



# basic education

Department:  
Basic Education  
**REPUBLIC OF SOUTH AFRICA**

## NATIONAL SENIOR CERTIFICATE

**GRADE 10**

**MATHEMATICAL LITERACY P2**

**EXEMPLAR 2012**

**MEMORANDUM**

**MARKS: 75**

<b>Symbol</b>	<b>Explanation</b>
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
SF	Correct substitution in a formula
O	Opinion/Example
P	Penalty, e.g. for no units, incorrect rounding off, etc.
R	Rounding off/Reason

**This memorandum consists of 7 pages.**

<b>QUESTION 1 [13]</b>			
<b>Ques</b>	<b>Solution</b>	<b>Explanation</b>	<b>Level</b>
1.1.1	Base = $6 \times 15 \text{ cm} = 90 \text{ cm}$ ✓A Height = $3 \times 15 \text{ cm} = 45 \text{ cm}$ Area of a triangle = $\frac{1}{2} \times \text{base} \times \text{height}$ $= \frac{1}{2} \times 90 \text{ cm} \times 45 \text{ cm}$ ✓SF $= 2\,025 \text{ cm}^2$ ✓CA	1A length  1SF substituting  1 CA answer  (3)	L3
1.1.2	Diameter = $4 \times 15 \text{ cm} = 60 \text{ cm}$ ✓A Radius = $30 \text{ cm}$ ✓CA Area of a circle = $\pi \times (\text{radius})^2$ $= 3,142 \times (30 \text{ cm})^2$ ✓SF $= 2\,827,8 \text{ cm}^2$ ✓CA	1A diameter 1CA radius  1SF substituting 1CA answer  (4)	L3
1.2.1	Length of tape = Perimeter of rectangle + Perimeter of square ✓SF                                      ✓SF $= 2 \times 60 \text{ cm} + 2 \times 30 \text{ cm} + 4 \times 30 \text{ cm}$ $= 120 \text{ cm} + 60 \text{ cm} + 120 \text{ cm}$ ✓S $= 300 \text{ cm}$ ✓CA	1SF substituting into perimeter of rectangle 1SF substituting into perimeter of square 1S simplification  1CA answer  (4)	L3
1.2.2	$300 \text{ cm} = 3 \text{ m}$ ✓C  Cost = $R19,50 \times 3$ $= R58,50$ ✓CA	1C converting cm to m  1CA answer  (2)	L3

QUESTION 2 [26]			
Ques	Solution	Explanation	Level
2.1.1	Tariff = R5,994 ✓ ✓RT	2RT reading values from table (2)	L2
2.1.2	$A = 40 \times R5,994 \quad \checkmark M$ $= R239,76 \quad \checkmark A$ <b>OR</b> $A = \frac{R273,33}{1,14} \quad \checkmark M$ $= R239,76 \quad \checkmark A$	1M multiplying/dividing 1A answer (2)	L2
2.2	$114\% \times \text{amount excluding VAT} = C$ $C = \frac{116,28 \quad \checkmark M}{114\% \quad \checkmark A}$ $= \frac{116,28}{1,14}$ $= R102,00 \quad \checkmark A$	1M concept excluding VAT 1A dividing by 114%  1A simplification (3)	L3
2.3.1	The total due includes values, like rates, on which no VAT is charged (zero rated). ✓R ✓R	2R answer (2)	L4
2.3.2	VAT at B = R273,33 – R239,76 = R33,57 ✓CA  VAT at D = R116,28 – R102,00 = R14,28 ✓CA  Total VAT ✓M = R33,57 + R2,27 + R55,76 + R9,24 + R14,28 + R25,84 = R140,96	1CA VAT at B  1CA VAT at D  1M adding all the values (3)	L4

Ques	Solution	Explanation	Level
2.4	$\text{Monthly rates} = \text{Residential rate} \times \frac{\text{rateable value}}{12}$ $R732,38 = 1,89\% \times \frac{\text{rateable value}}{12} \quad \checkmark\text{SF}$ $\text{Rateable value} = \frac{12 \times R732,38}{0,0189} \quad \checkmark\text{M/A}$ $= R465\,003,17 \quad \checkmark\text{A}$	<p>1SF substitution into formula</p> <p>1M/A rearranging the formula</p> <p>1A answer</p> <p>(3)</p>	L4
2.5.1	<p>Amount in rand  <math>\checkmark\text{A}</math></p> $= 6,20 \times 5,42 + (\text{amount used} - 6,20) \times 10,94$ <p style="text-align: center;"><math>\checkmark\text{A} \quad \checkmark\text{A} \quad \checkmark\text{A}</math></p>	<p>1A multiplying by 5,42</p> <p>1M subtracting 6,20</p> <p>1A multiplying by 10,94</p> <p>(3)</p>	L3
2.5.2	<p>Graph A <math>\checkmark\checkmark\text{A}</math></p> <p>The graph shows that the tariff increases when more water is used. <math>\checkmark\checkmark\text{R}</math></p> <p>(Any other suitable explanation)</p>	<p>2A choice</p> <p>2R reason</p> <p>(4)</p>	L4
2.6.1	<p>Mean <math>\checkmark\text{M}</math></p> $= \frac{740 + 700 + 720 + 769 + 815 + 830 + 820 + 800 + 765 + 712 + 745 + 770}{12}$ $= \frac{9186}{12} \quad \checkmark\text{A}$ $= 765,50 \text{ kWh} \quad \checkmark\text{CA}$	<p>1M finding mean</p> <p>1A simplifying</p> <p>1CA answer</p> <p>(3)</p>	L3
2.6.2	<p>During the school holidays in June, more people could be at home using electricity <math>\checkmark\text{O}</math></p> <p>June is a winter month, and the family could be using more electricity to keep themselves warm. <math>\checkmark\text{O}</math></p> <p>(Any other opinion/reason)</p>	<p>2O own opinion</p> <p>(2)</p>	L4
2.6.3	$P(\text{less than } 710) = \frac{1}{12} \quad \checkmark\text{A}$	<p>1A numerator</p> <p>1A denominator</p> <p>(2)</p>	L3

QUESTION 3 [14]			
Ques	Solution	Explanation	Level
3.1	$\text{Number of screws} = \frac{24}{6}$ $= 4 \quad \checkmark\checkmark\text{A}$	2A answer (2)	L4
3.2	$\checkmark\text{A}$ Chair seat and $\checkmark\checkmark\text{A}$ stretcher	1A chair seat 2A stretcher (3)	L4
3.3	Assemble the chair's side rails (C) to the front leg frame (B) using the $\checkmark\text{A}$ wood dowel (J) and the JCBC screw (G) and the spring washer (H). $\checkmark\text{A}$ Tighten in a clockwise direction using the Allen key (K). $\checkmark\text{A}$	1A side rails and front leg frame 1A wood dowel, JCBC screw and spring washer 1A direction for tightening 1A Allen key (4)	L4
3.4	$\text{Area} = 42 \text{ cm} \times 41 \text{ cm} \quad \checkmark\text{SF}$ $= 1\,722 \text{ cm}^2 \quad \checkmark\text{A} \quad \checkmark\text{A}$	1SF substitution into formula 1A answer 1A correct unit (3)	L2
3.5	$\text{Scale height} = \frac{94 \text{ cm}}{23,5} \quad \checkmark\text{A}$ $= 4 \text{ cm} \quad \checkmark\text{A}$	1A using the scale 1A answer (2)	L3

<b>QUESTION 4 [19]</b>			
<b>Ques</b>	<b>Solution</b>	<b>Explanation</b>	<b>Level</b>
4.1.1	25; 29; 30; 30; 32; 35; 35; 38; 56; 56; 58; 58; 58; 67; 67; 70; 74; 76; 84; 85 ✓M  Mode = 58% ✓ ✓ A	1M arranging data  2A mode  (2)	L2 (1) L3 (1)
4.1.2	Range = 85% – 25% ✓M = 60% ✓CA	1M subtracting min and max values 1CA solution  (2)	L2
4.1.3	Median = $\frac{56+58}{2}$ ✓A ✓M  = 57% ✓CA	1A correct central values 1M dividing  1CA conclusion  (3)	L3
4.2.1	P = 0 ✓A  Q = 6 ✓ ✓A	1A solution 2A solution  (3)	L2
4.2.2	P = $\frac{7}{20}$ ✓A ✓M = 0,35 ✓CA	1A denominator 1M writing probability 1CA answer  (3)	L2

Ques	Solution	Explanation	Level																
4.2.3	<p style="text-align: center;"><b>NUMBER OF LEARNERS PER LEVEL</b></p> <table border="1" style="margin-left: auto; margin-right: auto;"> <caption>Data for NUMBER OF LEARNERS PER LEVEL</caption> <thead> <tr> <th>Level</th> <th>Frequency</th> </tr> </thead> <tbody> <tr> <td>Level 1</td> <td>2</td> </tr> <tr> <td>Level 2</td> <td>6</td> </tr> <tr> <td>Level 3</td> <td>0</td> </tr> <tr> <td>Level 4</td> <td>5</td> </tr> <tr> <td>Level 5</td> <td>2</td> </tr> <tr> <td>Level 6</td> <td>3</td> </tr> <tr> <td>Level 7</td> <td>2</td> </tr> </tbody> </table>	Level	Frequency	Level 1	2	Level 2	6	Level 3	0	Level 4	5	Level 5	2	Level 6	3	Level 7	2	<p>1CA correct plotting of L2</p> <p>1CA correct plotting of L3</p> <p>1A correct plotting of L6</p> <p style="text-align: right;">(3)</p>	L3
Level	Frequency																		
Level 1	2																		
Level 2	6																		
Level 3	0																		
Level 4	5																		
Level 5	2																		
Level 6	3																		
Level 7	2																		
4.2.4	$\text{Share} = \frac{3}{5} \text{ of R600}$ $= \text{R360} \checkmark \text{A}$ $\text{Each learner's share} = \frac{\text{R360}}{2}$ $= \text{R180} \checkmark \text{A}$	<p>1A using ratio</p> <p>1A simplifying</p> <p>1CA answer</p> <p style="text-align: right;">(3)</p>	L4																

**TOTAL: 75**