



# education

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Department:  
Education  
**REPUBLIC OF SOUTH AFRICA**

**NATIONAL  
SENIOR CERTIFICATE**

**GRADE 10**

**MATHEMATICAL LITERACY**

**NOVEMBER 2006**

**This memorandum consists of 8 pages.**

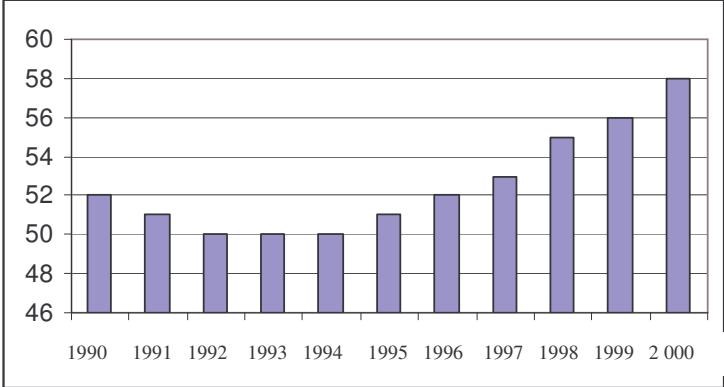
QUESTION	SOLUTION(S)	COMMENTS
1.1	28 kl ✓	✓ Answer
1.2	R102,37 ✓	✓ Answer
1.3	November ✓	✓ Answer
1.4.1	19,5 kl ✓	✓ Answer
1.4.2	$19 \times R4,57$ ✓ $= R86,83$ ✓	✓ Method(product) ✓ Answer
1.4.3	$R98,70 \div R4,57$ ✓ $= 21,60$ ✓	✓ Method(quotient) ✓ Answer
1.4.4	$21,60 + 5,6$ ✓ $= 27,2$ kl ✓	✓ Method(sum) ✓ Answer
1.5	Increase = $28\text{kl} - 22\text{kl}$ $= 6$ kl ✓ Percentage increase = $\frac{6}{22} \times 100$ ✓ $= 27,27\%$ ✓	✓ Calculating increase ✓ Method(fraction) ✓ Correct answer
1.6	$R74,95 + R102,37 + R81,80 + R68,55 + R101,91 + R89,12$ $= R518,70$ ✓✓	✓✓ 2 marks for the correct answer or zero marks
1.7	VAT = $\frac{14}{100} \times R518,70$ ✓ $= R72,62$ ✓	✓ VAT % ✓ substituting R518,70 ✓ Correct answer
1.8.1	$A = P(1 + r/100)^n$ ✓ $= R102,37(1 + 1/100)^5$ ✓ $= R107,59$ ✓ C.I = $R107,59 - R102,37$ $= R5,22$ ✓	✓ Formula ✓ Substitution ✓ Correct answer  ✓ Calculating the interest
1.8.2	S.I = $P \times r/100 \times n$ ✓ $= R102,37 \times 1/100 \times 5$ ✓ $= R5,12$ ✓	✓ Formula ✓ Substitution ✓ Correct answer

1.8.3	Compound Interest is higher ✓ Interest is paid on interest and not only on capital amount as is the case with simple interest ✓	✓ Correct answer ✓ Explanation
2.1.1	ii ✓✓	✓✓ Correct answer
2.1.2	iv ✓✓	✓✓ Correct answer
2.1.3	i ✓✓	✓✓ Correct answer
2.1.4	ii ✓✓	✓✓ Correct answer
2.2.1	60 min : 6 km ✓      OR Kelly can walk 6km in 1 hour. In a 10 min : 3 km ✓      quarter of an hour Kelly can walk 5 min : 0,5 km      6 km ÷ 4 = 1,5 km ∴ 15 min : 1,5 km ✓      ✓      ✓	✓ using 6km ✓ quotient ✓ Correct answer
2.2.2	Kelly's school is 1,5 km ✓      OR In 60 min she can cycle 18km ✓ away from home.      To cycle 1,5 km it will take 10 min : 3km ✓      60 min/12 = 5 min ✓ 5 min : 1,5 km ✓      ✓ ∴ Kelly's school is 5 minutes cycle away from home. ✓	✓ Using 18km ✓ quotient ✓ Correct answer
2.2.3	In 60 minutes Denzil can cycle 18 km. In 20 minutes Denzil can cycle 6 km, so Denzil lives 6 km away from school. ✓ He cycled for 3 km and walked for 3 km. ✓ 60/3 min : 18/3 km 10 min : 3 km ∴ Time to cycle 3 km = 10 min. ✓ Time taken to walk 3km = 60 min ÷ 2 = 30 min. ✓ Yesterday , it took Denzil 10 min + 30 min = 40 min to get to school. ✓	✓ Finding distance ✓ Distance halfway  ✓ Calculating time to cycle ✓ Calculating time to walk ✓ Correct answer
3.1.1	ii The second one. ✓ The bowl of the wheelbarrow is smaller in front ✓	✓ Correct choice ✓ Reason
3.1.2	i The first one. ✓ The bowl of wheelbarrow A is wider than that of wheelbarrow B . ✓	✓ Correct choice ✓ Reason
3.1.3	The bowls of the two wheelbarrows are of different depth. ✓✓	✓✓ 2 marks for

	(If the learners have other ways of identifying the wheelbarrows, take them on merit.)	the reason.
3.2.1	$A = l \times b \quad \checkmark$ $= 8 \text{ m} \times 4 \text{ m} \quad \checkmark$ $= 32 \text{ m}^2 \quad \checkmark$	$\checkmark$ Formula $\checkmark$ Substitution $\checkmark$ Answer
3.2.2	$A = \pi \times r \times r \quad \checkmark$ $= \pi \times 0,5 \text{ m} \times 0,5 \text{ m} \quad \checkmark$ $= 0,79 \text{ m}^2 \quad \checkmark$	$\checkmark$ Formula $\checkmark$ Substitution $\checkmark$ Answer
3.2.3	$\text{Grass needed} = 32 \text{ m}^2 - 3(0,79 \text{ m}^2) \quad \checkmark \quad \checkmark$ $= 29,63 \text{ m}^2 \quad \checkmark$	$\checkmark$ Substituting $32 \text{ m}^2$ $\checkmark$ Product $3(0,79 \text{ m}^2)$ $\checkmark$ Correct answer
3.3	$\text{Number of cabbages} = 205 \text{ cm} \div 25 \text{ cm} \quad \checkmark$ $= 8 \quad \checkmark$	$\checkmark$ quotient $\checkmark$ Answer
3.4.1	R300 $\checkmark$	$\checkmark$ Answer
3.4.2	8 hours $\checkmark$	$\checkmark$ Answer
3.4.3	R100 : 4 hrs $\checkmark$ i.e. R25 per hour $\checkmark$	$\checkmark$ using any correct ratio $\checkmark$ answer
3.4.4	<i>Payment = R25 <math>\times</math> no of hours worked</i> $\checkmark \checkmark$	$\checkmark$ using hour rate $\checkmark$ correct format
3.4.5	<i>Payment = R25 <math>\times</math> no of hours worked + 35</i> $\checkmark$	$\checkmark$ add 35 to equation in 3.4.4
4.1	$V = lbh \quad \checkmark$ $= 6 \text{ m} \times 3,5 \text{ m} \times 2 \text{ m} \quad \checkmark$ $= 42 \text{ m}^3 \quad \checkmark$	$\checkmark$ formula $\checkmark$ correct substitution $\checkmark$ answer
4.2	<p>Volume of rectangular figure</p> $V = lbh$ $= 3,5 \text{ m} \times 2 \text{ m} \times 0,8 \text{ m} \quad \checkmark$ $= 5,6 \text{ m}^3 \quad \checkmark$ <p>Volume of triangular prism</p> $V = \text{base area} \times \text{height}$ $= \frac{1}{2} \times 2 \text{ m} \times 0,8 \text{ m} \times 3,5 \text{ m} \quad \checkmark \checkmark$ $= 2,8 \text{ m}^3 \quad \checkmark$	$\checkmark$ correct substitution $\checkmark$ correct answer  2 marks for correct subst. $\checkmark$ correct answer

	$Volume\ of\ cemented\ portion = 5,6m^3 + 2,8m^3 = 8,4m^3 \checkmark$ [6]	1 mark for answer
4.3.1	$Volume\ of\ water = Volume\ of\ pool - Volume\ of\ cemented\ port$ $= 42m^3 - 8,4m^3 \checkmark$ $= 33,6m^3 \checkmark$  $Since\ given\ that\ 1000l = 1m^3, then$ $33,6m^3 \times 1000 = 33600l \checkmark$ [3]	1 mark for subst. 1 mark for answer  1 mark for conversion into litres
4.3.2	$33600l = 3,36 \times 10^4 \checkmark$ [1]	1 mark for answer
4.4	$P = 2(l + b) \checkmark$ $= 2(8m + 5,5m) \checkmark \checkmark$ $= 27m \checkmark$ [4]	
4.5.1	$(length\ of\ crosspiece)^2 = (1,2m)^2 + (0,5m)^2 (Theorem\ of\ Pythagoras) \checkmark$ $= 1,44m^2 + 0,25m^2$ $= 1,69m^2 \checkmark$  $\therefore length\ of\ crosspiece = 1,3m \checkmark$ [3]	1 mark subst.  1 mark for answer  1 mark for showing 1,3m (answer)
4.5.2	$Length\ of\ gate = \frac{1,2m}{50} \checkmark$ $= 0,024m$  $= (0,024 \times 100)cm$ $= 2,4cm \checkmark$ [2]	1 mark for ratio $\frac{1,2m}{50}$  1 mark for the answer
5.1.1(a)	2 workers : 24 days $\checkmark$ 1 worker : $2 \cdot 24 = 48$ days $\checkmark$ [2]	$\checkmark$ for correct ratio $\checkmark$ answer
5.1.1(b)	5 workers : 9,6 days Workers needed for 4,8 days = $48/4,8 \checkmark$ $= 10$ workers $\checkmark$ [2]	$\checkmark$ for correct ratio $\checkmark$ answer
5.1.2	$Number\ of\ days = \frac{48}{Number\ of\ wor\ ker\ s} \checkmark \checkmark$ [2]	1 mark for correct format 1 mark for answer
5.1.3	$Number\ of\ days = \frac{48}{7} \checkmark$ $= 6,86 \checkmark$	1 mark for subst. 1 mark for the answer 1 mark for

	$0,86 \times 8 \text{ hours} = 7 \text{ hours} \checkmark$ $= 6 \text{ days } 7 \text{ hours} \checkmark$	converting 0,86 into 8 hrs 1 mark for the correct answer															
5.1.4	<p style="text-align: center;"><b>WORKERS FOR NUMBER OF DAYS</b></p>	2 marks for the axes 1 mark for the scale 1 mark for shape 1 mark for the asymptote															
5.1.5	Any integer value between 6 and 8 $\checkmark$	1 mark for any value {i.e. 6,7,8}															
5.2.1	$P(R) = \frac{3}{12} \checkmark$ $= \frac{1}{4} \checkmark$	1 mark for fraction $\frac{3}{12}$ 1 mark for simplification to $\frac{1}{4}$															
5.2.1	$P(\text{not black}) = \frac{9}{12} \checkmark$ $= \frac{3}{4} \checkmark$	1 mark for fraction $\frac{9}{12}$ 1 mark for simplification to $\frac{3}{4}$															
6.1	<table border="0" style="width: 100%;"> <thead> <tr> <th style="text-align: left;">Class intervals</th> <th style="text-align: center;">Tally</th> <th style="text-align: right;">Frequency</th> </tr> </thead> <tbody> <tr> <td>10-15</td> <td style="text-align: center;">///</td> <td style="text-align: right;">3</td> </tr> <tr> <td>16-21</td> <td style="text-align: center;">//// /</td> <td style="text-align: right;">6</td> </tr> <tr> <td>22-27</td> <td style="text-align: center;">////</td> <td style="text-align: right;">4</td> </tr> <tr> <td>28-33</td> <td style="text-align: center;">///</td> <td style="text-align: right;">3</td> </tr> </tbody> </table>	Class intervals	Tally	Frequency	10-15	///	3	16-21	//// /	6	22-27	////	4	28-33	///	3	1 mark each for correct tally and frequency
Class intervals	Tally	Frequency															
10-15	///	3															
16-21	//// /	6															
22-27	////	4															
28-33	///	3															
6.2	$\text{Range} = 30 - 10 \checkmark$ $= 20 \checkmark$	1 mark for 30 -10 1 mark for the answer															
6.3	$\bar{x} = \frac{\sum_{i=1}^n x_i}{n} = \frac{323}{16} \checkmark = 20,19 \checkmark \checkmark$	$\checkmark$ correct formula $\checkmark$ for simplification to															

		[2]	$\frac{323}{16}$ ✓ for the answer
6.4	10,12,13,16,17,18,18, 20, 21, 22, 22, 23, 24, 28, 29, 30 ✓ $\therefore \text{Median} = \frac{20+21}{2}$ ✓ $= 20,5$ ✓	[3]	1 mark for picking 20 & 21 as middle numbers 1 mark for the method(formula) 1 mark for answer
6.5	18 ✓ & 22 ✓	[2]	1 mark each for 18 and 22
6.6	Rangers vs Kaizer Chiefs <ul style="list-style-type: none"> <li>▪ Both teams scored the same number of goals ✓</li> <li>▪ Kaizer Chiefs won more games compared to Rangers ✓</li> </ul>	[2]	2 marks for any convincing answers read from the given data
7.1.1		[5]	✓ for drawing a bar graph ✓ label X-axis ✓ label Y-axis ✓ dimension on X-axis ✓ dimension of Y-axis
7.1.2	<ul style="list-style-type: none"> <li>○ The infant mortality rate decreased slightly from 1990 to 1994</li> <li>○ There was an increase in the mortality rate since 1995</li> <li>○ A slight decrease occurred from 2000 to 2010 [2]</li> </ul>		2 marks for these or any other convincing reason
7.2.1	1990 ✓	[1]	
7.2.2	7 deaths per 1000 babies ✓✓	[2]	✓ for any number from 7 to 7,3 ✓ for stating per thousand
7.2.3	$\text{Infant deaths} = \frac{9,2}{100} \times 29395$ $= 2704,3$ <i>i.e = 2705 deaths</i>	[4]	✓ correct equation ✓ substitution ✓ simplify ✓ rounding
7.2.4	A steady decrease occurs ✓		✓ reason
7.2.5	<ul style="list-style-type: none"> <li>○ Mortality rate for South Africa is considerably higher than USA ✓</li> <li>○ The rate for SA increase for this period whereas the rate for USA decrease ✓</li> </ul>		2 marks for these or any other convincing deduction.

