



basic education

Department:
Basic Education
REPUBLIC OF SOUTH AFRICA

NATIONAL SENIOR CERTIFICATE

GRADE 12

MATHEMATICAL LITERACY P2

FEBRUARY/MARCH 2011

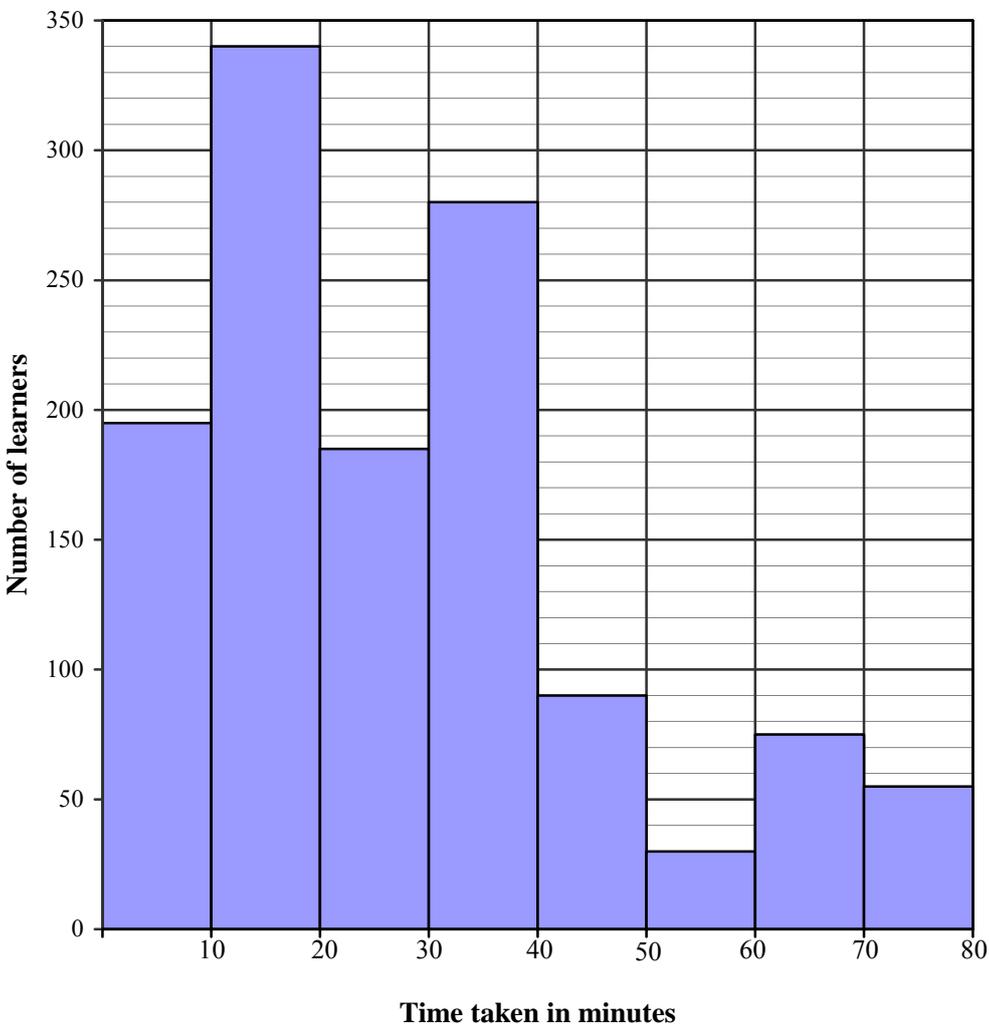
MEMORANDUM

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 22 pages.

Ques	Solution	Explanation	AS
1.1.2	<p>Percentage = 7,2% + 2,4% + 6% + 4,4% ✓M = 20% ✓CA</p> <p>OR</p> <p>Percentage = $\frac{90 + 30 + 75 + 55}{1\ 250} \times 100\%$ ✓M = $\frac{250}{1\ 250} \times 100\%$ = 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 style="text-align: center;">TABLE 1: Time usually taken by all the learners of Vuka High School to travel to school each day</p> <table border="1" style="margin: 10px auto;"> <thead> <tr> <th style="text-align: center;">Time taken in minutes</th> <th style="text-align: center;">0 to less than 10</th> <th style="text-align: center;">10 to less than 20</th> <th style="text-align: center;">20 to less than 30</th> <th style="text-align: center;">30 to less than 40</th> <th style="text-align: center;">40 to less than 50</th> <th style="text-align: center;">50 to less than 60</th> <th style="text-align: center;">60 to less than 70</th> <th style="text-align: center;">70 to less than 80</th> </tr> </thead> <tbody> <tr> <th style="text-align: center;">Number of learners</th> <td style="text-align: center;">195</td> <td style="text-align: center;">340</td> <td style="text-align: center;">185</td> <td style="text-align: center;">280</td> <td style="text-align: center;">90</td> <td style="text-align: center;">30</td> <td style="text-align: center;">75</td> <td style="text-align: center;">B</td> </tr> </tbody> </table> <p style="text-align: center;">RELATIONSHIP BETWEEN NUMBER OF LEARNERS AND TIME TAKEN TO TRAVEL TO SCHOOL</p>  <p style="margin-left: 20px;">4A marks for any four bars correct 1A all bars correct 1CA histogram (bars adjacent to each other – no space between bars)</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	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												

(6)

Ques	Solution	Explanation	AS
1.2.1(a)	<p>Average speed = $\frac{\text{distance}}{\text{time}}$ ✓M</p> <p>= $\frac{12 \text{ km}}{60 \text{ min}}$ ✓SF</p> <p>= $\frac{12\,000 \text{ m}}{60 \text{ min}}$ ✓C</p> <p>= 200 metres per minute ✓CA</p> <p>OR</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>$\frac{12\,000 \text{ m}}{60 \text{ min}} = \text{average speed}$ ✓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>OR</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>OR</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

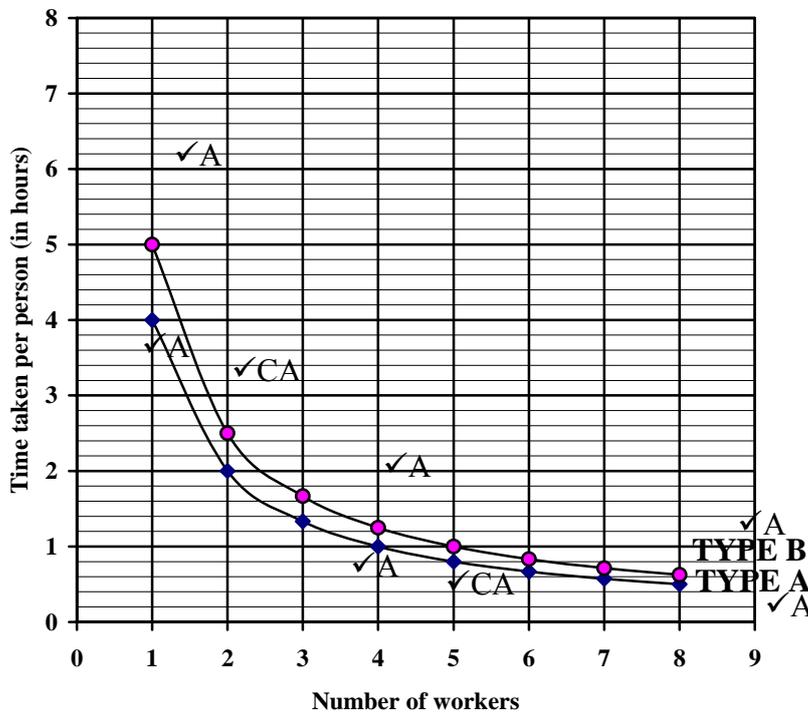
Ques	Solution	Explanation	AS
1.4.1	<p>Mean ✓MA</p> $= \frac{2+4+6+3+4+5+6+5+7+5+16+9+5+C+17+9}{16}$ $= \frac{103+C}{16} \quad \checkmark S$ <p>Mean = 7</p> $\therefore \frac{103+C}{16} = 7 \quad \checkmark M$ $103 + C = 7 \times 16$ $C = 112 - 103$ $= 9 \quad \checkmark CA$	<p>1MA finding the mean</p> <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 = $\frac{5+6}{2}$ ✓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>	<p>12.4.3</p>
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>	<p>12.4.3</p>

QUESTION 2 [33 MARKS]			
Ques	Solution	Explanation	AS
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>OR</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	5	8
Time taken (in hours) for TYPE A	4	2	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

12.2.2

(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 = $R11,25/\text{hour} \times 40 \text{ hours}$ ✓M $= R450,00$ ✓CA</p> <p>Each worker earns 80% of $R450,00 = R360,00$ ✓M ✓CA</p> <p>Total paid = $R450,00 + 3 \times R360$ ✓M $= R1\ 530,00$ ✓CA</p> <p>OR</p> <p>Jabu's wages = $R11,25/\text{hour} \times 40 \text{ hours}$ ✓M $= R450,00$ ✓CA</p> <p>Each worker earns 80% of $R11,25 = R9,00$ ✓M ✓CA</p> <p>Total paid = $R450,00 + 3 \times R9,00/\text{hour} \times 40 \text{ hours}$ ✓M $= R1\ 530,00$ ✓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>12.1.3 12.2.1</p> <p>(6)</p>
2.2.2	<p>Overtime pay per hour = $1,5 \times R11,25$ ✓M $= R16,875$ $\approx R16,88$ ✓CA</p> <p>Jabu's earning = $R450,00 + R16,88/\text{hour} \times 8 \text{ hours}$ ✓M $= R450,00 + R135,04$ ✓CA $= R585,04$ ✓CA</p> <p>OR</p> <p>Jabu's earning = $R450,00 + 8 \times (1,5 \times R11,25)$ ✓M ✓A ✓A $= R450,00 + R135,00$ ✓CA $= R585,00$ ✓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>12.1.3</p> <p>(5)</p>

Ques	Solution	Explanation	AS
2.3.1(a)	Percentage = 25% ✓ ✓ A OR $\text{Percentage} = \frac{3}{12} \times 100\% \quad \checkmark A$ $= 25\% \quad \checkmark CA$	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>OR</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</p> <p>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	<p>METHOD 1</p> <p>Discount = 5% of R139 900 ✓M $= \frac{5}{100} \times R139\,900$ $= 0,05 \times R139\,900$ $= R6\,995,00$ ✓A</p> <p>Price after discount $= R139\,900 - R6\,995,00$ $= R132\,905$ ✓CA</p> <p>VAT $= 14\% \text{ of } R132\,905$ $= \frac{14}{100} \times R132\,905$ $= R18\,606,70$ ✓CA</p> <p>Total cost including VAT $= R132\,905 + R18\,606,70$ $= R151\,511,70$ ✓CA</p>	<p>METHOD 2</p> <p>Price after discount ✓M $= 95\% \text{ of } R139\,900$ $= \frac{95}{100} \times R139\,900$ $= 0,95 \times R139\,900$ $= R132\,905$ ✓CA</p> <p>Total cost including VAT $= 114\% \text{ of } R132\,905$ ✓M $= \frac{114}{100} \times R132\,905$ $= 1,14 \times R132\,905$ $= R151\,511,70$ ✓CA</p>	<p>1M calculating % 1A calculating 5% 1CA cash price (ex VAT)</p> <p>OR</p> <p>1M subtracting from 100% 1M calculating percentage 1CA discounted price</p> <p>1M adding 14% 1CA price including VAT</p> <p>OR</p> <p>1CA calculating VAT</p> <p>1CA cash price (incl. VAT)</p>	12.1.3
	<p>Pre-delivery cost $= 0,75\% \text{ of } R151\,511,70$ $= \frac{0,75}{100} \times R151\,511,70$ ✓M $= 0,0075 \times R151\,511,70$ $= R\,1\,136,34$ ✓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>		<p>1M calculating % 1CA delivery cost</p> <p>1CA purchase price</p>	(8)

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>OR</p> <p>% to be financed = 100% – 20% = 80% ✓CA</p> <p>Amount to be financed = $\frac{80}{100} \times R158\,998,04$ ✓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="217 1379 963 1973"> <thead> <tr> <th data-bbox="217 1379 588 1424">METHOD 1</th> <th data-bbox="588 1379 963 1424">METHOD 2</th> </tr> </thead> <tbody> <tr> <td data-bbox="217 1424 588 1973"> <p>Monthly instalment = $\frac{R203\,517,49}{60}$ ✓M = R3 391,95816.. ≈ R3 391,96 ✓CA</p> <p>The monthly instalment is over by R7,04 ✓J</p> </td> <td data-bbox="588 1424 963 1973"> <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 = $\frac{R203\,517,49}{60}$ ✓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 OR 1M dividing by 60</p> <p>1CA monthly instalment OR 1CA total paid</p> <p>1J conclusion</p>	12.1.3
METHOD 1	METHOD 2						
<p>Monthly instalment = $\frac{R203\,517,49}{60}$ ✓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 = $2,99 \text{ m} \times 10,35 \text{ m}$ ✓MA $= 30,9465 \text{ m}^2$ ✓CA</p> <p>Area of the top face of a brick = $23 \text{ cm} \times 11,5 \text{ cm}$ ✓MA $= 264,5 \text{ cm}^2$ ✓A $= 0,02645 \text{ m}^2$ ✓C</p> <p>Number of bricks = $\frac{30,9465 \text{ m}^2}{0,02645 \text{ m}^2}$ ✓M $= 1\ 170$ bricks ✓CA</p> <p>Number of pallets = $\frac{1\ 170}{354}$ ✓M $= 3,305$</p> <p>So, 4 pallets will be needed ✓CA</p> <p>OR</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>METHOD 1</p> <p>Number bricks lengthwise</p> $= \frac{299 \text{ cm}}{23 \text{ cm}} \quad \checkmark M$ <p>= 13 bricks ✓CA</p> </td> <td data-bbox="587 302 959 638"> <p>METHOD 2</p> <p>Number of bricks lengthwise</p> $= \frac{299 \text{ cm}}{11,5 \text{ cm}} \quad \checkmark M$ <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>METHOD 1</p> <p>Number of bricks breadthwise</p> $= \frac{1\ 035 \text{ cm}}{11,5 \text{ cm}}$ <p>= 90 bricks ✓CA</p> </td> <td data-bbox="587 862 959 1189"> <p>METHOD 2</p> <p>Number of bricks breadthwise</p> $= \frac{1\ 035 \text{ cm}}{23 \text{ cm}}$ <p>= 45 bricks ✓CA</p> </td> </tr> <tr> <td data-bbox="215 1189 587 1413"> <p>Total number of bricks</p> $= 13 \times 90 \quad \checkmark CA$ <p>= 1 170 bricks ✓CA</p> </td> <td data-bbox="587 1189 959 1413"> <p>Total number of bricks</p> $= 26 \times 45 \quad \checkmark CA$ <p>= 1 170 bricks ✓CA</p> </td> </tr> </table> <p>Number of pallets = $\frac{1\ 170}{354} \checkmark M$</p> <p style="padding-left: 100px;">= 3,305</p> <p>So, 4 pallets will be needed ✓CA</p>	<p>METHOD 1</p> <p>Number bricks lengthwise</p> $= \frac{299 \text{ cm}}{23 \text{ cm}} \quad \checkmark M$ <p>= 13 bricks ✓CA</p>	<p>METHOD 2</p> <p>Number of bricks lengthwise</p> $= \frac{299 \text{ cm}}{11,5 \text{ cm}} \quad \checkmark M$ <p>= 26 bricks ✓CA</p>	<p>METHOD 1</p> <p>Number of bricks breadthwise</p> $= \frac{1\ 035 \text{ cm}}{11,5 \text{ cm}}$ <p>= 90 bricks ✓CA</p>	<p>METHOD 2</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>METHOD 1</p> <p>Number bricks lengthwise</p> $= \frac{299 \text{ cm}}{23 \text{ cm}} \quad \checkmark M$ <p>= 13 bricks ✓CA</p>	<p>METHOD 2</p> <p>Number of bricks lengthwise</p> $= \frac{299 \text{ cm}}{11,5 \text{ cm}} \quad \checkmark M$ <p>= 26 bricks ✓CA</p>								
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<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 $\checkmark A \quad \checkmark A \quad \checkmark A$ = R95 + R5,45 × (no of kilometres above 10 km)</p> <p>OR</p> <p>$\checkmark A \quad \checkmark A \quad \checkmark A$ 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> $\quad \quad \quad \checkmark \text{CA}$ <p>Ravi should use ABC transport because he would save R18,75 $\checkmark \checkmark \text{J}$</p>	<p>1SF substitution</p> <p>1A delivery charge</p> <p>1CA choice 2J justification</p> <p>(5)</p>	12.2.1
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Question 5 [18 MARKS]			
Ques	Solution	Explanation	AS
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	$\begin{aligned} \text{Daily water consumption} & \\ &= 40 \times 90 \ell + 20 \times 50 \ell + 30 \times 50 \ell + 50 \times 5 \ell \\ &= 6\,350 \ell \quad \checkmark\text{CA} \\ &= 6,350 \text{ k} \ell \quad \checkmark\text{C} \end{aligned}$	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