



# basic education

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

## NATIONAL SENIOR CERTIFICATE

**GRADE 12**

**MATHEMATICAL LITERACY P2**

**FEBRUARY/MARCH 2011**

**MEMORANDUM**

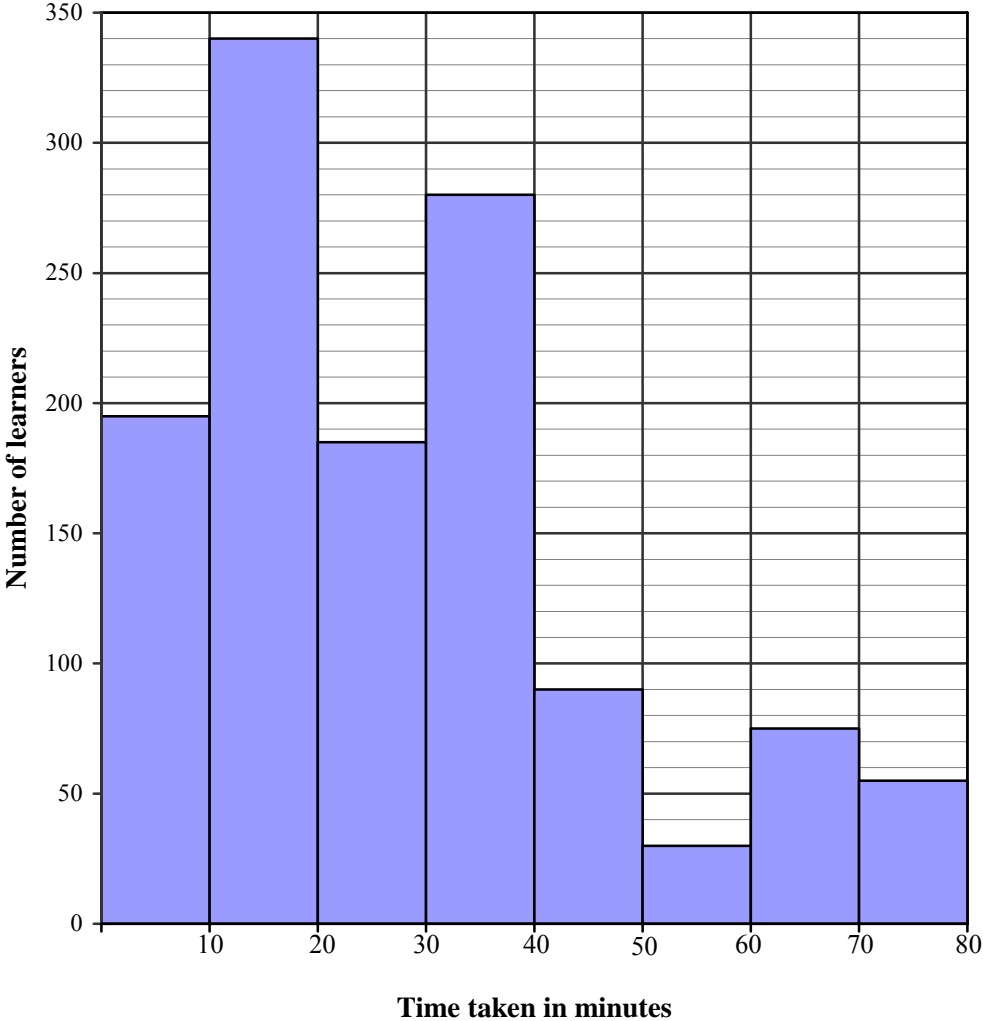
**MARKS: 150**

<b>SYMBOL</b>	<b>EXPLANATION</b>
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 22 pages.**

QUESTION 1 [40 MARKS]			
Ques	Solution	Explanation	AS
1.1.1(a)	$A = 100\% - (15,6 + 27,2 + 22,4 + 7,2 + 2,3 + 6,0 + 4,4)\%$ $= 14,8\% \quad \checkmark CA$ <p><b>OR</b></p> $\text{Number of learners in school} = \frac{340}{27,2\%}$ $= 1\,250 \quad \checkmark M$ $A = \frac{185}{1\,250} \times 100\%$ $= 14,8\% \quad \checkmark CA$	<p>1M subtracting from 100%</p> <p>1CA value of A</p> <p>1MA number of learners at school</p> <p>1CA value of A</p> <p>(2)</p>	12.4.4
1.1.1(b)	$\text{Total number of learners} = \frac{195}{15,6\%}$ $= 1\,250 \quad \checkmark A$ $\frac{B}{1\,250} \times 100\% = 4,4\% \quad \checkmark M$ $B = \frac{4,4\% \times 1\,250}{100\%}$ $= 55 \quad \checkmark CA$	<p>1A number of learners</p> <p>1M using 4,8%</p> <p>1CA value of B</p> <p>(3)</p>	12.4.4 12.1.1

Ques	Solution	Explanation	AS
1.1.2	<p>Percentage = 7,2% + 2,4% + 6% + 4,4% ✓M = 20% ✓CA</p> <p><b>OR</b></p> <p>Percentage = <math>\frac{90 + 30 + 75 + 55}{1\ 250} \times 100\%</math> ✓M = <math>\frac{250}{1\ 250} \times 100\%</math> = 20% ✓CA</p>	<p>1M adding 1CA percentage</p> <p>1M finding percentage</p> <p>1CA percentage (2)</p>	12.4.4

Ques	Solution	AS																		
1.1.3	<p data-bbox="309 353 1114 416"><b>TABLE 1: Time usually taken by all the learners of Vuka High School to travel to school each day</b></p> <table border="1" data-bbox="296 454 1303 658"> <thead> <tr> <th data-bbox="301 461 485 589">Time taken in minutes</th> <th data-bbox="489 461 587 589">0 to less than 10</th> <th data-bbox="592 461 689 589">10 to less than 20</th> <th data-bbox="694 461 791 589">20 to less than 30</th> <th data-bbox="796 461 893 589">30 to less than 40</th> <th data-bbox="898 461 995 589">40 to less than 50</th> <th data-bbox="1000 461 1098 589">50 to less than 60</th> <th data-bbox="1102 461 1200 589">60 to less than 70</th> <th data-bbox="1204 461 1302 589">70 to less than 80</th> </tr> </thead> <tbody> <tr> <td data-bbox="301 595 485 651">Number of learners</td> <td data-bbox="489 595 587 651">195</td> <td data-bbox="592 595 689 651">340</td> <td data-bbox="694 595 791 651">185</td> <td data-bbox="796 595 893 651">280</td> <td data-bbox="898 595 995 651">90</td> <td data-bbox="1000 595 1098 651">30</td> <td data-bbox="1102 595 1200 651">75</td> <td data-bbox="1204 595 1302 651"><b>B</b></td> </tr> </tbody> </table> <p data-bbox="379 701 1177 763"><b>RELATIONSHIP BETWEEN NUMBER OF LEARNERS AND TIME TAKEN TO TRAVEL TO SCHOOL</b></p>  <p data-bbox="233 1861 1126 1966">4A marks for any four bars correct 1A all bars correct 1CA histogram (bars adjacent to each other – no space between bars)</p> <p data-bbox="1305 1968 1345 1998"><b>(6)</b></p>	Time taken in minutes	0 to less than 10	10 to less than 20	20 to less than 30	30 to less than 40	40 to less than 50	50 to less than 60	60 to less than 70	70 to less than 80	Number of learners	195	340	185	280	90	30	75	<b>B</b>	12.4.2
Time taken in minutes	0 to less than 10	10 to less than 20	20 to less than 30	30 to less than 40	40 to less than 50	50 to less than 60	60 to less than 70	70 to less than 80												
Number of learners	195	340	185	280	90	30	75	<b>B</b>												

Ques	Solution	Explanation	AS
1.2.1(a)	<p>Average speed = <math>\frac{\text{distance}}{\text{time}}</math> ✓M</p> <p><math>= \frac{12 \text{ km}}{60 \text{ min}}</math> ✓SF</p> <p><math>= \frac{12\,000 \text{ m}}{60 \text{ min}}</math> ✓C</p> <p><math>= 200 \text{ metres per minute}</math> ✓CA</p> <p><b>OR</b></p> <p>Distance = average speed × time</p> <p>12 km = average speed × 60 minutes ✓SF</p> <p>12 000 m = average speed × 60 minutes ✓C</p> <p><math>\frac{12\,000 \text{ m}}{60 \text{ min}} = \text{average speed}</math> ✓M</p> <p>Average speed = 200 metres per minute ✓CA</p>	<p>1M rearranging the formula</p> <p>1SF substitution</p> <p>1C conversion</p> <p>1CA solution</p> <p><b>OR</b></p> <p>1SF substitution</p> <p>1C conversion</p> <p>1M rearranging the formula</p> <p>1CA solution</p> <p>(4)</p>	12.2.1
1.2.1(b)	<p>200 m/minute is too fast for walking and too slow for travelling by car or by taxi. ✓O</p> <p>Thus, the learner was cycling/running/travelling in a donkey cart. ✓✓J</p> <p><b>OR</b></p> <p>✓✓J</p> <p>Any other sensible reason</p>	<p>1O Own opinion</p> <p>2J justification/reason</p> <p>(3)</p>	12.1.2
1.2.2	<p>The statement of the newspaper was NOT correct. ✓O</p> <p>✓J</p> <p>The sample chosen was too small (not representative of the whole country) so cannot be used to make conclusions about the whole country. ✓J</p>	<p>1O conclusion of the newspaper</p> <p>2J representivity of the sample</p> <p>(3)</p>	12.4.6

Ques	Solution	Explanation	AS
1.3	<p style="text-align: center;"> <math>\checkmark C</math>                      Area needed for 1 bicycle = <math>(1,8 \text{ m} \times 0,45 \text{ m}) + 0,5 \text{ m}^2</math> <math>\checkmark MA</math>  <math>\checkmark CA</math>  <math>= 0,81 \text{ m}^2 + 0,5 \text{ m}^2</math>   <math>= 1,31 \text{ m}^2</math> <math>\checkmark CA</math> </p> <p>                     So, area needed for 124 bicycles = <math>124 \times 1,31 \text{ m}^2</math> <math>\checkmark A</math>  <math>\checkmark CA</math>  <math>= 162,44 \text{ m}^2</math> <math>\checkmark CA</math> </p> <p><b>OR</b></p> <p>                     Area needed for 1 bicycle  <math>\checkmark MA</math> <math>\checkmark C</math> <math>\checkmark A</math>  <math>= (180 \text{ cm} \times 45 \text{ cm}) + 0,5 \times 10\,000 \text{ cm}^2</math>   <math>= 8\,100 \text{ cm}^2 + 5\,000 \text{ cm}^2</math>   <math>= 13\,100 \text{ cm}^2</math> <math>\checkmark CA</math> </p> <p>                     So, area needed for 124 bicycles = <math>124 \times 13\,100 \text{ cm}^2</math> <math>\checkmark CA</math>  <math>= 1\,624\,400 \text{ cm}^2</math> <math>\checkmark CA</math>  <math>= 162,44 \text{ m}^2</math> <math>\checkmark A</math> </p>	<p>1C conversion to m 1MA area for a bicycle 1CA additional space 1A total area for a bicycle 1A multiplication by 124 1CA Solution 1CA correct unit</p> <p>1C conversion to <math>\text{cm}^2</math> 1MA area for a bicycle 1A additional space 1CA total area for a bicycle</p> <p>1CA multiplication by 124 1CA Solution 1A correct unit</p>	<p>12.3.1 12.3.1</p> <p>(7)</p>

Ques	Solution	Explanation	AS
1.4.1	<p>Mean <span style="float: right;">✓MA</span></p> $= \frac{2+4+6+3+4+5+6+5+7+5+16+9+5+C+17+9}{16}$ $= \frac{103+C}{16} \quad \checkmark S$ <p>Mean = 7</p> $\therefore \frac{103+C}{16} = 7 \quad \checkmark M$ $103 + C = 7 \times 16$ $C = 112 - 103$ $= 9 \quad \checkmark CA$	<p>1MA finding the mean</p> <p>1S simplification</p> <p>1M equating to 6</p> <p>1CA value of C</p> <p style="text-align: right;">(4)</p>	<p>12.4.3</p> <p>12.4.4</p>
1.4.2	<p>Responses in ascending order are:</p> <p style="text-align: right;">✓CA</p> <p>2; 3; 4; 4; 5; 5; 5; 5; 6; 6; 7; 9; 9; 9; 16; 17</p> <p>The median = <math>\frac{5+6}{2}</math> ✓M</p> <p style="text-align: right;">= 5,5 people ✓CA</p>	<p>1CA ascending order</p> <p>1M finding the median</p> <p>1CA median</p> <p style="text-align: right;">(3)</p>	12.4.3
1.4.3	<p>Mrs James should use the median rather than the mean ✓O</p> <p>The mean (i.e. 7 people) is not a good measure to use as 10 of the 16 households have less than 7 people. The mean is affected by large numbers. ✓J</p> <p>More than 50% of the households have 5 people or less thus making the median (i.e. 5,5 people) a more accurate measure. ✓J</p>	<p>1O correct measure</p> <p>1J rejecting the mean</p> <p>1J accepting the median</p> <p style="text-align: right;">(3)</p>	12.4.3

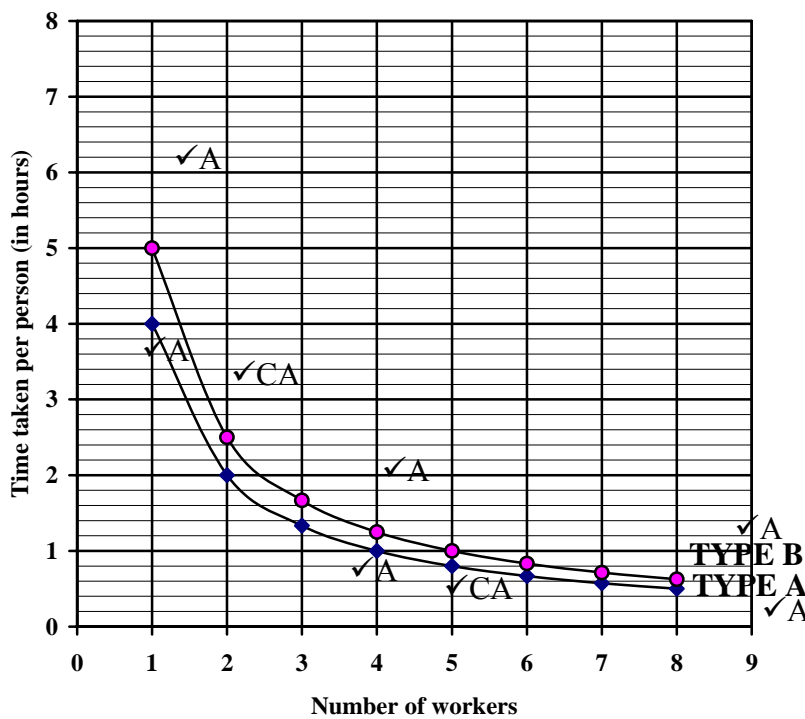
<b>QUESTION 2 [33 MARKS]</b>			
<b>Ques</b>	<b>Solution</b>	<b>Explanation</b>	<b>AS</b>
2.1.1(a)	$P = \frac{4}{2} \quad \checkmark M$ $= 2 \quad \checkmark CA$	1 M method 1CA value of P (2)	12.2.1
2.1.1(b)	$1 = \frac{5}{Q} \quad \checkmark M$ $Q = \frac{5}{1}$ $= 5 \quad \checkmark CA$ <p><b>OR</b></p> $0,8 = \frac{4}{Q} \quad \checkmark M$ $Q = \frac{4}{0,8}$ $= 5 \quad \checkmark CA$	1 M method 1CA value of Q  1 M method 1CA value of Q (2)	12.2.1



2.1.2

No. of workers	1	2	4	<b>5</b>	8
Time taken (in hours) for TYPE A	4	<b>2</b>	1	0,8	0,5
Time taken (in hours) for TYPE B	5	2,5	1,25	1	0,625

**TIME TAKEN PER WORKER TO MAKE ONE PAIR OF SANDALS**



**Type A Sandal**

2A all points plotted

1CA correct graph

1A label

**Type B Sandal**

2A all points plotted

1CA correct graph

1A label

(8)

2.1.3

Inverse proportion or Indirect proportion ✓ ✓CA

2CA type of proportion

(2)

12.2.1

Ques	Solution	Explanation	AS
2.2.1	<p>Jabu's wages = <math>R11,25/\text{hour} \times 40 \text{ hours}</math> ✓M  <math>= R450,00</math> ✓CA</p> <p>Each worker earns <math>80\%</math> of <math>R450,00 = R360,00</math>                      ✓M ✓CA</p> <p>Total paid = <math>R450,00 + 3 \times R360</math> ✓M  <math>= R1\ 530,00</math> ✓CA</p> <p><b>OR</b></p> <p>Jabu's wages = <math>R11,25/\text{hour} \times 40 \text{ hours}</math> ✓M  <math>= R450,00</math> ✓CA</p> <p>Each worker earns <math>80\%</math> of <math>R11,25 = R9,00</math> ✓M ✓CA</p> <p>Total paid = <math>R450,00 + 3 \times R9,00/\text{hour} \times 40 \text{ hours}</math> ✓M  <math>= R1\ 530,00</math> ✓CA</p>	<p>1M calculating Jabu's wages                      1CA Jabu's wages</p> <p>1M calculating worker's wages                      1CA worker's wages</p> <p>1M adding all wages                      1CA total wages</p> <p>1M calculating Jabu's wages                      1CA Jabu's wages</p> <p>1M calculating worker's wages                      1A worker's hourly wage                      1M adding all wages                      1CA total wages</p> <p>(6)</p>	<p>12.1.3                      12.2.1</p>
2.2.2	<p>Overtime pay per hour = <math>1,5 \times R11,25</math> ✓M  <math>= R16,875</math>  <math>\approx R16,88</math> ✓CA</p> <p>Jabu's earning = <math>R450,00 + R16,88/\text{hour} \times 8 \text{ hours}</math> ✓M  <math>= R450,00 + R135,04</math> ✓CA  <math>= R585,04</math> ✓CA</p> <p><b>OR</b></p> <p>Jabu's earning = <math>R450,00 + 8 \times (1,5 \times R11,25)</math> ✓M                      ✓A ✓A  <math>= R450,00 + R135,00</math> ✓CA  <math>= R585,00</math> ✓CA</p>	<p>1M calculating overtime rate                      1CA overtime rate</p> <p>1M calculating Jabu's wages                      1CA overtime pay                      1CA total earnings</p> <p>1A number of hours overtime                      1A multiplying by overtime rate                      1M calculating Jabu's wages                      1CA overtime pay                      1CA total earnings</p> <p>(5)</p>	<p>12.1.3</p>

Ques	Solution	Explanation	AS
2.3.1(a)	Percentage = 25% ✓✓A  <b>OR</b> $\text{Percentage} = \frac{3}{12} \times 100\% \quad \checkmark A$ $= 25\% \quad \checkmark CA$	2A percentage  1A number of days 1CA percentage (2)	12.4.3
2.3.1(b)	Percentage = 50% ✓✓A  OR $\text{Percentage} = \frac{6}{12} \times 100\% \quad \checkmark A$ $= 50\% \quad \checkmark CA$	2A percentage  1A number of days  1CA percentage (2)	12.4.3
2.3.2(a)	$P(3 \text{ Type B}) = \frac{2 \checkmark A}{12 \checkmark A}$ $= \frac{1}{6}$ $= 0,1666\dots$ $\approx 0,167$	1A number of days 1A total number of days  (2)	12.4.5
2.3.2(b)	$P(\text{more than 4 Type A}) = \frac{6 \checkmark A}{12 \checkmark A}$ $= \frac{1}{2}$ $= 0,25$	1A number of days 1A total number of days  (2)	12.4.5



Ques	Solution	Explanation	AS
3.1.2	<p>Distance around the pencil = 18 mm ✓M                      ∴ The number of beads = 18 mm ÷ 1,5 mm                      = 12 ✓CA</p> <p>Length of beaded area = 60 mm ✓M                      The number of beads = 60 mm ÷ 1,5 mm                      = 40 ✓CA</p> <p>So the number of beads needed = 12 × 40 ✓M                      = 480 ✓CA</p> <p><b>OR</b></p> <p>Width of one side of pencil = 3 mm                      Number of beads needed for width = 3 mm ÷ 1,5 mm = 2 ✓M ✓A</p> <p>Length of pencil to be beaded = 60 mm                      Number of beads needed for length = 60 mm ÷ 1,5 mm = 40 ✓M ✓A</p> <p>Number of beads needed for one side of pencil = 2 × 40                      = 80 ✓CA beads</p> <p>Number of beads needed for six sides of pencil = 6 × 80                      = 480 ✓CA</p>	<p>1M dividing</p> <p>1CA number of beads</p> <p>1M dividing</p> <p>1CA number of beads</p> <p>1M multiplying</p> <p>1CA solution</p> <p>1M dividing                      1A number on width                      1M dividing                      1A number on length</p> <p>1CA number on side</p> <p>1CA number on six sides</p>	<p>12.3.1 12.1.1</p> <p>(6)</p>

Ques	Solution	Explanation	AS
3.2.1	$\begin{aligned} \text{Cost of labour (for beading)} &= \frac{5}{60} \times R15,50 && \checkmark\text{MA} \\ &= R1,29 && \checkmark\text{CA} \\ \\ \text{Cost of beads} &= \frac{480}{1\,000} \times R8,00 && \checkmark\text{MA} \\ &= R3,84 && \checkmark\text{CA} \\ \\ \text{Cost of pencil} &= \frac{R30,00}{12} && \checkmark\text{MA} \\ &= R2,50 && \checkmark\text{CA} \\ \\ \text{Total cost price of the beaded pencil} &= R1,29 + R3,84 + R2,50 \\ &= R7,63 && \checkmark\text{CA} \\ \\ \% \text{ Selling price} &= 100\% + 35\% = 135\% \\ \\ \text{Selling price} &= \frac{135}{100} \times R7,63 && \checkmark\text{M} \\ &= 1,35 \times R7,63 \\ &= R10,30 && \checkmark\text{CA} \end{aligned}$	<p>1MA fraction and multiplication</p> <p>1CA cost of labour</p> <p>1MA fraction and multiplication</p> <p>1CA cost of beads</p> <p>1MA dividing by 12</p> <p>1CA cost of one pencil</p> <p>1CA total cost of a pencil</p> <p>1M calculating increase %</p> <p>1CA cost of pencil</p> <p>(9)</p>	12.1.1

Ques	Solution	Explanation	AS
3.2.2	Price of pencil = R10,30 R1 = ARS 0,54895 $R10,30 = ARS\ 0,54895 \times 10,30 \quad \checkmark A$ $= ARS\ 5,654185$  Price of one pencil = ARS 5,654185 $\checkmark CA$  Number of pencils = $\frac{ARS\ 100}{ARS\ 5,654185} \quad \checkmark M$ $= 17,686$ $\approx 17 \quad \checkmark CA$	1A using the exchange rate  1CA price of pencil in Argentinean peso 1M finding number of pencils  1CA number of pencils  (4)	12.1.1

**QUESTION 4 [34 MARKS]**

Ques	Solution	Explanation	AS				
4.1.1	<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 50%; text-align: left;">METHOD 1</th> <th style="width: 50%; text-align: left;">METHOD 2</th> </tr> </thead> <tbody> <tr> <td>Discount = 5% of R139 900 ✓M  = <math>\frac{5}{100} \times R139\,900</math> = 0,05 × R139 900 = R6 995,00 ✓A  Price after discount = R139 900 – R6 995,00 = R132 905 ✓CA  VAT = 14% of R132 905 = <math>\frac{14}{100} \times R132\,905</math> = R18 606,70 ✓CA  Total cost including VAT = R132 905 + R18 606,70 = R151 511,70 ✓CA</td> <td>Price after discount = 95% of R139 900 ✓M  = <math>\frac{95}{100} \times R139\,900</math> = 0,95 × R139 900 = R132 905 ✓CA  Total cost including VAT = 114% of R132 905 ✓M = <math>\frac{114}{100} \times R132\,905</math> = 1,14 × R132 905 = R151 511,70 ✓CA</td> </tr> </tbody> </table> <p>Pre-delivery cost = 0,75% of R151 511,70 = <math>\frac{0,75}{100} \times R151\,511,70</math> ✓M = 0,0075 × R151 511,70 = R 1 136,34 ✓CA</p> <p>Full purchase cash price = R151 511,70 + R 1 136,34 + R1 400,00 + R4 950,00 = R158 998,04 ✓CA</p>	METHOD 1	METHOD 2	Discount = 5% of R139 900 ✓M  = $\frac{5}{100} \times R139\,900$ = 0,05 × R139 900 = R6 995,00 ✓A  Price after discount = R139 900 – R6 995,00 = R132 905 ✓CA  VAT = 14% of R132 905 = $\frac{14}{100} \times R132\,905$ = R18 606,70 ✓CA  Total cost including VAT = R132 905 + R18 606,70 = R151 511,70 ✓CA	Price after discount = 95% of R139 900 ✓M  = $\frac{95}{100} \times R139\,900$ = 0,95 × R139 900 = R132 905 ✓CA  Total cost including VAT = 114% of R132 905 ✓M = $\frac{114}{100} \times R132\,905$ = 1,14 × R132 905 = R151 511,70 ✓CA	<p>1M calculating % 1A calculating 5% 1CA cash price (ex VAT)  <b>OR</b> 1M subtracting from 100% 1M calculating percentage 1CA discounted price  1M adding 14% 1CA price including VAT  <b>OR</b> 1CA calculating VAT  1CA cash price (incl. VAT)</p> <p>1M calculating % 1CA delivery cost</p> <p>1CA purchase price</p> <p style="text-align: right;">(8)</p>	12.1.3
METHOD 1	METHOD 2						
Discount = 5% of R139 900 ✓M  = $\frac{5}{100} \times R139\,900$ = 0,05 × R139 900 = R6 995,00 ✓A  Price after discount = R139 900 – R6 995,00 = R132 905 ✓CA  VAT = 14% of R132 905 = $\frac{14}{100} \times R132\,905$ = R18 606,70 ✓CA  Total cost including VAT = R132 905 + R18 606,70 = R151 511,70 ✓CA	Price after discount = 95% of R139 900 ✓M  = $\frac{95}{100} \times R139\,900$ = 0,95 × R139 900 = R132 905 ✓CA  Total cost including VAT = 114% of R132 905 ✓M = $\frac{114}{100} \times R132\,905$ = 1,14 × R132 905 = R151 511,70 ✓CA						



Ques	Solution	Explanation	AS				
4.1.2	<p>Deposit = 20% of R158 998,04 = R31 799,61 ✓CA</p> <p>Amount to be financed = R158 998,04 – R31 799,61 ✓M = R127 198,43 ✓CA</p> <p><b>OR</b></p> <p>% to be financed = 100% – 20% = 80% ✓CA</p> <p>Amount to be financed = <math>\frac{80}{100} \times R158\,998,04</math> ✓M = 0,8 × R158 998,04 = R127 198,43 ✓CA</p> <p>A = P(1 + i × n) ✓SF ✓A = R127 198,43 (1 + 0,12 × 5) = R203 517,49 ✓CA</p> <table border="1" data-bbox="215 1377 962 1975"> <thead> <tr> <th data-bbox="215 1377 587 1422">METHOD 1</th> <th data-bbox="587 1377 962 1422">METHOD 2</th> </tr> </thead> <tbody> <tr> <td data-bbox="215 1422 587 1975"> <p>Monthly instalment = <math>\frac{R203\,517,49}{60}</math> ✓M = R3 391,95816.. ≈ R3 391,96 ✓CA</p> <p>The monthly instalment is over by R7,04 ✓J</p> </td> <td data-bbox="587 1422 962 1975"> <p>R3 399,00 × 60 ✓M = R203 940,00 ✓CA</p> <p>The monthly instalment is over by R422,51 over the 60 months. ✓J</p> </td> </tr> </tbody> </table>	METHOD 1	METHOD 2	<p>Monthly instalment = <math>\frac{R203\,517,49}{60}</math> ✓M = R3 391,95816.. ≈ R3 391,96 ✓CA</p> <p>The monthly instalment is over by R7,04 ✓J</p>	<p>R3 399,00 × 60 ✓M = R203 940,00 ✓CA</p> <p>The monthly instalment is over by R422,51 over the 60 months. ✓J</p>	<p>1CA deposit amount</p> <p>1M subtracting 1CA amount financed</p> <p>1CA correct %</p> <p>1M calculating %</p> <p>1CA amount financed</p> <p>1SF substituting P 1A value of <i>i</i> 1CA amount to be repaid</p> <p>1M multiplying by 60 <b>OR</b> 1M dividing by 60</p> <p>1CA monthly instalment <b>OR</b> 1CA total paid</p> <p>1J conclusion</p>	12.1.3
METHOD 1	METHOD 2						
<p>Monthly instalment = <math>\frac{R203\,517,49}{60}</math> ✓M = R3 391,95816.. ≈ R3 391,96 ✓CA</p> <p>The monthly instalment is over by R7,04 ✓J</p>	<p>R3 399,00 × 60 ✓M = R203 940,00 ✓CA</p> <p>The monthly instalment is over by R422,51 over the 60 months. ✓J</p>						
(9)							

Ques	Solution	Explanation	AS
4.2	<p>Area to be paved = <math>2,99 \text{ m} \times 10,35 \text{ m}</math> ✓MA  <math>= 30,9465 \text{ m}^2</math> ✓CA</p> <p>Area of the top face of a brick = <math>23 \text{ cm} \times 11,5 \text{ cm}</math> ✓MA  <math>= 264,5 \text{ cm}^2</math> ✓A  <math>= 0,02645 \text{ m}^2</math> ✓C</p> <p>Number of bricks = <math>\frac{30,9465 \text{ m}^2}{0,02645 \text{ m}^2}</math> ✓M  <math>= 1\,170 \text{ bricks}</math> ✓CA</p> <p>Number of pallets = <math>\frac{1\,170}{354}</math> ✓M  <math>= 3,305</math></p> <p>So, 4 pallets will be needed ✓CA</p> <p><b>OR</b></p>	<p>1MA using area formula  1CA paving area</p> <p>1MA using area formula  1A area of each brick  1C converting</p> <p>1M dividing  1CA number of bricks</p> <p>1M dividing by 160  1CA number of pallets</p>	12.3.1

	<p>2,99 m = 299 cm ✓C</p> <table border="1" data-bbox="215 302 959 638"> <tr> <td data-bbox="215 302 587 638"> <p><b>METHOD 1</b></p> <p>Number bricks lengthwise</p> <math display="block">= \frac{299 \text{ cm}}{23 \text{ cm}} \quad \checkmark M</math> <p>= 13 bricks ✓CA</p> </td> <td data-bbox="587 302 959 638"> <p><b>METHOD 2</b></p> <p>Number of bricks lengthwise</p> <math display="block">= \frac{299 \text{ cm}}{11,5 \text{ cm}} \quad \checkmark M</math> <p>= 26 bricks ✓CA</p> </td> </tr> </table> <p>10,35 cm = 1 035 cm ✓C</p> <table border="1" data-bbox="215 862 959 1413"> <tr> <td data-bbox="215 862 587 1189"> <p><b>METHOD 1</b></p> <p>Number of bricks breadthwise</p> <math display="block">= \frac{1\ 035 \text{ cm}}{11,5 \text{ cm}}</math> <p>= 90 bricks ✓CA</p> </td> <td data-bbox="587 862 959 1189"> <p><b>METHOD 2</b></p> <p>Number of bricks breadthwise</p> <math display="block">= \frac{1\ 035 \text{ cm}}{23 \text{ cm}}</math> <p>= 45 bricks ✓CA</p> </td> </tr> <tr> <td data-bbox="215 1189 587 1413"> <p>Total number of bricks</p> <math display="block">= 13 \times 90 \quad \checkmark CA</math> <p>= 1 170 bricks ✓CA</p> </td> <td data-bbox="587 1189 959 1413"> <p>Total number of bricks</p> <math display="block">= 26 \times 45 \quad \checkmark CA</math> <p>= 1 170 bricks ✓CA</p> </td> </tr> </table> <p>Number of pallets = <math>\frac{1\ 170}{354} \checkmark M</math></p> <p style="padding-left: 100px;">= 3,305</p> <p>So, 4 pallets will be needed ✓CA</p>	<p><b>METHOD 1</b></p> <p>Number bricks lengthwise</p> $= \frac{299 \text{ cm}}{23 \text{ cm}} \quad \checkmark M$ <p>= 13 bricks ✓CA</p>	<p><b>METHOD 2</b></p> <p>Number of bricks lengthwise</p> $= \frac{299 \text{ cm}}{11,5 \text{ cm}} \quad \checkmark M$ <p>= 26 bricks ✓CA</p>	<p><b>METHOD 1</b></p> <p>Number of bricks breadthwise</p> $= \frac{1\ 035 \text{ cm}}{11,5 \text{ cm}}$ <p>= 90 bricks ✓CA</p>	<p><b>METHOD 2</b></p> <p>Number of bricks breadthwise</p> $= \frac{1\ 035 \text{ cm}}{23 \text{ cm}}$ <p>= 45 bricks ✓CA</p>	<p>Total number of bricks</p> $= 13 \times 90 \quad \checkmark CA$ <p>= 1 170 bricks ✓CA</p>	<p>Total number of bricks</p> $= 26 \times 45 \quad \checkmark CA$ <p>= 1 170 bricks ✓CA</p>	<p>1C conversion</p> <p>1M dividing</p> <p>1CA no. of bricks</p> <p>1C conversion</p> <p>1CA no of bricks</p> <p>1CA multiplying</p> <p>1CA total no. of bricks</p> <p>1M dividing</p> <p>1CA no. of pallets</p> <p style="text-align: right;">(9)</p>	
<p><b>METHOD 1</b></p> <p>Number bricks lengthwise</p> $= \frac{299 \text{ cm}}{23 \text{ cm}} \quad \checkmark M$ <p>= 13 bricks ✓CA</p>	<p><b>METHOD 2</b></p> <p>Number of bricks lengthwise</p> $= \frac{299 \text{ cm}}{11,5 \text{ cm}} \quad \checkmark M$ <p>= 26 bricks ✓CA</p>								
<p><b>METHOD 1</b></p> <p>Number of bricks breadthwise</p> $= \frac{1\ 035 \text{ cm}}{11,5 \text{ cm}}$ <p>= 90 bricks ✓CA</p>	<p><b>METHOD 2</b></p> <p>Number of bricks breadthwise</p> $= \frac{1\ 035 \text{ cm}}{23 \text{ cm}}$ <p>= 45 bricks ✓CA</p>								
<p>Total number of bricks</p> $= 13 \times 90 \quad \checkmark CA$ <p>= 1 170 bricks ✓CA</p>	<p>Total number of bricks</p> $= 26 \times 45 \quad \checkmark CA$ <p>= 1 170 bricks ✓CA</p>								
<p>4.3.1</p>	<p>Delivery charge  <math>\checkmark A \quad \checkmark A \quad \checkmark A</math>          = R95 + R5,45 × (no of kilometres above 10 km)</p> <p><b>OR</b></p> <p><math>\checkmark A \quad \checkmark A \quad \checkmark A</math>          Delivery = R 95 + R5,45 × (total distance – 10 km)</p>	<p>1A constant amount</p> <p>1A rate per km</p> <p>1A correct equation</p> <p>1A constant amount</p> <p>1A rate per km</p> <p>1A correct equation</p> <p style="text-align: right;">(3)</p>	<p>12.2.1</p>						

4.3.2	<p>Delivery charge by ABC Transport</p> $= R95 + R5,45 \times (35 \text{ km} - 10 \text{ km}) \quad \checkmark \text{SF}$ $= R95 + R5,45 \times 25 \text{ km}$ $= R 231,25 \quad \checkmark \text{A}$ <p>Friend's charge = R250,00</p> $\checkmark \text{CA}$ <p>Ravi should use ABC transport because he would save R18,75</p> $\checkmark \checkmark \text{J}$	<p>1SF substitution</p> <p>1A delivery charge</p> <p>1CA choice 2J justification</p> <p>(5)</p>	12.2.1
-------	--	---	--------

<b>Question 5 [18 MARKS]</b>			
<b>Ques</b>	<b>Solution</b>	<b>Explanation</b>	<b>AS</b>
5.1.1	$\begin{aligned} \text{Capacity} &= 2,5 \text{ m} \times 2,5 \text{ m} \times 2 \text{ m} \quad \checkmark\text{SF} \\ &= 12,5 \text{ m}^3 \quad \checkmark\text{CA} \\ &= 12,5 \text{ k} \ell \quad \checkmark\text{C} \end{aligned}$	1SF substitution 1CA computation 1C converting to k ℓ (3)	12.3.1 12.3.2
5.1.2	$\begin{aligned} 65\% \text{ of capacity} &= 0,65 \text{ of } 12,5 \text{ k} \ell \\ &= 8,125 \text{ k} \ell \quad \checkmark\text{A} \\ \\ \text{Full output} &= 3,6 \text{ k} \ell / \text{hour} \\ \frac{2}{3} \text{ of output} &= \frac{2}{3} \times 3,6 \text{ k} \ell / \text{hour} \quad \checkmark\text{M} \\ &= 2,4 \text{ k} \ell / \text{hour} \quad \checkmark\text{CA} \\ \\ \text{Time taken to fill } 65\% &= \frac{8,125 \text{ k} \ell}{2,4 \text{ k} \ell / \text{hour}} \quad \checkmark\text{M} \\ &= 3,385\dots \text{ hours} \quad \checkmark\text{CA} \\ &= 3 \text{ hours} + 0,385\dots \times 60 \text{ min} \\ &= 3 \text{ hours} + 23,125 \text{ minutes} \\ &= 3 \text{ h } 24 \text{ min} \quad \checkmark\text{CA} \end{aligned}$	1A 65% of tank 1M multiplication 1CA operating output rate 1M finding time 1CA time in hours 1CA time in minutes and hours (6)	12.1.1 12.2.1 12.3.2
5.2.1	$\begin{aligned} \text{Daily water consumption} & \\ &= 40 \times 90 \ell + 20 \times 50 \ell + 30 \times 50 \ell + 50 \times 5 \ell \quad \checkmark\text{M} \\ &= 6\,350 \ell \quad \checkmark\text{CA} \\ &= 6,350 \text{ k} \ell \quad \checkmark\text{C} \end{aligned}$	2M substitution 1CA simplification 1C conversion (4)	12.2.1 12.3.1 12.3.2

Ques	Solution	Explanation	AS
5.2.2	$\text{Water needed for ten days} = 6,35 \text{ k}\ell \times 10 \quad \checkmark\text{M}$ $= 63,5 \text{ k}\ell$ $= 63,5 \text{ m}^3 \quad \checkmark\text{C}$	1M multiplication  1C conversion	12.1.1 12.2.1 12.3.2
	$3,14 \times (\text{radius})^2 \times 2 \text{ m} = 63,5 \text{ m}^3 \quad \checkmark\text{SF}$ $(\text{radius})^2 = \frac{63,5 \text{ m}^3}{3,14 \times 2 \text{ m}}$ $(\text{radius})^2 = 10,111\dots \text{ m}^2 \quad \checkmark\text{CA}$ $\text{radius} = \sqrt{10,111\dots \text{ m}^2}$ $\text{radius} = 3,17985\dots \text{ m}$ $\text{radius} = 3,18 \text{ m} \quad \checkmark\text{CA}$	1SF substitution  1CA simplification  1CA solution	
			(5)

**TOTAL: 150**