



NATIONAL SENIOR CERTIFICATE EXAMINATION
NOVEMBER 2008

MATHEMATICAL LITERACY: PAPER I
MARKING GUIDELINES

Time: 3 hours

150 marks

These marking guidelines are prepared for use by examiners and sub-examiners, all of whom are required to attend a standardisation meeting to ensure that the guidelines are consistently interpreted and applied in the marking of candidates' scripts.

The IEB will not enter into any discussions or correspondence about any marking guidelines. It is acknowledged that there may be different views about some matters of emphasis or detail in the guidelines. It is also recognised that, without the benefit of attendance at a standardisation meeting, there may be different interpretations of the application of the marking guidelines.

VITAL STATISTICS

BY CLASSIFICATION OF CONTENT						
	A.S. per question	LO 1 Numbers and operations in context	LO 2 Functional relationships	LO 3 Space, shape and measurement	LO 4 Data Handling	Total Mark/ Question
Question 1	12.1.1, 12.1.2, 12.2.1, 12.3.2, 12.4.3	26	3		3	32
Question 2	12.1.1, 12.1.2, 12.1.3, 12.2.1, 12.3.1	4	9	9		22
Question 3	12.1.1., 12.1.2, 12.1.3, 12.2.1, 12.2.2, 12.2.3, 12.3.3, 12.3.4, 12,4,2	1	11	23		35
Question 4	12.1.1, 12.1.2, 12.1.3, 12.2.1	6	8			14
Question 5	12.1.2, 12.2.1, 12.3.1, 12.3.2	1	3	8		12
Question 6	12.1.1, 12.1.2, 12.2.1, 12.4.3, 12.4.4, 12.4.5	2	2		10	14
Question 7	12.2.1, 12.4.3, 12.4.4		4		17	21
TOTAL		40	40	40	30	150
% of Paper		27%	27%	27%	20%	

MARKING GUIDELINES AND THINKING LEVELS

Question	Possible answers	Mark allocation	Taxonomy level			
			L1	L2	L3	L4
	QUESTION 1					
	LO examined: LO 1, LO 2, LO 4 AS examined: 12.1.1, 12.1.2, 12.2.1, 12.3.2, 12.4.3					
1.1.1	$24 + 14 \checkmark - 6 = 32 \checkmark$	Simplification $\checkmark$ Working out $\checkmark$	1	1		
1.1.2	$\frac{3}{4} (5) \checkmark + 6 = 9,75 \checkmark$ OR $9\frac{3}{4}$	Simplification $\checkmark$ Working out $\checkmark$	1	1		
1.1.3	$6\,800 \times \frac{4}{5} \checkmark \text{ m} = 5\,440 \checkmark \text{ a}$	Method $\checkmark$ Simplification $\checkmark$ Penalty (P1) missing unit	1	1		
1.2	$135 \text{ m} \times 15 = 2\,025 \text{ m} \checkmark \text{ m}$ $\frac{2\,025 \text{ km}}{1\,000} \checkmark \text{ m} = 2,025 \text{ km} \checkmark \text{ a}$	Method $\checkmark$ Conversion $\checkmark$ (m $\rightarrow$ km) Simplification $\checkmark$	1	2		
1.3	$\frac{\text{test mark} + 71(\text{old mean})}{2} = 75(\text{new mean}) \checkmark \text{ m} \checkmark \text{ a}$ test mark = 79 $\checkmark$ ca OR $71 \times 6 = 426 \checkmark \text{ m}$ $75 \times 7 = 525 \checkmark \text{ m}$ $525 - 426 = 99$	Method $\checkmark \checkmark$ Simplification $\checkmark$		2	1	
1.4.1	$1\frac{1}{2} \times 30 \text{ g} \checkmark \text{ m} = 45 \text{ g} \checkmark \text{ a}$	Method $\checkmark$ Simplification $\checkmark$	1	1		
1.4.2	$1\frac{1}{2} \times 560 \text{ ml} \checkmark \text{ m} = 840 \text{ ml} \checkmark \text{ a}$	Method $\checkmark$ Simplification $\checkmark$	1	1		
1.4.3	$\frac{3}{4} \times 450 \text{ g} \checkmark \text{ m} = 337,5 \text{ g} \checkmark \text{ a}$	Method $\checkmark$ Simplification $\checkmark$	1	1		
1.4.4	$^{\circ}\text{C} = \frac{5}{9} (350^{\circ} - 32) \checkmark \text{ sub} = 176,67^{\circ} \text{ C} \checkmark \text{ rounding} \checkmark \text{ a}$	Substitution $\checkmark$ Rounding $\checkmark$ Simplification $\checkmark$	2	1		
1.5	$24 \text{ bolts} \times \frac{75}{100} \checkmark \text{ m} = 18 \text{ bolts in the box} \checkmark \text{ a}$	Method $\checkmark$ Simplification $\checkmark$	1	1		
1.6	R5 613 $\checkmark \text{ m}$ – 40 $\times \checkmark \text{ m}$ R65,25 = bonus bonus = R3003 $\checkmark \text{ a}$	Method $\checkmark \checkmark$ Simplification $\checkmark$	1	2		
1.7	$3,5 \times 120 \text{ cm} \checkmark \text{ m} = 420 \text{ km in first } 3\frac{1}{2} \text{ hours} \checkmark \text{ a}$ $480 \text{ km} - 420 \text{ km} = 60 \text{ km} \checkmark \text{ a}$	Method $\checkmark$ Simplification $\checkmark$	1	2		

1.8	$120 \text{ ml} \div 6 = 20 \text{ ml} \therefore 2 : 4 = 40 \text{ ml} \checkmark_a : 80 \text{ ml} \checkmark_a$ OR $\frac{2}{6} \checkmark_m \times 120 \text{ ml} = \checkmark_a 40 \text{ ml}$ $120 \text{ ml} - 40 \text{ ml} = 80 \text{ ml} \checkmark_a$ $\therefore A = 40 \text{ ml}$ and $B = 80 \text{ ml}$	Method $\checkmark$ Simplification $\checkmark\checkmark$	1	2		
		SUBTOTAL	13	18	1	

	QUESTION 2					
	LO Examined: LO 1, LO 2, LO 3, LO 4 AS Examined: 12.1.1, 12.1.2, 12.1.3, 12.2.1, 12.3.1					
2.1.1	$25 \text{ days} \times R8,45 \checkmark_m = R211,25 \checkmark_a$ $R211,25 \times 2 = R422,50 \checkmark_a$ OR $25 \text{ days} \times R16,90 \checkmark_m = R422,50 \checkmark_m \checkmark_{ca}$	Method of days x cost $\checkmark$ Multiply days or cost by 2 Simplification $\checkmark$	2	1		
2.1.2	$25 \text{ days} \times R25 \checkmark_m = R625 \checkmark_a$	Method of days x cost $\checkmark$ + train trip cost Simplification $\checkmark$	2			
2.1.3	$(120\,000 - 100\,000) / 100\,000 \times 100\% = 20\%$	Method of calculating % increase $\checkmark$ Simplification $\checkmark\checkmark$	2	1		
2.2	$\frac{R110\,000 \times R1\,500\,000}{R2\,100\,000 \times 0,8} = R98\,214,29 \checkmark_{\text{answer}}$ $\checkmark_{\text{rounding}}$	Substitution $\checkmark$ Rounding $\checkmark$ Simplification $\checkmark$	2	1		
2.3.1	$\text{Area} = L \times B \checkmark + \pi r^2 \checkmark_a$ $= 100 \text{ m} \times 80 \text{ m} \checkmark_m + \pi \cdot 40^2 \checkmark_m$ $= 13\,026,55 \text{ m}^2 \checkmark_a$ If $\pi = 3,14$ then 13024	Divide diameter by 2 $\checkmark_m$ Simplification $\checkmark\checkmark$	2	1		
2.3.2	$12\,500 \text{ m}^2 \div 2 \checkmark_m \times R83 \checkmark_m = R518\,750 \checkmark_{ca}$ OR $12\,500 \text{ m}^2 \times \checkmark_m \times R83 \div 2 \checkmark_m = R518\,750 \checkmark_{ca}$	Method $\checkmark\checkmark$ Simplification $\checkmark$	1	2		
2.3.3	$\text{Semi-circle} = 2 \times 3,14 \times 40 \div 2 \checkmark_m = 125,6 \text{ m} \checkmark_a$ $125,6 \div 3 = 41,87 \checkmark_m$ Thus 42 poles + 1 extra $\checkmark_m$ for start point $\checkmark_{ca} = 43$ poles	Method to calculate circum $\checkmark\checkmark$ Correct semi-circle circumference $\checkmark$ Number of poles $\checkmark$	2	2	1	
		SUBTOTAL	13	8	1	

	QUESTION 3					
	LO Examined: LO 1, LO 2, LO 3, LO 4 AS Examined: 12.1.1, 12.1.2, 12.1.3, 12.2.1, 12.2.2, 12.2.3, 12.3.3, 12.3.4, 12.4.2					
3.1.1	(a) $12 \div 4 = 3$ boxes OR $\frac{12}{4} = 3$ boxes ✓ca ✓m (b) $3 \times R165 = R495$ ✓m ✓ca	$12 \div 4$ ✓ Simplification ✓	1 1	1 1		
3.1.2	✓m ✓m ✓m Total Price = $(5 \times R549) + (11 \times R89,99) + (3 \times R349) +$ $(3 \times R129,99)$ ✓m + $R495 = R\ 5\ 666,86$ ✓a	Cost for each individual items ✓✓✓✓excl cricket ball Total cost ✓	1	2	2	
3.1.3	$(22 + 3)$ ✓m items ordered thus cost $R50$ ✓a	Total number of items ✓ deciding on delivery charge option ✓		1	1	
3.1.4	$R5\ 666,86 \times 14\%$ ✓ca = $R793,36$ ✓a	Continued accuracy ✓ Simplification ✓			2	
3.1.5	$R5\ 666,86 + 793,36 + R50$ ✓ca = $R6\ 510,22$ ✓a	Adding total + VAT + delivery charge ✓ca Total cost ✓a			2	
3.1.6	$\frac{R6\ 510,22}{12\ 500}$ ✓ca $\times 100 = 52,08\%$ ✓a	Method ✓ Simplification ✓	2			
3.2.1	(a) $R500 \times 2 + 240 \times 2$ ✓m = $R1\ 480$ ✓a (b) $R300 \times 4 + 330 \times 4$ ✓m = $R2\ 520$ ✓a	Method ✓ Simplification ✓ Method ✓ Simplification ✓	1 1	1 1		
3.2.2	$R3\ 810 = R300 \times 5 + R330 Y$ ✓ $R3\ 810 - R1\ 500 = R330 Y$ ✓ $7 = Y$ ✓	Substitution of values in formula ✓ Manipulation to solve for Y ✓ Correct Y value ✓			3	

3.2.3		Legend or label each graph ✓m ✓a Correct graphs ✓a ✓m X axis ✓ labels Y axis ✓ labels Plotting points ✓	4	3		
3.3.1	Robertsham and Booyens, Ormande or Crown Gardens	Correct identification of a suburb ✓	1			
3.3.2	1: 8 500 100 mm = 10 cm 100 mm $\therefore 8\,500 \times 10\text{ cm} \checkmark = \frac{85\,000\text{ km}}{100\,000} \checkmark$ = 0,85 km ✓a	Method ✓ Calculation ✓ Simplification ✓	2	1		
		SUBTOTAL	14	11	10	

	QUESTION 4				
	LO Assessed: LO 1, LO 2 AS Assessed: 12.1.1, 12.1.2, 12.1.3, 12.2.1				
4.1	R305	2 years = 24 months thus choosing correct value ✓	1		
4.2	R305 x 24 ✓ A = R 7 320 ✓ a	Method ✓ answer ✓	2		
4.3	R7 320 – R6 000 = R1 320 interest paid ✓ ✓	Method of subtraction ✓ Simplification ✓	2		
4.4 4.4.1	SI = R6 000 x 2 x $\frac{29}{100}$ = R3 480 ✓ a ✓ m ✓ m	Substitution of values in formulae ✓ Correct method of calculation ✓ Simplification ✓	2	1	

4.4.2	A loan from ABC Loans		Choice of option ✓			1	
4.5	Plot 1 R140 000÷640 = R218,75 ✓m	Plot 2 R234 000÷1 000 =R234 ✓m	Correct calculation for land 1 and 2 ✓✓ Difference ✓ Plot 2 – plot 1 Simplification ✓	2	1	2	
	R234 – R218,75 ✓m= R15,25 ✓ Simplification						
			SUBTOTAL	9	2	3	

	QUESTION 5					
	LO Assessed: LO 1, LO 2, LO 3 AS Assessed: 12.1.2, 12.2.1, 12.3.1, 12.3.2					
5.1	24 cm ÷ 1,5 cm ✓ m = 16 x 2 = 32 ✓ a slabs 32 slabs ✓ a	Method ✓ Simplification ✓ Simplification ✓	1	1		
5.2	24 cm x 2 = 48 cm or 32 cm x 1,5 = 48 cm ✓ m ✓ a	Method ✓ Simplification ✓	1	1		
5.3	SA = 2(8 x 18 + 8 x 48 + 18 x 48) cm = 2 784 cm ² ✓ m ✓ sub ✓ a	Correct formula choice ✓ Substitution / method ✓ Simplification ✓	2	1		
5.4	24 ÷ 1,5 = 16 ✓ m 16 x 2 = 32 ✓ a 32 slabs ÷ 4 = 8 ✓ m 8 x R32,60 = R260,80 ✓ a	Multiplication by R32,60 ✓ Division of 32 by 4 ✓ Simplification ✓✓	2	2		
		SUBTOTAL	6	6		

	QUESTION 6					
	LO Assessed: LO 1, LO 2, LO 4 AS Assessed: 12.1.1, 12.1.2, 12.2.1, 12.4.3, 12.4.4, 12.4.5					
6.1 6.1.1	$100\% - 89\% = 11\%$ plastic ✓ ✓	Method ✓ Simplification ✓	2			
6.1.2	$35\% \times 35 \text{ kg} = 12,25 \text{ kg}$ per week ✓ ✓	Method ✓ Simplification ✓	2			
6.1.3	$35\text{kg} \times (100\% - 37\%) = 22,05 \text{ kg}$ balance ✓ ✓	New percent ✓ Correct calculation of new mass of waste ✓	2	1		
6.2 6.2.1	23 faults $(12 + 6 + 2 + 2 + 1) = 23$ ✓ m ✓ a	Add frequency ✓ Simplification ✓	1	1		
6.2.2	Fault A ✓ a	Correct choice ✓		1		
6.2.3	✓ m (a) $\frac{6}{400}$ OR $\frac{3}{200}$ ✓ m ✓ a ✓ a ✓ m (b) $\frac{377}{400}$ ✓ a	Correct B value ✓ Simplification ✓ Correct value as numerator ✓ Simplification ✓	1 1	1 1		
		SUBTOTAL	9	5		

	QUESTION 7					
	LO Assessed: LO 2, LO 4 As Assessed: 12.2.1, 12.4.3, 12.4.4					
7.1	Western Cape	Correct interpretation of graph ✓		2		
7.2	Gauteng	Correct interpretation of graphs ✓		2		
7.3.1	$629 \div 9 = 69,89$ ✓ca ✓m ✓m ✓a	Adding percentages for provinces ✓✓ Dividing by 9 ✓ Simplification ✓	2	2		
7.3.2	$735 \div 9 = 81,67$ ✓ca ✓m ✓m ✓a	Adding percentages for provinces ✓✓ Dividing by 9 ✓ Simplification ✓	2	2		
7.3.3	$(81,67 - 69,89) \div 69,89 \times 100\% = 16,85\%$ ✓a ✓m	Method ✓ Simplification ✓	1	1		
7.4	Sipho's Option: $6 \text{ hrs} \times 1,78 \times 10$ ✓m = 106,80c ✓a Jane's Option: $7 \times 6 \text{ hrs} \times 2,66$ ✓✓m = 111,72c ✓a $3 \times 6 \text{ hrs} \times 1,78 \text{ c} = 32,04 \text{ c}$ ✓a $\therefore 32,04 \text{ c} + 111,72 \text{ c} = 143,76 \text{ c}$ ✓ ca Sipho's option is cheaper ✓a	Answer Sipho's option ✓✓ Answer Jane's option ✓✓✓✓ Choice of Sipho's option ✓	2	3	2	
		SUBTOTAL	7	12	2	
	FINAL TOTAL		71	62	17	
		Actual	48%	40%	11%	
		Expected according to IEB SAG 2008	50%	40%	10%	