GAUTENG PROVINCE
EDUCATION
REPUBLIC OF SOUTH AFRICA

# GAUTENG DEPARTMENT OF EDUCATION

# PREPARATORY EXAMINATION

# 2020

# MARKING GUIDELINES

## MATHEMATICAL LITERACY PAPER 2 (10602)

| Codes | Explanation |
|---|---|
| M | Method |
| MA | Method with Accuracy |
| CA | Consistent Accuracy |
| A | Accuracy |
| C | Conversion |
| D | Define |
| J | Justification / Reason / Explain |
| S | Simplification |
| RT / RD / RG | Reading from a table OR a graph OR a diagram OR a map OR a plan |
| F | Choosing the correct formula |
| SF | Substitution in a formula |
| O | Opinion |
| P | Penalty, e.g. for no units, incorrect rounding-off, etc. |
| R | Rounding-off |
| NP | No penalty for rounding-off OR omitting units |

**KEY TO TOPIC SYMBOL:**

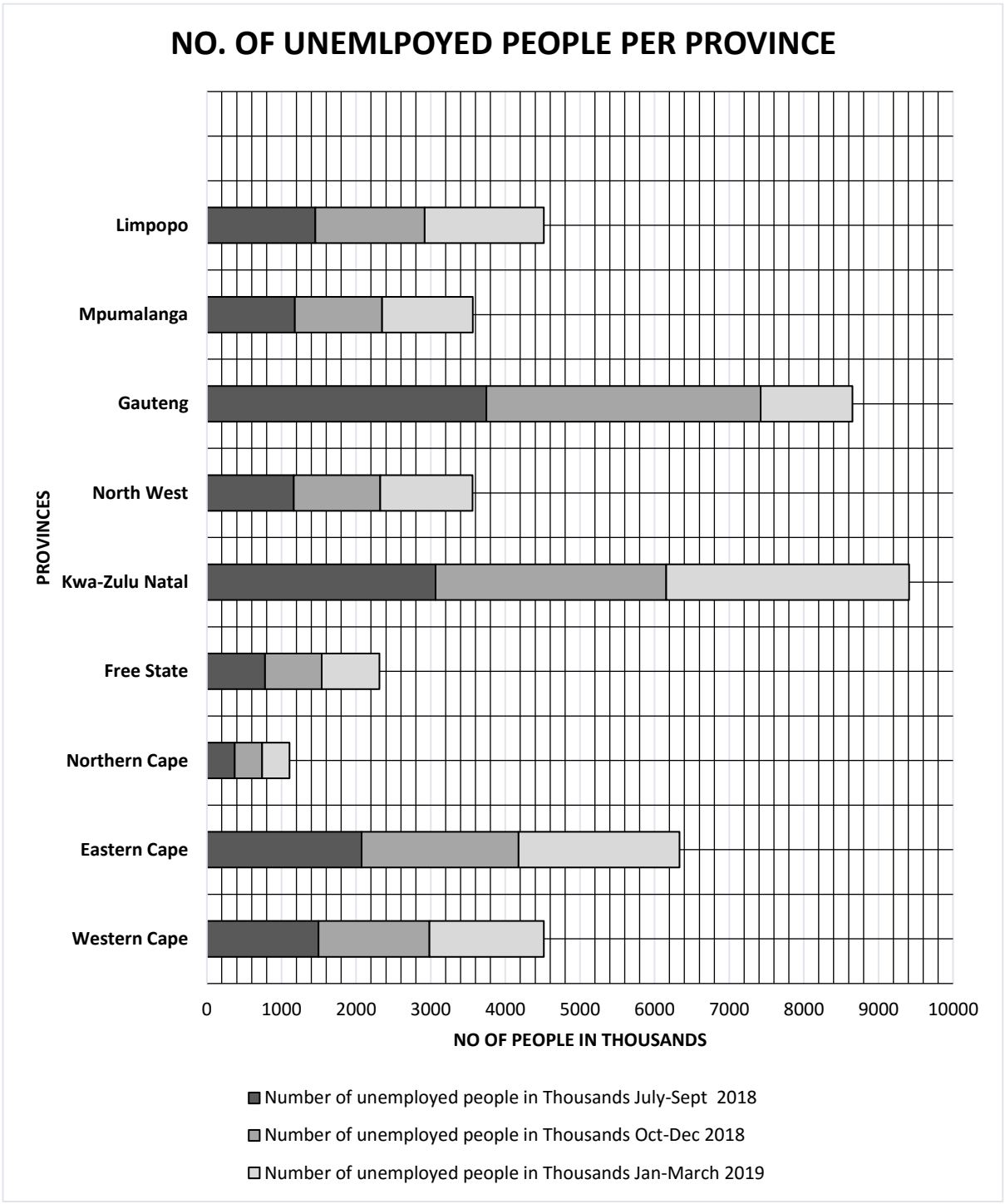
**F = Finance; M = Measurement; MP = Maps, Plans and other representations; DH = Data Handling; P = Probability**

**11 pages**

**QUESTION 1**

| Q | Answer | Explanation | Level |
|---|---|---|---|
| 1.1.1 | $\frac{1}{9}$✓✓2A | 1A numerator<br>1A denominator<br>(2) | P2 |
| 1.1.2 | Mean for Oct-Dec 2018 = $\frac{15\ 278\ 000}{9}$✓<br>= 1 697 555,56✓<br><br>Mean for July-Sept 2018 = $\frac{15\ 324\ 000}{9}$<br>= 1 702 666,67✓<br><br>Difference = 1 702666.67 – 1 697 555,56✓<br>= 5 111,11✓<br>Her claim is invalid✓ | 1M mean concept<br>1A correct answer<br><br>1Acorrect answer<br><br>1M for subtraction<br><br>1CA answer<br><br>1O for conclusion<br>(6) | DH4 |
| 1.1.3 | White unemployed = 100% − (84% + 9% + 2%)✓<br>=100% − 95%<br>= 5%✓<br><br>Number of white unemployed people<br>= 5% × 13 369 000✓<br>= 668 450 people✓ | 1M for percentage concept<br><br>1A for the difference<br><br>1M for multiplying by 5%<br>1CA answer<br>(4) | DH3 |
| 1.1.4 | 372; 779; 1 163; 1 178; 1 455; 1 496; 2 073; 3 064; 3 744 ✓<br>$Q_1 = \frac{779+1\ 163}{2}$<br>= 971✓<br><br>$Q_3 = \frac{2\ 073+3\ 064}{2}$<br>= 2 568,5✓<br><br>IQR = $Q_3 - Q_1$<br>= 2 568,5 – 971✓<br>= 1 597,5✓ | 1M arranging in ascending order<br>1A value of $Q_1$<br><br>1A value of $Q_3$<br><br>1M finding the difference<br>1CA answer<br>(5) | DH3 |

| 1.1.5 | | (4) | DH2 |
|---|---|---|---|




1A for heading
1A for labelling the axes
1A for every **TWO** correctly drawn bars

| Q | Answer | Explanation | Level |
|---|---|---|---|
| 1.2.1 | r = $\frac{6m}{2}$ = 3 m✓<br>Area = 3,142 × (3 m)$^2$ ✓<br>= 28,278 m$^2$✓ | 1A value of radius<br>1SF correct values<br>1A answer<br>(3) | M2 |
| 1.2.2 | $Area\ of\ the\ braai\ area = 15 \times 15 = 225\ m^2$ ✓<br>$Area\ needed\ to\ be\ paved = 225\ m^2 - 28{,}278\ m^2$<br>$= 196{,}722\ m^2$ ✓<br><br>No. of bricks = 196,722 × 48<br>= 9 442,656 ≈ 9 443 $bricks$ ✓<br><br>No. of pallets = 9 443÷ 1 000<br>= 9,44256 ≈ 10 ✓<br>Cost = 10 × R3 500✓<br>= R35 000✓<br><br>Her claim is valid.✓ | 1A correct area of square<br>1A correct area needs paving<br><br>1CA for number of bricks<br><br>1A correct number of pallets<br>1M multiplying by R3 500<br>1CA answer<br>1O justification<br>(7) | F4 |
| | | | |
| 1.3.1 | Medical credits = R310 + R310 + R290 + R290✓<br>= R1 200 ✓<br>Then R1 200 × 12 ✓<br>= R14 400✓ | 1M adding correct values<br><br>1M multiplying by 12<br>1CA answer<br>(3) | F2 |
| 1.3.2<br>. | Payable tax before rebates<br>= 63 853 + 31% of income above 305 850✓<br>= 63 853 + 0,31 (370 000 − 305 850)✓<br>= 63 853 + 19 886,50<br>= R83 739,50✓<br><br>Income tax = R83 739,50 − Rebates − Medical credit<br>= R83 739,50 – R14 067 − R14 400✓✓<br>= R52 272,50 ✓<br>Monthly income tax = R52 272,50 ÷ 12<br>= R4 356,04✓<br><br>∴ Her complaint is invalid.✓ | 1A correct tax bracket<br>1SF the value of 370 000<br><br>1A correct answer<br><br>1M subtracting rebates<br>1MCA subtracting medical credit<br>1CA answer<br>1M dividing by 12<br><br>1CA answer<br><br>1O for conclusion<br>(8) | F4 |
| | | | **[42]** |

**QUESTION 2**

| Q | Answer | Explanation | Level |
|---|---|---|---|
| 2.1.1 | A = 5 888 373 557 + 1 822 497 265 ✓<br>= 7 710 870 822✓ | 1M addition<br>1A correct answer<br>(2) | DH2 |
| 2.1.2 | Range = Max Value – Min Value<br>= 10 304 756 649 – 4 848 960 105✓✓ | 1M range concept<br>1A correct values<br>(2) | DH2 |
| 2.1.3 | % Change = $\frac{8\ 962\ 470\ 233 - 8\ 701\ 405\ 578}{8\ 701\ 405\ 578} \times 100$✓<br>= 3%✓ | 1SF correct values<br>1A correct answer<br>(2) | F2 |
| 2.1.4 | 402 154 = $\frac{332\ 187+383\ 114+416\ 365+414\ 802+414\ 949+C}{6}$✓✓<br>2 412 924 = 1 961 417 + C✓<br>C = 2 412 924 – 1 961 417<br>= 451 507✓ | 1M mean concept<br>1A for 2 412 924<br>1A for 1 961 417<br>1CA answer<br>(4) | DH3 |
| 2.1.5 | P = $\frac{2}{6}$✓✓<br>= 0,33✓ | 1A numerator<br>1A denominator<br>1C for decimal<br>(3) | P3 |
| 2.1.6 | • Tuition fees increase annually✓✓<br>**or**<br>• Student Residence rental fees increase annually✓✓<br>**or**<br>• Student study material costs increase annually ✓✓<br>**or**<br>• Student catering/food costs increase annually✓✓<br>**or**<br>• Inflation rate increases annually✓✓<br>Any sensible reason | 2O opinion<br>(2) | DH4 |
| 2.1.7 | • Decreases in 2012✓<br>• Increases in 2013✓<br>• Decreases in 2014 – 2015✓<br>• Increases in 2016✓ | 1A trend and year<br>1A trend and year<br>1A trend and years<br>1A trend and year (4) | DH2 |

| | | | |
|---|---|---|---|
| 2.2 | 1st year = $(\frac{5,5}{100} \times$ R58 000) + R58 000✓<br><br>= R61 190✓<br><br>2nd year = $(\frac{5,5}{100} \times$ R61 190) + R61 190<br>= R64 555,45✓<br><br>Interest for 6 months<br><br>= $\frac{5,5\%}{12} \times 6$ = 2,75% ✓<br><br>Last 6 months = $(\frac{2,75}{100} \times$ R64 555,45) + R64 555,45<br>= R66 330,72✓<br><br>∴ The claim is invalid.✓<br><br>**OR**<br><br>1st year = 5,5 % ✓ + 1 = 1,055 ✓<br><br>2nd year = 5,5 % + 1 = 1,055 ✓<br><br>Interest for 6 months<br><br>= $\frac{5,5\%}{2}$ + 1 = 1,0275% ✓<br><br>Last 6 months = (1,055) (1,055) (1,0275)<br>= R66 330,72✓<br><br>∴ The claim is invalid.✓ | 1M calculation<br>1A correct answer<br><br>1CA answer<br><br>1C for 2.75<br><br>1CA correct answer<br>1O conclusion<br><br>**OR**<br><br>1M calculation<br>1A correct answer<br><br>1CA answer<br><br>1C for 1,0275<br><br>1CA correct answer<br><br>1O conclusion<br>(6)<br><br>**If learners use a Formula and the answer is :**<br>**R66 306,96** | F4 |

<table>
<tr><th>Q</th><th>Answer</th><th>Explanation</th><th>Level</th></tr>
<tr><td>2.3.1</td><td>
<table>
<tr><td>Category</td><td>Calculations</td><td>Cost</td></tr>
<tr><td>A</td><td>6 × R11,61</td><td>R69,66✓</td></tr>
<tr><td>B</td><td>6 × R16,56</td><td>R99,36✓</td></tr>
<tr><td>C</td><td>6 × R21,75</td><td>R130,50✓</td></tr>
<tr><td>D</td><td>3× R25,16</td><td>R75,48✓</td></tr>
<tr><td>Total</td><td></td><td>R375✓</td></tr>
</table>
</td><td>1A correct answer<br>1A correct answer<br>1A correct answer<br>1A correct answer<br>1CA total<br>(5)</td><td>F2</td></tr>
<tr><td>2.3.2</td><td>VAT Inclusive = 1,15 ×R375✓<br>= R431,25✓<br><br>Ratio is 2 : 1 ✓<br><br>$\frac{2}{3} \times R431{,}25 = R287{,}50$ ✓</td><td>1M for calculations<br>1A correct answer<br><br>1A ratio<br>1CA correct answer<br>(4)</td><td>F3</td></tr>
<tr><td>2.3.3</td><td>
<table>
<tr><td>Category</td><td>Calculations</td><td>Cost</td></tr>
<tr><td>A</td><td>6 × R11,61</td><td>R69,66</td></tr>
<tr><td>B</td><td>6 × R16,56</td><td>R99,36✓</td></tr>
<tr><td>C</td><td>4 × R21,75</td><td>R87,00✓</td></tr>
<tr><td>Total</td><td></td><td>R256,02✓</td></tr>
</table>
His claim is valid.✓</td><td>1A for first two answers<br>1A for correct answer<br>1A for total<br>1O for justification<br>(4)</td><td>F4</td></tr>
<tr><td></td><td></td><td></td><td>[38]</td></tr>
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**QUESTION 3**

| Q | Answer | Explanation | Level |
|---|---|---|---|
| 3.1.1 | SE✓✓ | 2A correct answers (2) | MP2 |
| 3.1.2 | Time = $\frac{350}{100}$<br>= 3,50 h✓<br><br>Time (petrol refill & lunch) = 20 min + 40 min<br>= 60 min = 1 hour✓<br><br>Total time = 3,50h + 1h<br>= 4,50 h<br>= 4 h 30min✓<br><br>Arrival time = 10 h10 + 4h 30 min<br>= 2:40 p.m/14h40 ✓ | 1S for simplification to 3,50<br><br>1C Conversion<br><br>1A correct answer<br><br>1CA answer (4) | M3 |
| 3.1.3 | Actual distance = $\frac{Measured\ distance}{Measured\ bar}$ × scale factor<br><br>=$\frac{113\ mm}{25\ mm}$ ✓✓ × 900 km✓<br><br>= 4 068 km ✓<br><br>His claim is invalid.✓ | 1RG measured distance<br>1RG measured bar<br>1M multiplying by 900<br>1CA answer<br><br>1O justification<br><br>**NB: Measure the final printed copy.**<br><br>(5) | MP4 |
| 3.1.4 | Siteki✓✓ | 2A correct answer (2) | MP2 |
| 3.2.1 | Washing basin is build next to the inner wall of the waiting room,✓✓ fixing it might be a challenge. | 2J for justification (2) | MP4 |
| 3.2.2 | • Head South from waiting room.✓<br>• Pass business office and 1st examining room on the left.✓<br>• The destination will be the next room on your left.✓ | 1A for South<br>1A for specifying rooms for indicating left<br>1A for the destination (3) | MP2 |
| 3.2.3 | 18′ ×15′1′′<br>18′ × 12 = 216′✓<br>(15′ × 12) + 1 = 181′✓<br>216′ × 181′✓ = 39 096 square inches | 1C for converting to 216′<br>1C for converting to 181′<br>1M for multiplication (3) | M2 |

| Q | Answer | Explanation | Level |
|---|---|---|---|
| 3.2.4 | $\frac{39\,096}{0,155}$✓ $= 252\,232$✓<br>$= 252\,232\ cm^2 \div 10\,000$✓<br>$= 25,2232\ m^2$ ✓ | 1M dividing correct values<br>1A correct answer<br>1C dividing by 10 000<br>1CA answer<br>(4) | M3 |
| 3.2.5 | $\frac{3}{13}$✓ × 100%<br><br>= 23%✓ | 1A correct answer<br>1C conversion to % and whole number<br>**Accept**<br>$\frac{1}{13}$✓ × 100%<br>= 8%✓<br>(2) | P3 |
| 3.3.1 | • Below 3rd percentile✓<br>• Underweight✓ | 1RG for percentile<br>1RT for status<br>(2) | M3 |
| 3.3.2 | • Risk of being overweight✓<br>• Exercise✓✓<br>or<br>• Eat balanced diet✓✓ | 1RT for answer<br>2J for reasons<br>(3) | M4 |
| 3.3.3 | BMI = $\frac{55}{1,5^2}$✓<br><br>= $\frac{55}{2,25}$✓<br><br>= 24,4 kg/$m^2$ ✓<br>• His weight places him between the 75th and 85th percentile curve.✓<br>• He is healthy.✓<br>• The claim is valid.✓ | 1SF correct values<br>1S for 2,25<br>1A correct answer<br><br>1RG for percentiles<br>1RT for status<br>1O for conclusion<br>(6) | M4 |
| | | | **[38]** |

**QUESTION 4**

| Q | Answer | Explanation | Level |
|---|---|---|---|
| 4.1.1 | ✓<br>13,86 $m^3$ = 5,5 m ×0,9 m × h✓<br>h = 13,86 ÷ 4,95✓<br>h = 2,8 m✓ | 1SF for 13,86<br>1SF for 5,5 and 0,9<br>1S dividing values<br>1A correct answer<br>(4) | MP3 |
| 4.1.2 | **Option 1:**<br>$\frac{5,5}{0,2}$ = 27,5 ≈ 27 boxes✓<br>$\frac{0,9}{0,5}$ = 1,8 ≈ 1 box✓<br>Total no. of boxes = 1 × 27<br>= 27 boxes✓<br>**Option 2:**<br>$\frac{5,5}{0,5}$ = 11 boxes✓<br>$\frac{0,9}{0,2}$ = 4,5≈4 boxes✓<br>Total no. of boxes = 11× 4<br>= 44 boxes✓<br>Invalid✓<br>Option 2 will have more boxes✓ | 1A correct answer<br>1A correct answer<br>1CA answer<br>1A correct answer<br>1A correct answer<br>1CA answer<br>1O for conclusion<br>1J for explanation<br>(8) | MP4 |
| 4.2.1 | Surface area = 2(1,2 × 1,6) + 2(0,4 × 1,6)✓<br>= 3,84 $m^2$ + 1,28 $m^2$ ✓<br>= 5,12 $m^2$ ✓<br>Total Surface area (Triple layer)<br>= 5,12 $m^2$ × 3✓<br>= 15,36 $m^2$✓ | 1SF Substituting correctly<br>1S Simplification<br>1A for correct answer<br>1M for multiplying by 3<br>1CA answer<br>(5) | M3 |
| 4.2.2 | Perimeter = 2(1,2m + 0,4 m) × 3✓<br>= 3,2 m × 3✓<br>= 9,6 m × 100✓<br>= 960 cm✓ | 1M for perimeter concept<br>1M multiplying by 3<br>1M multiplying by 100<br>1C answer<br>(4) | M3 |

| Q | Answer | Explanation | Level |
|---|---|---|---|
| 4.3.1 | Price of bag = 450 × R0,28✓<br>= R126✓ | 1M for multiplying by R0,28<br>1A for correct answer<br>(2) | F2 |
| 4.3.2 | Total cost = R126 + R46,95<br>= R172,95✓<br><br>R500 − R172,95 = R327,05✓<br><br>$\frac{R327,05}{R500}$ × 100% ✓= 65,41%✓<br><br>The claim is valid.✓ | <br>1A for correct answer<br>1A for the difference<br>1M for calculation of %<br>1A for correct answer<br>1O for conclusion<br>(5) | F4 |
| 4.3.3 | 100% + 4,96% = 104,96%✓<br><br>Previous price = $\frac{100}{104,96}$ ✓ × R46,95✓<br><br>= R44,73✓ | 1A for the value of 104,96%<br>1M for dividing correct values<br>1M for multiplying by R46,95<br><br>1A for correct answer<br>(4) | F3 |
| | | | **[32]** |

**TOTAL: 150**