

Grade12 Mathematical Literacy: Memorandum Paper 2

1.1	$R4\ 500 + R7\ 985,13 = R12\ 485,13$ ✓ ✓ ✓	3	
1.2	Monthly salary : $R97\ 575,00 \div 12$ = $R8\ 131,25$ ✓ ✓ UIF = 1% of $R8\ 131,25$ = $R81,31$ ✓ ✓ OR Yearly UIF: 1% of $R97\ 575,00$ = $R975,75$ ✓ ✓ Monthly UIF = $R975,75 \div 12$ = $R81,31$ ✓ ✓	4	
1.3	Tax paid per month: $R12\ 485,13 \div 12$ = $R1\ 040,43$ ✓ Take home salary: = $R8\ 131,25 - (R1\ 040,43 + R81,31)$ ✓ = $R7\ 009,51$ ✓	3	
1.4	Jan 2006 Food: $26,5\% \times R7\ 009,51$ ✓ = $R1\ 858$ ✓ Jan 2006 Clothing etc: $5\% \times R7\ 009,51$ ✓ = $R350$ ✓ Jan 2006 Housing etc: $18,9\% \times R7\ 009,51$ ✓ = $R1\ 325$ ✓ Jan 2006 Transport: $9,7\% \times R7\ 009,51$ ✓ = $R680$ ✓	8	
1.5	a Jan 2007 Food: $(100 + 9,3)\% \times R1\ 858$ ✓ = $R2\ 031$ ✓ b Jan 2007 Clothing etc: $(100 - 10,9)\% \times R350$ ✓ = $R312$ ✓ c Jan 2007 Housing etc: $(100 + 9,2)\% \times R1\ 325$ ✓ = $R1\ 447$ ✓ d Jan 2007 Transport: $(100 + 6,8)\% \times R680$ ✓ = $R726$ ✓ e Total = $R\ 7\ 583$ ✓ ✓	10	
1.6	Total expenditure for January 2007: = $R7\ 541$ ✓ % change = $\frac{7\ 538 - 7\ 003}{7\ 003}$ as a % ✓ ✓ = $7,64\%$ ✓	4	
1.7	Gross salary after increase: $(100 + 5)\% \times R97\ 575,00$ ✓ ✓ = $R102\ 453,75$ ✓	3	
1.8	2007 tax: = $18\ 000 + 25\%$ of $(R102\ 453,75 - R100\ 000) - R7\ 200$ ✓ ✓ ✓ = $R11\ 413,44$ per year ✓ 2007 UIF: = 1% of $R102\ 453,75$ = $R1\ 024,54$ per year ✓	7	
	Take home salary: = $R102\ 453,75 - (R11\ 413,44 + R1\ 024,54)$ ✓ = $R90\ 015,78$ per year = $R90\ 015,78 \div 12$ per month = $R7\ 501,31$ ✓		
1.9	% increase in take home salary: $\frac{7\ 501,31 - 7\ 009,51}{7\ 009,51}$ as a % ✓ ✓ = $7,02\%$ ✓ % tax in 2006 = $\frac{12\ 485,13}{97\ 575}$ as a % ✓ = $12,8\%$ ✓ % tax in 2007 = $\frac{11\ 413,44}{102\ 453,75}$ as a % ✓ = $11,1\%$ ✓ Luca's tax decreased by 1,7% from 2006 to 2007 This meant that besides the increase in gross salary of 5% she was also paying less tax in 2007. This meant that her take home salary was more than 5%. ✓	8	
1.10	Anticipated expenses = $R\ 7\ 583$ ✓ Luca will be earning $R7\ 501,31$ which falls short by about $R50$. ✓ This means that she will have to look at ways to cut down on her expenses if she does not want to overspend. ✓	3	
2.1	2005: $\approx 19\%$ ✓ 2006: $\approx 18\%$ ✓ 2007: $\approx 16\%$ ✓ 2008: $\approx 15\%$ ✓	4	
2.2	2005: $\approx R230\ 000$ ✓ 2006: $\approx R260\ 000$ ✓ 2007: $\approx R330\ 000$ ✓ 2008: $\approx R370\ 000$ ✓	4	
2.3	Effective interest rate = 10% ✓ 10% of $R100\ 000 = R10\ 000$ ✓	2	
2.4	The effective interest rate has decreased over the period 2005 to 2008. ✓ This is seen by the graph of 2006 being below the 2005 graph. Similarly for the 2007 and 2008 graphs. It can also be seen in the answers to 2.1 and 2.2 ✓ ✓ ✓	4	
3.1	This means that 75% of the class scored a lower mark than he did and 25% of the class scored a mark higher than he did. ✓ ✓	2	
3.2	Total number of participants = 20. ✓ Each quartile has $\frac{1}{4}$ of 20 = 5 participants. ∴ 88 falls in the fourth quartile. ✓	2	
3.3.1	75 percentile ✓ ✓	2	
3.3.2	$17,2$ ✓ ✓	2	
3.3.3	$13,2 < BMI < 19,4$ ✓ ✓ ✓ ✓	4	

3.4.1	<p>$BMI = \frac{30}{1.2^2} = 20,8$ ✓ ✓ ✓</p> <p>Falls above the 95 percentile and is therefore overweight. ✓ ✓</p>		
3.4.2	<p>$BMI = 20,6$ ✓ ✓</p> <p>$20,6 = \frac{w}{1.65^2}$ ✓</p> <p>$20,6 \times 1,65^2 = w$ ✓</p> <p>$w = 56$ kg ✓</p>		
4.1.1	<p>$5 + 6 + 9 + 10 + 8 + 5$ ✓ ✓ ✓</p> <p>= 43% of fatalities occur between 17h00 and 22h00 ✓</p>		
4.1.2	<p>There would be many more cars on the road because people would be traveling to work and school at this time of the day. ✓ ✓ ✓</p>		
4.1.3	<p>Between 17h00 and 22h00 ✓ ✓</p> <p>The graph shows a peak between those times. ✓ ✓</p>		
4.2.1	That data was unavailable.		
4.2.2	<p>(a) 9 981 in 40 400 000. ✓</p> <p>$\therefore 9\,981 \div 404\,000$ ✓</p> <p>= 24,71 per 100 000. ✓ ✓</p> <p>(b) 10 523 in 42 640 000. ✓</p> <p>$\therefore 10\,523 \div 426\,400$ ✓</p> <p>= 24,68 per 100 000. ✓ ✓</p>		
4.3.1	$10\,523 - 9\,981 = 542$ ✓ ✓		
4.3.2	$12\,727 - 11\,201 = 1\,526$ ✓ ✓		
4.4.1	$24,68 - 24,71 = -3,03$ ✓ ✓		
4.4.2	$27,32 - 25,31 = 2,01$ ✓ ✓		
4.5	<p>The Minister would use the graph of fatalities per 100 000 as it shows a steady decline in fatalities per 100 000 from 1990 to 1998. thereafter there has been a slow rate of increase in fatalities per 100 000. It shows that even though the number of actual deaths has increased, the ratio of deaths to population size has decreased. ✓ ✓ ✓</p> <p>Somebody trying to contradict the minister would use the actual fatalities graph as it shows a steady increase in fatalities since 1993. It does not however indicate how the population has increased. ✓ ✓ ✓</p>		
4.6	<p>Fatalities per 100 000. This statistic gives you a ratio of deaths per 100 000 of the population and therefore gives you an idea of the likelihood of you dying in a car crash no matter how large or small the population is. If you are only given the actual fatalities you are unable to compare it with the population size. A large number of fatalities could be a small percentage of a very large population or it could be a big percentage of a small population. It does not give you an idea of the risk factor. ✓ ✓ ✓ ✓</p>		
5.1	<p>From Friday 18:10 to Saturday 06:40 by train which is $17\frac{1}{2}$ hours. ✓</p> <p>It takes ≈ 1 hour by taxi</p> <p>\therefore trip takes approximately $18\frac{1}{2}$ hours. ✓</p>	5	
5.2	R220 ✓		2
5.3	<p>Moz Airlines: Cost R1 485 and time 1 hour ✓</p> <p>SAA: Cost R1 450 and time 1 hour and 5 minutes ✓</p> <p>Bus: Cost R220 and time $10\frac{1}{2}$ hours ✓</p> <p>Train and taxi: Cost R80 and time $18\frac{1}{2}$ hours. ✓</p> <p>The least expensive option takes the most time to get there and you travel through the night. It also means a change of transport along the way which is inconvenient. ✓</p> <p>The two most expensive options (flying) take the least time to get there and is the most convenient as Luka would get a good night's sleep at home. ✓</p>	5	1
5.4	See completed diagram below		6
5.5	<p>Take Mozambique airlines departing at 19:10 on Friday night and arriving at 20:10. ✓ ✓</p> <p>Spend Friday and Saturday night in Mozambique. (2 nights) ✓</p> <p>Return by bus on Sunday departing at 19h00 and arriving at 03h55. ✓ ✓</p> <p>This would maximise her time in Maputo and still have her at work on time on Monday morning. ✓</p> <p>Costs = R1 485 + R220 ✓ ✓</p> <p>= R1 705 which is within her budget. ✓</p>	8	6
			9

