a)	<p style="text-align: center;">ANNEXURE D</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 5%;"></th> <th style="width: 35%; text-align: left;">MONTHLY DEDUCTIONS</th> <th style="width: 60%; text-align: center;">3.1.2 (a)</th> </tr> </thead> <tbody> <tr> <td style="text-align: center;">A</td> <td>Union membership</td> <td style="text-align: right;">R35,00</td> </tr> <tr> <td style="text-align: center;">B</td> <td>Pension = 7,5% of gross salary</td> <td style="text-align: right;">$\checkmark M$ $7,5\% \times R7\ 986,50 = \underline{\underline{R598,99}}$ $\checkmark A$</td> </tr> <tr> <td style="text-align: center;">C</td> <td>PAYE = (gross salary – R4 750) \times 18%</td> <td style="text-align: right;">$\checkmark SF$ $(R7\ 986,50 - R4\ 750,00) \times 18\%$ $\checkmark CA$ $= R3\ 236,50 \times 0,18 = \underline{\underline{R582,57}}$</td> </tr> <tr> <td style="text-align: center;">D</td> <td>Medical Aid contribution</td> <td style="text-align: right;">R938,67</td> </tr> <tr> <td style="text-align: center;">E</td> <td>Total = A + B + C + D</td> <td style="text-align: right;">Total deductions = R35 + R598,99 + R582,57 + R938,67 $\checkmark CA$ = <u><u>R2 155,23</u></u></td> </tr> </tbody> </table>		MONTHLY DEDUCTIONS	3.1.2 (a)	A	Union membership	R35,00	B	Pension = 7,5% of gross salary	$\checkmark M$ $7,5\% \times R7\ 986,50 = \underline{\underline{R598,99}}$ $\checkmark A$	C	PAYE = (gross salary – R4 750) \times 18%	$\checkmark SF$ $(R7\ 986,50 - R4\ 750,00) \times 18\%$ $\checkmark CA$ $= R3\ 236,50 \times 0,18 = \underline{\underline{R582,57}}$	D	Medical Aid contribution	R938,67	E	Total = A + B + C + D	Total deductions = R35 + R598,99 + R582,57 + R938,67 $\checkmark CA$ = <u><u>R2 155,23</u></u>	<p>12.1.3 12.2.3</p> <p>1M multiplying 1A simplifying</p> <p>1SF substitution into formula</p> <p>1CA simplifying</p> <p>1CA total</p> <div style="border: 1px solid black; padding: 2px; width: fit-content; margin: 5px auto;">No penalty for rounding off</div> <p style="text-align: right;">(5)</p>
	MONTHLY DEDUCTIONS	3.1.2 (a)																		
A	Union membership	R35,00																		
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D	Medical Aid contribution	R938,67																		
E	Total = A + B + C + D	Total deductions = R35 + R598,99 + R582,57 + R938,67 $\checkmark CA$ = <u><u>R2 155,23</u></u>																		
3.1.2 (b)	<p>Net salary = Gross salary – total deductions = R7 986,50 – R2 155,23 $\checkmark M$ = R5 831,27 $\checkmark CA$</p> <p>Net annual salary = R5 831,27 \times 12 = R69 975,24 $\checkmark CA$</p>	<p>1M difference of correct values 1CA simplifying</p> <p>1CA annual net salary</p> <p style="text-align: right;">(3)</p>																		

Ques	Solution		Explanation ASs	
3.1.3 (a)	ANNEXURE E		12.1.3 12.2.3	
		MONTHLY DEDUCTIONS	3.1.3(a)	
	A	Union membership	R35,00	1A increase in %
	B	Pension = 7,5% of gross salary	New salary $\checkmark A$ $= 1,045 \times R7\ 986,50 = R8\ 345,89$ $\checkmark CA$ Pension $= 7,5\% \times R8\ 345,89 = \underline{R625,94}$ $\checkmark CA$	1CA new salary 1CA simplifying
	C	PAYE = (gross salary – R4 750) \times 18%	$(R8\ 345,89 - R4\ 750,00) \times 18\%$ $= R3\ 595,89 \times 0,18 = \underline{R647,26}$ $\checkmark CA$	1CA simplifying
	D	Medical Aid contribution	Medical Aid cost $\checkmark RT$ $= R1\ 256 + R900 + 2 \times R468$ $= R3\ 092$ $\checkmark A$ Member contribution $\checkmark CA$ $= \frac{1}{3} \times R3\ 092 = \underline{R1\ 030,67}$	1RT values 1A medical aid costs 1CA simplifying
	E	Total = A + B + C + D	Total deductions $= R35 + R625,94 + R647,26$ $+ R1\ 030,67$ $= R2\ 338,87$ $\checkmark CA$	1CA total deductions
Net salary = R8 345,89 – R2 338,87 = R6 007,02 $\checkmark CA$			1CA simplifying	
Difference in net salaries = R6 007,02 – R5 831,27 = <u>R175,75</u>				
$\checkmark CA$ \therefore Mr Riet's argument is NOT valid.			1CA conclusion	
<div style="border: 1px solid black; padding: 5px; display: inline-block;"> No penalty for rounding off </div>			(10)	

Ques	Solution	Explanation	ASs
3.1.3(b)	$\% \text{ change} = \frac{\overset{\check{CA}}{R72\,084,24} - \overset{\check{M}}{R69\,975,24}}{R69\,975,24} \times 100\%$ $= 3,013\%$ $\approx 3,01\% \quad \check{CA}$ <p style="text-align: center;">OR</p> $\% \text{ change} = \frac{\overset{\check{M}}{R6\,007,02} - \overset{\check{CA}}{R5\,831,27}}{R5\,831,27} \times 100\%$ $= 3,013\%$ $\approx 3,01\% \quad \check{CA}$	<p>1M calculating % change 1CA using new and old salary</p> <p>1CA simplifying</p> <p>1M calculating % change 1CA using new and old salary</p> <p>1CA simplifying</p> <div style="border: 1px solid black; padding: 5px; width: fit-content; margin: 10px auto;"> No penalty for leaving out % symbol Accept 0,0301 </div> <div style="border: 1px solid black; padding: 5px; width: fit-content; margin: 10px auto; text-align: center;"> Answer only full marks </div>	12.1.3
3.2.1	$2009/2010 = 17\% \text{ of } R834,3 \text{ billion} \quad \check{M}$ $= 0,17 \times R834,3 \text{ billion}$ $= R141,831 \text{ billion} \quad \check{A}$ $2010/2011 = 18\% \text{ of } R900,9 \text{ billion} \quad \check{M}$ $= 0,18 \times R900,9 \text{ billion}$ $= R162,162 \text{ billion} \quad \check{CA}$ $\text{Difference} = R162,162 \text{ billion} - R141,831 \text{ billion} \quad \check{M}$ $= R20,331 \text{ billion} \quad \check{CA}$ $= R20\,331\,000\,000 \quad \check{C}$ $R20\,331\,000\,000 > R20\,000\,000\,000$	<p>1M calculating 17%</p> <p>1A simplifying</p> <p>1A percentage expenditure in 2010/2011 1M calculating 18% 1CA simplifying</p> <p>1M calculating the difference</p> <p>1CA difference in rand 1C conversion</p> <div style="border: 1px solid black; padding: 5px; width: fit-content; margin: 10px auto;"> Numbers may be written with zeros instead of the word billion </div>	12.1.1 12.4.4

Ques	Solution	Explanation	ASs
3.2.2	<ul style="list-style-type: none"> * Increases in number of employees * Increase in salaries * Building new schools/libraries * Increase in the number of “no fee” schools * Teacher development initiatives * Increase in expenditure per learner * Demands of the new curriculum * Cater for inflation * Free stationery and textbooks * Feeding scheme for all learners * Free transport for all learners * More money for bursaries ✓✓ O ✓✓ O * Improvement of matric results * Demand for Higher Education 	<p>2O any correct reason</p> <p>2O any correct reason</p> <p style="text-align: right;">(4)</p>	12.4.4



QUESTION 4 [28 MARKS]			
Ques	Solution	Explanation	AS
4.1	$\text{Height of bottle} = \frac{143 \text{ mm}}{102\%}$ $= \frac{143 \text{ mm}}{1,02}$ $= 140,196\dots \text{ mm}$ $\approx 140 \text{ mm}$	<p>1M dividing 1A using correct values</p> <p>1CA/R simplifying to nearest mm</p> <p><input type="checkbox"/> ax 1 for rounding off if method is incorrect</p> <p>Answer only full marks</p> <p>(3)</p>	12.1.1 12.3.1



Ques	Solution	Explanation	AS
4.2	$\begin{aligned} \text{Area of base of bottle} &= 3,14 \times (29 \text{ mm})^2 \quad \checkmark \text{ SF} \\ &= 2\,640,74 \text{ mm}^2 \quad \checkmark \text{ CA} \end{aligned}$ <p>Length of base of box</p> $= 105\% \times 58 \text{ mm} \quad \checkmark \text{ M}$ $= 1,05 \times 58 \text{ mm}$ $= 60,9 \text{ mm} \quad \checkmark \text{ A}$ <p style="text-align: center;">OR</p> $\frac{105}{100} \times 58 \text{ mm}$ <p>Area of base of box = (side length)²</p> $= (60,9 \text{ mm})^2 \quad \checkmark \text{ SF}$ $= 3\,708,81 \text{ mm}^2 \quad \checkmark \text{ CA}$ <p>Difference in area = $3\,708,81 \text{ mm}^2 - 2\,640,74 \text{ mm}^2$ $\checkmark \text{ M}$</p> $= 1\,068,07 \text{ mm}^2 \quad \checkmark \text{ CA}$ $\approx 10,68 \text{ cm}^2$ <p>The dimensions satisfy the guideline $\checkmark \checkmark \text{ CA}$</p>	<p>1SF substitution into correct formula 1A value of radius 1CA simplifying</p> <div style="border: 1px solid black; padding: 5px; width: fit-content;"> <p>2642,08 using pi 2643,14 using $\frac{22}{7}$</p> </div> <p>1M increasing percentage 1A simplifying</p> <p>1SF substitution into formula 1CA simplifying 1M subtracting 1CA simplifying</p> <p>2CA conclusion</p> <div style="border: 1px solid black; padding: 5px; width: fit-content;"> <p>Length of base rounded off to 61 mm, or use of $\pi/\frac{22}{7}$ the difference in area = $10,80 \text{ cm}^2$</p> <p>Answer can be calculated using cm.</p> </div> <p style="text-align: right;">(11)</p>	12.3.1 12.1.1

Ques	Solution	Explanation	AS
4.3.1	<p>Area A = $143 \text{ mm} \times 60,9 \text{ mm}$ ✓ M $= 8\,708,7 \text{ mm}^2$ ✓ CA</p> <p>Area B = $(60,9 \text{ mm})^2$ $= 3\,708,81 \text{ mm}^2$ ✓ CA</p> <p>Area C = $\frac{1}{2} \times 3,14 \times \left(\frac{60,9 \text{ mm}}{2}\right)^2$ ✓ SF $= \frac{1}{2} \times 2\,911,41585 \text{ mm}^2$ $= 1\,455,71 \text{ mm}^2$ ✓ CA</p> <p>Area of open box $= 4(A + D) + 2(B + C) + E$ $= 4(8\,708,7 + 1\,832) \text{ mm}^2 + 2(3\,708,81 + 1\,455,71) \text{ mm}^2$ ✓ SF $+ 2\,855 \text{ mm}^2$ $= 55\,346,84 \text{ mm}^2$ ✓ CA $= \frac{55\,346,84}{1\,000\,000} \text{ m}^2$ ✓ C $= 0,055346\dots\text{m}^2$</p> <p>Mass of box = $240 \text{ g/m}^2 \times \frac{55\,346,84}{1\,000\,000} \text{ m}^2$ ✓ M $= 13,2832\dots \text{g}$ ✓ S $= 14 \text{ g}$ ✓ R</p> <p style="text-align: center;">OR</p>	<p>1M calculating area 1CA simplifying</p> <p>1CA area B</p> <p>1SF substitution into correct formula 1CA simplifying</p> <p>1SF(CA) substitution 1CA simplifying 1C converting to m^2</p> <p>1M multiplication 1S simplifying 1R rounding</p> <div style="border: 1px solid black; padding: 2px; width: fit-content; margin: 5px auto;">accept 13 g</div> <div style="border: 1px solid black; padding: 2px; width: fit-content; margin: 5px auto;">If area rounded off to $0,06 \text{ m}^2$ then mass = 15 g</div>	12.3.1



Ques	Solution	Explanation	ASs
4.3.1 (cont)	<p>Area A = 143 mm × 61 mm ✓ SF = 8 723 mm² ✓ CA</p> <p>Area B = 61 mm × 61 mm = 3 721 mm² ✓ CA</p> <p>Area C = $\frac{1}{2} \times 3,14 \times \left(\frac{61 \text{ mm}}{2}\right)^2$ ✓ SF = $\frac{1}{2} \times 2\,920,985 \text{ mm}^2$ = 1 460,49 mm² ✓ CA</p> <p>Surface area = 4(A + D) + 2(B + C) + E ✓ SF = 4 (8 723 + 1 832) mm² + 2 (3 721 + 1 460,49) mm² + 2 855 mm² = 55 437,98 mm² = $\frac{55\,437,98}{1\,000\,000} \text{ m}^2$ ✓ C = 0,055..m²</p> <p>Mass of box = 240 g/m² × 0,055.. ✓ M = 13,31 g ✓ S = 14 g ✓ R</p>	<p>1SF substitution 1CA area A</p> <p>1CA area B</p> <p>1SF substitution 1CA area C</p> <p>1SF substitution 1CA surface area 1C converting to m²</p> <p>1M multiplication 1S simplification 1R rounding</p> <p>(11)</p>	12.3.1
4.3.2	<p>1 kg = 1 000 g ∴ 14 g = 0,014 kg ✓ C</p> <p>Cost = R 16,00 + 0,014 kg × R 20 per kg ✓ SF = R16,00 + R0,28 = R16,28 ✓ CA</p>	<p>1C converting to kg 1SF substitution of answer from 4.3.1 into the correct formula 1CA simplifying</p> <div style="border: 1px solid black; padding: 5px; width: fit-content; margin: 10px auto;"> <p>Accept R16,26 to R16,30</p> </div> <p>(3)</p>	12.2.3 12.3.2

QUESTION 5 [30 MARKS]			
Ques	Solution	Explanation	AS
5.1.1(a)	July and August ✓A ✓A	2A July and August June and July 1 mark August and Sept 1 mark (2)	12.4.4
5.1.1(b)	February; ✓A May; ✓A September; December	1 A two months 1 A two months Penalty of 1 mark if more than four months (2)	12.4.4
5.1.1(c)	October and November ✓A ✓A	2A October and November Sept and Oct 1 mark Nov and Dec 1 mark (2)	12.4.4
5.1.2(a)	<p>Interpretation as % difference:</p> <p>Percentage change = $-4,1\% - 3,9\%$ ✓RG ✓M = -8% ✓CA</p> <p>OR</p> <p>Percentage change = $3,9\% - (-4,1\%)$ ✓RG ✓M = 8% ✓CA</p> <p>Interpretation as % change:</p> <p>Percentage change = $\frac{-4,1 - 3,9}{3,9} \times 100\%$ ✓RG ✓M = $-205,13\%$ ✓CA</p>	<p>1RG reading from graph 1M subtracting 1CA simplifying</p> <p>OR</p> <p>1RG reading from graph 1M subtracting 1CA simplifying</p> <p>OR</p> <p>1RG reading from graph 1M calculating % 1CA simplifying</p> <p>Answer only full marks</p> <p>(3)</p>	12.1.1

Ques	Solution	Explanation	ASs
5.1.2 (b)	$\begin{aligned} \text{Cost in May} &= 92\% \times R150 \\ &= 0,92 \times R150 \\ &= R138 \end{aligned}$ <p style="text-align: center;">OR</p> $\begin{aligned} \text{Cost in May} &= R150 - 8\% \text{ of } R150 \\ &= R150 - 0,08 \times R150 \\ &= R138 \end{aligned}$	1CA percentage 1M calculating cost 1CA simplifying 1CA percentage 1M calculating cost 1CA simplifying <div style="border: 1px solid black; padding: 2px; display: inline-block;">Answer only full marks</div> (3)	12.1.3
5.2.1	$\begin{aligned} \text{Price of bicycle} \times 105,8\% &= R1\,586,95 \\ \text{Price of bicycle} &= \frac{R1\,586,95}{105,8\%} \\ &= \frac{R1\,586,95}{1,058} \\ &= R1\,499,95 \end{aligned}$ <p style="text-align: center;">OR</p> <p>Let x be the price of the bicycle in November 2008</p> $\begin{aligned} \text{Price of bicycle: } x + 5,8\% \text{ of } x &= R1\,586,95 \\ 1,058x &= R1\,586,95 \\ x &= R1\,499,95 \end{aligned}$	1M dividing 1A using correct values 1CA simplifying 1M use of equation 1A using correct values 1CA simplifying (3)	12.1.3
5.2.2	$\begin{aligned} A &= P(1+i)^n \\ &= R5,45(1+0,058)^6 \\ &= R7,64 \end{aligned}$	1SF substitution of P 1A value of i 1A value of n 1CA simplifying <div style="border: 1px solid black; padding: 2px; display: inline-block;">No penalty for rounding</div> <div style="border: 1px solid black; padding: 2px; display: inline-block;">Answer only full marks</div> (4)	12.1.3

Ques	Solution	Explanation	AS
5.3.2(a)	<p>The graphs show a similar trend of month-on-month changes in prices as follows:</p> <p>An increase from May to November OR A decrease from January to February; OR A decrease from April to May; OR An increase from May to July; OR An increase from May to August; OR Zero change from July to August OR An increase from September to November OR A decrease from November to December. OR NO trend from January to December ✓CA ✓CA</p>	<p>2 CA for the trend</p> <p style="text-align: right;">(2)</p>	12.4.4
5.3.2(b)	<p>Prices are generally high in December and January due to festive season, and tend to drop in February. ✓✓O OR Prices tend to increase in the winter months (May, June, July) as fruit becomes scarce. OR Valid reasons like: Political reason; economic; climatic; religious; no trend-fluctuations</p>	<p>2O Own opinion that is valid for the trend chosen in 5.3.2(a)</p> <p style="text-align: right;">(2)</p>	12.4.4
TOTAL:			150