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KWAZULU-NATAL PROVINCE

EDUCATION
REPUBLIC OF SOUTH AFRICA

**NATIONAL
SENIOR CERTIFICATE**

GRADE 12

**MATHEMATICAL LITERACY P1
PREPARATORY EXAMINATION
MARKING GUIDELINE**

SEPTEMBER 2023

MARKS: 150

| SYMBOL | EXPLANATION |
|-------------|---|
| M | Method |
| MA | Method with accuracy |
| CA | Consistent accuracy |
| A | Accuracy |
| C | Conversion |
| S | Simplification |
| RT/RG/RD/RM | Reading from a table/ graph/ diagram/map |
| SF | Correct substitution in a formula |
| O | Opinion/ reason/deduction/example/Explanation |
| J | Justification |
| R | Rounding off |
| F | deriving a formula |
| AO | Answer only full marks |
| P | Penalty e.g. for units, incorrect rounding off etc. |
| NPR | No penalty for rounding / units |
| | |

This marking guideline consists of 9 pages.

| QUESTION 1 [30 MARKS] ANSWER ONLY FULL MARKS | | | |
|---|---|---|---|
| Ques | Solution | Explanation | T & L |
| 1.1.1 | Discrete✓✓A | 2A correct answer (2) | DH L1 |
| 1.1.2 | R29,99✓✓RT | 2RT correct answer (2) | DH L1 |
| 1.1.3 | R12,99✓✓RT | 2RT correct answer (2) | DH L1 |
| 1.1.4 | A = R20,99+R109,99+R34,99+R56,99+R36,99+R38,99+R49,99+ R16,99+R74,99✓MA = R 440,91✓A | 1MA adding all correct values 1A correct Amount | |
| 1.1.5 | Difference = R109,99 – R84,99✓MA = R25,00✓A | 1MA subtracting R84,99 from R109,99 1A answer AO (2) | DH L1 |
| 1.1.6 | Food Lovers✓✓RT | 2RT reading from table (2) | DH L1 |
| 1.2.1 | It is a formal statement or document that Tiger Security issued to Maranatha Computer College to upgrade the CCTV at a stated price. ✓✓A | 2A correct definition (2) | F L1 |
| 1.2.2 | Unit price = R11 040 ÷ 16✓M = R690✓A | 1M for dividing R11 040 by 16 1A correct answer (2) | F L1 |
| 1.2.3 | R75 931,10✓✓R | 2R correct answer Accept R75 931,20 (2) | F L1 |
| 1.2.4 | $\begin{array}{l} \text{✓RT} \quad \text{✓MA} \\ \text{Tax amount} = \text{R75 931,15} - \text{R66 027,09} \\ \quad = \text{R9 904,06} \end{array}$ <p style="text-align: center;">OR</p> $\begin{array}{l} \text{✓RT} \quad \text{✓MA} \\ \text{Tax amount} = \text{R66 027,09} \times 15\% \\ \quad = \text{R9 904,06} \end{array}$ <p style="text-align: center;">OR</p> $\begin{array}{l} \text{Tax amount} = \text{R75 931,15} \times \frac{15\text{✓M}}{115\text{✓M}}\% \\ \quad = \text{R 9 904,06} \end{array}$ | 1RT for R75 931,16 1MA subtracting R66 027,09 1RT for R66 027,09 1MA multiplying by 15% 1M for multiplying by 15% 1M for dividing by 115% (2) | F L1 |

| | | | |
|-------|---|---|----------|
| 1.2.5 | $\text{Deposit} = 50\% \times R75\,931,15 \checkmark M A$ $= R37\,965,58 \checkmark A$ OR $\text{Deposit} = \frac{1}{2} \times R75\,931,15 \checkmark MA$ $= R37\,965,58 \checkmark A$ OR $\text{Deposit} = 0,5 \times R75\,931,15 \checkmark MA$ $= R37\,965,58 \checkmark A$ OR $\text{Deposit} = R75\,931,15 \div 2 \checkmark MA$ $= R37\,965,58 \checkmark A$ | 1MA multiplying by 50% 1A correct answer OR 1MA multiplying by $\frac{1}{2}$ 1A correct answer OR 1MA multiplying by 0,5 1A correct answer OR 1MA dividing by 2 1A correct answer (2) | F L1 |
| 1.2.6 | $\text{Cost per metre} = R3\,990 \div 500 \checkmark M$ $= R7,98 \checkmark A$ | 1M dividing by 500 1A correct answer (2) | F L1 |
| 1.3.1 | Pie chart $\checkmark \checkmark A$ | 2A correct answer (2) | DH L1 |
| 1.3.2 | 33%; 31%; 13%; 12%; 8%; 3,5% $\checkmark \checkmark A$ | 2A Correct answer (2) | DH L1 |
| 1.3.3 | 152 170 000 $\checkmark \checkmark A$ | 2A correct answer (2) | DH L1 |
| | | [30] | |

| QUESTION 2 [36 MARKS] | | | |
|------------------------------|--|---|---------|
| 2.1.1 | It is the amount paid by Mr Ngwane for the clothing account. \checkmark | 2A correct definition (2) | F L1 |
| 2.1.2 | 04 January 2023 or 04/01/2023 $\checkmark \checkmark A$ | 2A correct answer (2) | F L1 |
| 2.1.3 | $\checkmark M$ $\text{Balance amount} = R10\,825,30 - R1\,100 + R899 + R1\,000$ $+ R1\,930 + R205 + R199 + R212,36 \checkmark \checkmark M$ $= R14\,170,66$ | 1M subtracting R1 100 2M adding amounts (3) | F L2 |
| 2.1.4 | $\text{Interest as a percentage} = \frac{R212,36 \checkmark RT}{R1\,271,57 \checkmark M} \times 100\%$ $\approx 16,7\% \checkmark R$ | 1RT for R212,36 1M dividing by R1 271,57 1R correct answer (3) | F L2 |
| 2.2.1 | $\text{Rate per hour} = R19\,750 \div 5 \text{ hours} \checkmark M$ $= R3\,950/\text{hour} \checkmark A$ | 1M dividing by 5 1A correct answer (2) | F L2 |

| | | | |
|-------|---|---|---------|
| 2.2.2 | $\checkmark M$ $100 \text{ hrs} + 5 \text{ hrs} + 50 \text{ hrs} = 155 \text{ hrs} \checkmark A$ Total flight cost = $155(R1\ 725) + 20(R945 + R2\ 025) + R19\ 750$ $= R346\ 525 \checkmark A$ Nkosi's claim is INCORRECT $\checkmark O$ | 1M for adding 1A for 155 hours 1A correct answer 1O opinion (4) | F L4 |
| 2.3.1 | Real cost of loan = $(R7\ 371 \times 72) + R1\ 207,50 \checkmark MA$ $= R531\ 919,50 \checkmark A$ | 1MA for multiplying by 72 and adding R1207,50 1A Correct answer (2) | F L2 |
| 2.3.2 | Total Monthly Repayment = $72 \times R7\ 371 \checkmark M$ $= R530\ 712 \checkmark A$ Total interest = $R530\ 712 - R300\ 000 \checkmark M$ $= R230\ 712 \checkmark A$ Monthly interest = $R230\ 712 \div 72 \checkmark M$ $= R3\ 205$ | 1MA multiplying by 72 1A correct answer 1M subtracting R300 000 from R530 712 1A correct answer 1M dividing R230 712 by 72 (5) | F L3 |
| 2.3.3 | $R1 = 0,0737862 \text{ CAD}$ $\checkmark A$ $R50\ 000 = 50\ 000 \times 0,0737862 \text{ CAD} \checkmark M A$ $= 3\ 689,31 \text{ CAD} \checkmark A$ | 1A for 50 000 1MA Multiplying 0,0737862 by 50 000 1A correct answer (3) | F L2 |
| 2.4.1 | Cost per mirror = $R2\ 190 - R1\ 500 \checkmark M$ $= R690 \checkmark A$ $\checkmark A$ $\checkmark A$ Total Cost = $R1\ 500 + R690 \times \text{total number of mirrors}$ | 1M subtracting R1 500 from R2 190 1A answer 1A for R1 500 1A multiplying by total number of mirrors (4) | F L3 |
| 2.4.2 | $B = R1\ 500 + 4 \times R690 \checkmark MCA$ $= R4\ 260 \checkmark CA$ | CA Q2.4.1 1MCA adding 4 and multiplying by 690 1CA correct answer (2) | F L2 |
| 2.4.3 | $\checkmark A$ $\checkmark A$ (4 ; R4 260) | 1A for 4 1A for R4 260 (2) | F L4 |
| 2.4.4 | Mr Ngwane will know the minimum number of mirrors he needs to make and sell to start making profit. $\checkmark \checkmark O$ | 2O explanation (2) | F L4 |
| | | [36] | |

| QUESTION 3 [22 MARKS] | | | |
|------------------------------|--|---|-------|
| 3.1.1 | A research method used to collect data to determine the percentage of parents that paid school fees. ✓✓A | 2A correct definition (2) | DH L1 |
| 3.1.2 | Questionnaire ✓✓A | 2A Correct answer (2) | DH L1 |
| 3.1.3 | <p style="text-align: right;">✓A ✓M</p> <p>Mean</p> $= \frac{67,23\% + 66,16\% + 68,01\% + 67,98\% + 56\% + 63,75\% + 62,75\%}{7} \checkmark M$ <p>= 64,55% ✓CA</p> <p>The claim is NOT true ✓O</p> | <p>1A for 56%</p> <p>1M adding correct values</p> <p>1M dividing by 7</p> <p>1CA correct answer</p> <p>1O correct opinion (5)</p> | DH L4 |
| 3.1.4 | <p>2020 ✓A</p> <p>Parents lost jobs due to Covid 19 ✓O</p> | <p>1A for correct year</p> <p>1O for reason (2)</p> | DH L4 |
| 3.1.5 | <p>Number of parents = 51,17% × 198 200 ✓M A</p> <p>= 101 418,94 ✓A</p> <p>= 101 419 ✓R</p> | <p>1MA multiplying 198 200 by 51,17%</p> <p>1A answer</p> <p>1R rounding (3)</p> | DH L2 |
| 3.2.1 | <p>Range = 4 186 000 – 436 000 ✓M</p> <p>= 3 750 000 ✓A</p> | <p>1M subtracting 436 000 from 4 186 000</p> <p>1A correct answer (2)</p> | DH L2 |
| 3.2.2 | 15%; 21%; 28%; 35%; 38%; 39%; 46%; 47%; 57% ✓✓A | 2A correct answer (2) | DH L1 |
| 3.2.3 | Eastern Cape ✓✓RT | <p>CA from 3.2.2</p> <p>2 RT correct answer (2)</p> | DH L1 |
| 3.2.4 | North West ✓✓RT | <p>2 RT correct answer (2)</p> | DH L1 |
| | | [22] | |

| QUESTION 4 [33 MARKS] | | | |
|-----------------------|---|--|---------|
| 4.1.1 | R177,12✓✓A | 1A correct answer (2) | F L1 |
| 4.1.2 | $\begin{aligned} \text{Annual pension} &= 12(7,5\% \times R74\,800) \\ &= R67\,320 \end{aligned}$ | 1M multiplying by 12 1M multiplying R74 800 by 7,5% 1A correct answer (3) | F L2 |
| 4.1.3 | $\begin{aligned} \text{Monthly taxable income} &= R74\,800 - R5\,000 - R5\,610 \\ &= R64\,190 \end{aligned}$ $\begin{aligned} \text{Annual taxable income} &= 12(R64\,190) \\ &= R770\,280 \end{aligned}$ | 1M multiplying by 12 1M subtracting R5000 and R5610 1A correct answer (3) | F L3 |
| 4.1.4 | $\begin{aligned} \text{Annual Medical Tax Credit} &= 12(2 \times R364 + 3 \times R246) \\ &= R17\,592 \end{aligned}$ | 1M for 12 1M multiplying R364 by 2 and R246 by 3 1A correct answer (3) | F L2 |
| 4.1.5 | $\begin{aligned} \text{Annual tax with medical aid} &= R179\,147 + 39\%(R770\,280 - R673\,000) \\ &= R217\,086,20 \end{aligned}$ $\begin{aligned} \text{Annual tax payable} &= R217\,086,20 - R17\,235 - R17\,592 \\ &= R182\,259,20 \end{aligned}$ $\begin{aligned} \text{Monthly Tax Payable} &= R182\,259,20 \div 12 \\ &= R15\,188,27 \end{aligned}$ $\begin{aligned} \text{Annual Tax payable without Medical Aid} &= R217\,086,20 - R17\,235 \\ &= R199\,851,20 \end{aligned}$ $\begin{aligned} \text{Monthly Tax Payable without medical Aid} &= R199\,851,20 \div 12 \\ &= R16\,654,27 \end{aligned}$ $\begin{aligned} \text{Difference} &= R16\,654,27 - R15\,188,27 \\ &= R1\,466 \end{aligned}$ Claim is invalid✓O | 1SF substitution 1S simplifying 1M subtracting Rebate and MTC 1M dividing by 12 1M subtracting rebates 1M subtracting R15 188,27 1O opinion (7) | F L4 |

| | | | |
|-------|--|---|----------|
| 4.2.1 | Total Cost = $4 \times R6\,999 \checkmark M$ = $R27\,996 \checkmark A$ | 1M multiplying R6 999 by 4 1A correct answer (2) | F L2 |
| 4.2.2 | Solar rebate = $25\% \times R27\,996 \checkmark MCA$ = $R6\,999 \checkmark CA$ | CA from Q4.2.1 1M multiplying R27 996 by 25% 1CA correct answer (2) | F L2 |
| 4.2.3 | $\text{Monthly tax} = \frac{\checkmark CA \quad \checkmark MCA}{12 \checkmark M} \frac{R182\,259,20 - R6\,999}{12 \checkmark M}$ $= R14\,605,02 \checkmark CA$ His claim is valid $\checkmark O$ OR Annual tax = $R182\,259,20 - R6\,999 \checkmark MCA$ = $R175\,260,20 \checkmark CA$ Monthly tax = $R175\,260,20 \div 12 \checkmark M$ = $R14\,605,02 \checkmark CA$ His claim is valid $\checkmark O$ | CA from 4.1.5 1CA for R182 259,20 1MCA for subtracting R6 999 1M dividing by 12 1CA correct answer 1O opinion OR 1MCA subtracting R6 999 from R182 259,20 1CA simplifying 1M dividing by 12 1CA correct answer 1O opinion (5) | F L4 |
| 4.3.1 | The horizontal axis is not drawn to scale. $\checkmark \checkmark A$ OR Scale and labels not clearly shown on graph. $\checkmark \checkmark A$ | 2A correct answer (2) | DH L1 |
| 4.3.2 | Number of days = 129 $\checkmark RG$ Number of hours = 459 $\checkmark RG$ Number of hours per day = $459 \text{ hours} \div 129 \text{ days} \checkmark M$ $\approx 3,56$ Her claim is valid $\checkmark O$ | 1RG for 129 1RG for 459 1M dividing 459 by 129 1A answer 1O opinion (4) | DH L4 |
| | | [33] | |

| QUESTION 5 [29 MARKS] | | | |
|------------------------------|--|---|----------|
| 5.1.1 | $C = 160 + 90 \checkmark M$ $= 250 \checkmark A$ OR $C = 830 - 45 - 535 \checkmark M$ $= 250 \checkmark A$ $D = 45 - 35 \checkmark M$ $= 10 \checkmark A$ OR $D = 490 - 320 - 160 \checkmark M$ $= 10 \checkmark A$ | 1M adding 160 and 90 1A answer OR 1M subtracting 45 and 535 from 830 1A answer 1M subtracting 35 from 45 1A answer OR 1M subtracting 320 and 160 from 490 1A answer AO (4) | P L2 |
| 5.1.2 | $P(\text{Girl travelling by car}) = \frac{160 \checkmark A}{830 \checkmark A} \times 100$ $= 19,28 \checkmark A$ | 1M for 160 1M dividing by 830 1A correct Answer (3) | P L3 |
| 5.2.1 | Weight of the boy = 13,5 kg $\checkmark RG$ Weight of the girl = 13 kg $\checkmark RG$ Difference = 13,5 kg – 13 kg $\checkmark M$ = 0,5 kg $\checkmark CA$ | Accept leeway of 1 1RG weight of the boy 1RG weight of the girl 1M subtracting girl's weight from boy's weight 1CA answer (4) | DH L3 |
| 5.2.2 | The daughter's weight is greater than 25% of the weights of girls of her age. $\checkmark \checkmark O$ OR Her daughter's weight is less than 75% of the weights of girls of her age. $\checkmark \checkmark O$ | 2O explanation (2) | DH L4 |
| 5.2.3 | Height = 93cm $\checkmark RG$ height = 0,93m $\checkmark C$ weight = 16,6 kg $BMI = \frac{16,6 \text{ kg}}{(0,93)^2} \checkmark SF$ = 19,19 kg/m ² $\checkmark CA$ | Accept leeway of 1cm 1RG height in cm 1C converting cm to m 1SF substitution 1CA correct answer (4) | DH L3 |
| 5.3.1 | Quarterly interest rate = 8,4% ÷ 4 $\checkmark M$ = 2,1% $\checkmark A$ | 1M for dividing by 4 1A correct answer (2) | F L2 |

| | | | |
|-------------------------|--|---|---------|
| 5.3.2 | <p>Quarter 1: Amount = $102,1\% \times R30\,000 \checkmark M$ $= R30\,630 \checkmark A$</p> <p>Quarter 2: Amount = $102,1\% \times R30\,630 \checkmark M$ $= R31\,273,23 \checkmark CA$</p> <p>Quarter 3: Amount = $102,1\% \times R31\,273,23 \checkmark M$ $= R31\,929,97 \checkmark CA$</p> <p style="text-align: center;">OR</p> <p>Quarter 1: Amount = $(2,1\% \times R30\,000) + R30\,000 \checkmark M$ $= R30\,630 \checkmark A$</p> <p>Quarter 2: Amount = $(2,1\% \times R30\,630) + R30\,630 \checkmark M$ $= R31\,273,23 \checkmark CA$</p> <p>Quarter 3: Amount = $(2,1\% \times R31\,273,23) + R31\,273,23 \checkmark M$ $= R31\,929,97 \checkmark CA$</p> | <p>CA Q5.3.1 1M multiplying R30 000 by 102,1% 1A answer 1M multiplying by R30 630 by 102,1% 1CA answer 1M multiplying R31 273,23 by 102,1% 1CA answer</p> <p>1M multiplying R30 000 by 2,1% and adding R30 000 1A answer 1M multiplying by R30 630 by 2,1% and adding R30 630 1CA answer 1M multiplying R31 273,23 by 2,1% and adding R31 273,23 1CA answer</p> <p style="text-align: right;">(6)</p> | F L3 |
| 5.3.3 | <p>Quarter 4: Amount = $102,1\% \times R31\,929,97$ $= R32\,600,50 \checkmark CA$</p> <p>Simple Interest = $8,4\% \times R30\,000 \checkmark M$ $= R2\,520$</p> <p>Total Amount = $R30\,000 + R2\,520$ $= R32\,520 \checkmark A$</p> <p>Difference = $R32\,600,50 - R32\,520 \checkmark M$ $= R80,50 \checkmark CA$</p> | <p>CA from 5.3.2 1MCA multiplying 31 929,97 by 102,1% 1M multiplying by 8,4%</p> <p>1A total amount 1M subtracting 1CA answer</p> <p style="text-align: right;">(5)</p> | F L3 |
| | | [29] | |
| TOTAL MARKS: 150 | | | |