



GRADE 10 EXEMPLAR EXAMINATION
NOVEMBER 2006

MATHEMATICS LITERACY
PAPER 1 MEMORANDUM

LO 1 – Numbers and Operations in Context
LO 2 – Functional Relationships

QUESTION 1: BANKING WITH BONGANI

- (a) (i) A minus sign indicates that money has been deducted from the account. ✓ (1)
- (ii) R554,09 ✓ (1)
- (b) (i) Service fee for 5 February = R2 249,90 - R2 245,90
= R4,00 ✓ (1)

Note: Subtracting R2 249,90 from R2 245,90 to get an answer of - R4,00 is also acceptable.

- (ii) Account balance for 9 February = R2 245,90 + R148,70
= R2 394,60 ✓ (1)
- c) (i)

Bongani's calculations:

Service fee = R20,00 + 0,95% of R1 800,00
 = R20,00 + 0,095 × R1 800,00
 = R20,095 × R1 800,00
 = R36,17

Mistake 1:

$$0,95\% = \frac{0,95}{100} = 0,0095 \checkmark$$

The final answer is also incorrect.
 i.e. R20,095 x R1 800,00 =
 R36 171,00 ✓

Mistake 2:

Bongani has added R20,00 to 0,95 instead of first multiplying R1 800,00 by 0,0095 and then adding R20,00. i.e. Bongani has ignored BODMAS. ✓

- (3)
- (ii) Service fee = R20,00 + 0,95% of the amount withdrawn
 = R20,00 + (× R1 800,00) ✓
 = R20,00 + R17,10
 = R37,10 ✓ (2)
- (d) (i) Annual interest rate = 1,8%.
 ∴ Monthly interest rate = $\frac{1,8\%}{12} = 0,15\% \checkmark$ (1)
- (ii) Interest for February = 0,15% × R2 412,06 ✓
 = $\frac{0,15}{100} \times R2 412,06$
 ≈ R3,62 ✓ (2)

(iii) Total service fees = R9,00 + R4,00 + R3,41 + R37,10 + R41,33 + R40,90
 = R135,74 ✓

In February he earned R3,62 in interest and paid R136,22 in service fees. He lost R135,74 - R3,62 = R132,12 to service fees. ✓ (2)

(iv) One reason why people keep their money in the bank is because it is safer than keeping it under a mattress.
 Another reason is that most businesses do not pay their employees in cash for security reasons and will only pay salaries into a bank account.
 Another reason is that many people believe that you are making money by earning interest if you keep it in the bank while you are earning nothing if you keep it at home. (1)

(e)

Transaction	Amount	Fee
Withdrawal: Branch	R1 800,00	Fee = R16,00 + (R0,90 × 17) ✓ = R16,00 + R15,30 = R31,30 ✓
Withdrawal: Branch	R2 200,00	Fee = R16,00 + (R0,90 × 21) ✓ = R16,00 + R18,90 = R34,90 ✓

∴ Total service fees for withdrawals from a branch of *Big-Bucks Bank* = R31,30 + R34,90
 = R66,20

The total service fees for withdrawals from a branch of *i-Moocha Moola Bank* = R37,10 + R40,90
 = R78,00.

Bongani would pay less for withdrawing a total of R4 050,00 from a branch of *Big-Bucks Bank* than he does from *i-Moocha Moola Bank*. ✓ (5)

20 marks

QUESTION 2: SHOPPING WITH PENNY

- (a) Original price = R77,95
Discount price = R66,25

$$\begin{aligned} \therefore \% \text{ discount} &= \frac{R77,95 - R66,25}{R77,95} \checkmark \times 100\% \checkmark \\ &= 15\% \checkmark \end{aligned} \quad (3)$$

- (b) Shirt purchases = 31,09% of total amount spent

$$\begin{aligned} &= \frac{31,09}{100} \times R997,39 \checkmark \\ &= R310,09 \checkmark \end{aligned}$$

Total shirt purchases = R66,25 + R108,35 + missing price
R310,09 – R66,25 – R108,35 = missing price

$$\therefore \text{missing price} = R135,49 \checkmark \quad (3)$$

- (c) (i) Interest on balance of R997,38 = 2% × R997,38 \checkmark

$$\begin{aligned} &= \frac{2}{100} \times R997,38 \\ &= R19,95 \checkmark \end{aligned} \quad (2)$$

- (ii) Amount owed in August = balance in July + interest on balance in July

$$\text{Balance in July} = R997,38 + R19,95 = R1\,017,33$$

$$\text{Interest rate on balance of R1\,017,33} = 4,5\% \checkmark$$

$$\begin{aligned} \therefore \text{Amount owed in August} &= R1\,017,33 + (4,5\% \times R1\,017,33) \checkmark \\ &= R1\,017,33 + R45,78 \\ &= R1\,063,11 \checkmark \end{aligned}$$

$$\begin{aligned} \text{Amount owed in September} &= R1\,063,11 + (4,5\% \times R1\,063,11) \square \\ &= R1\,063,11 + R47,84 \\ &= R1\,110,95 \checkmark \end{aligned} \quad (5)$$

13 marks

QUESTION 3: MANDLA'S MONEY

(a) Total income = R7 150,50 + R350,00
= R7 500,50

Total expenditure = sum of all of the expenditure items
= R7 761,05

Profit/loss for the month = income - expenditure
= R7 500,50 - R7 761,05 ✓
= - R260,55 ✓

Mandla is living in debt and is a poor financial situation. He spent R260,55 more than he earned. ✓ (3)

- (b) Mandla could improve his financial situation by:
- reducing the amount of money that he spends on food by buying cheaper food products.
 - not eating out as much as he does.
 - reducing the amount that he spends on entertainment.
 - reducing the amount that he spends on petrol by forming a lift club to get to work.
 - reducing his car repayments by selling his car and buying a cheaper car with lower monthly repayments.

✓✓ for any two reasons.

Learners must not only describe some of the areas of Mandla's spending that are high but must also explain how Mandla can reduce spending in these areas.

(2)

5 marks

QUESTION 4: BOB THE BUSINESSMAN'S CELLPHONE DILEMA

(a) (i) Cost of the call = R2,80 × 5
= R14,00 ✓ (1)

(ii) Cost of the call = R1,40 × 12,5
= R17,50 ✓ (1)

(b) (i) Total monthly cost of calls = R2,80 × no. of minutes spent on calls ✓ (1)

(ii) Total monthly cost of calls = Subscription fee + (R2,10 × no. of minutes spent on calls)
= R75,00 + (R2,10 × no. of minutes spent on calls) ✓(1)

(c) (i) Monthly cost = R2,80 × 40
= R112,00 ✓

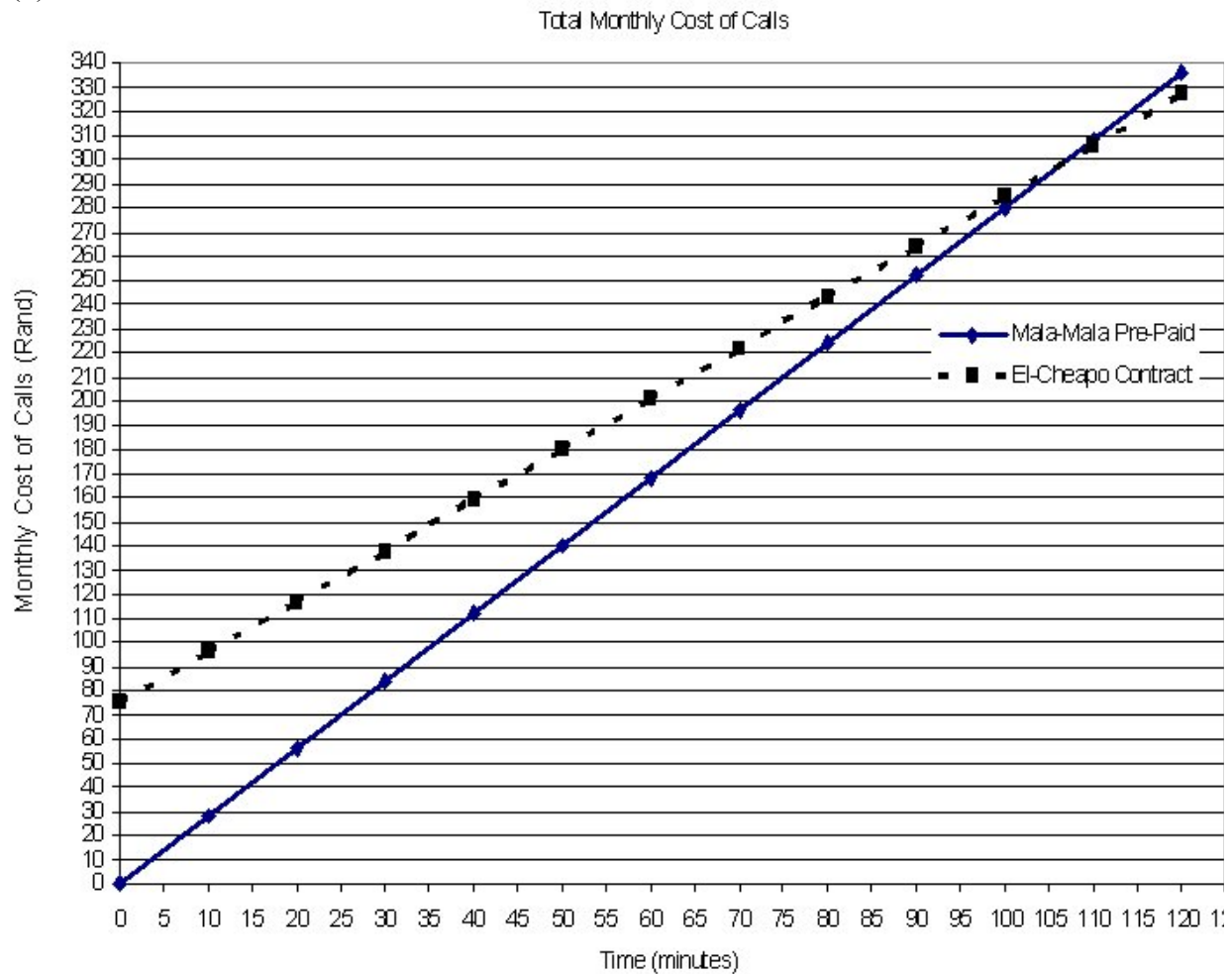
(ii) Monthly cost = R75,00 + (R2,80 × 40)
 = R243,00 ✓

(iii) Time spent on calls = $\frac{R327,00 - R75,00}{R2,10}$ ✓✓
 = 120 minutes

(iv) Monthly cost = R2,80 × 120
 = R336,00 ✓

(5)

(d)



Mark allocation: Total – 4 marks

- ✓✓ for pre-paid graph
- ✓✓ for contract graph

Not every point has to be plotted, i.e. if students realise that the graphs must be straight lines and only plot a couple of points, then they must still be credited with the marks.

(4)

(e) (i) ≈ R180,00 ✓

(1)

(ii) ≈ 93 or 94 minutes ✓

(1)

- (f) If you make more than 107 minutes worth of calls each month you should be on the *El-Cheapo* contract option. This is because after 107 minutes the graph of the contract option drops below the graph of the pre-paid option. So, for more than 107 minutes worth of calls it is cheaper to be on a contract than on a pre-paid option. ✓

For 3 hours = 360 minutes worth of calls, Bob should definitely be on the contract option. ✓

- (g) Bob makes most of his calls during peak time. ✓ So, off peak talk time will not be to his advantage. ✓ Also, he will save so much by being on a contract that 30 free minutes of off-peak talk time will still not make it cheaper to be on the pre-paid option. (2)

19 marks

QUESTION 5: WASEEMA'S WATER COSTS

- (a) The calculation $R0,00 \times 6$ kl represents the fact that the first 6 kl of water are free. ✓ (1)

- (b) 14 kl: First 6 kl are free
Next 4 kl charged at R3,90 per kl
Next 4 kl charged at R5,15 per kl

$$\begin{aligned} \text{Cost of water} &= R0,00 + (R3,90/\text{kl} \times 4 \text{ kl}) + (R5,15/\text{kl} \times 4 \text{ kl}) \checkmark \checkmark \\ &= R36,20 \checkmark \end{aligned} \quad (3)$$

- (c) *Waseema's water costs:*
9,5 kl: First 6 kl are free
Next 3,5 kl charged at R3,90 per kl

$$\begin{aligned} \text{Cost of water} &= R0,00 + (R3,90/\text{kl} \times 3,5 \text{ kl}) \\ &= R0,00 + R13,65 \\ &= R13,65 \checkmark \end{aligned}$$

Waseema's brother's water costs:
9,5 kl: Fixed cost = R31,80 ✓

Cost per kl of water used: First 6 are free
Next 3,5 kl are charged at R5,30 per kl

$$\begin{aligned} \Rightarrow \text{Cost of water} &= R0,00 + (R5,30/\text{kl} \times 3,5 \text{ kl}) \\ &= R0,00 + R18,55 \\ &= R18,55 \checkmark \end{aligned}$$

$$\begin{aligned} \therefore \text{Total cost of using 9,5 kl of water in eThekweni Municipality} &= R31,80 + R18,55 \\ &= R50,35 \checkmark \end{aligned}$$

So, Waseema's brother will pay $R50,35 - R18,55 = R31,80$ more to use 9,5 kl of water. ✓ (5)

Note:

Students can also determine who will pay more for their water using logic and without having to do any calculations.

For example: The charge per kl of water in Ethekewini Municipality for 9,5 kl of water is higher than in the Johannesburg Municipality and in the Ethekewini Municipality you also have to pay a fixed charge. This means that the cost of water for Waseema's brother is much higher than for Waseema.

However, to determine by how much the water costs will differ. Students will have to perform the calculations as shown above.

- (d) (i) Residents in Durban pay significantly more for their water. ✓
For example: The graph for the eThekwini Municipality is always above the graph for the Johannesburg Municipality, and the gap between the two graphs seems to widen even more after 30 kl of water consumption. ✓ (2)
- (ii) In both eThekwini and Johannesburg the first 6 kl of water are free. So, both of the graphs lie on R0,00 for the first 6 kl. ✓ (1)
- (iii) \approx R16,50 ✓ (1)
- (iv) The stepped graphs represents the fact that there is no single charge for water and the water tariffs change depending on the number of kl of water used. ✓ (1)
- (e) If the *eThekwini Municipality* dropped the fixed monthly charge, then residents in the *eThekwini Municipality* who use between 15,1 kl and 30 kl would pay less in consumption charges (R5,30/kl) than residents in Johannesburg (R6,45 & R7,75/kl). ✓✓
However, residents in the *eThekwini Municipality* who use between 6 kl and 15 kl and more than 30 kl will still pay more for their water consumption than residents in Johannesburg even if the fixed monthly charge is dropped. ✓✓ (4)

18 marks