



GAUTENG PROVINCE

EDUCATION
REPUBLIC OF SOUTH AFRICA

GAUTENG DEPARTMENT OF EDUCATION

PREPARATORY EXAMINATION

2020

MARKING GUIDELINES

MATHEMATICAL LITERACY PAPER 2 (10602)

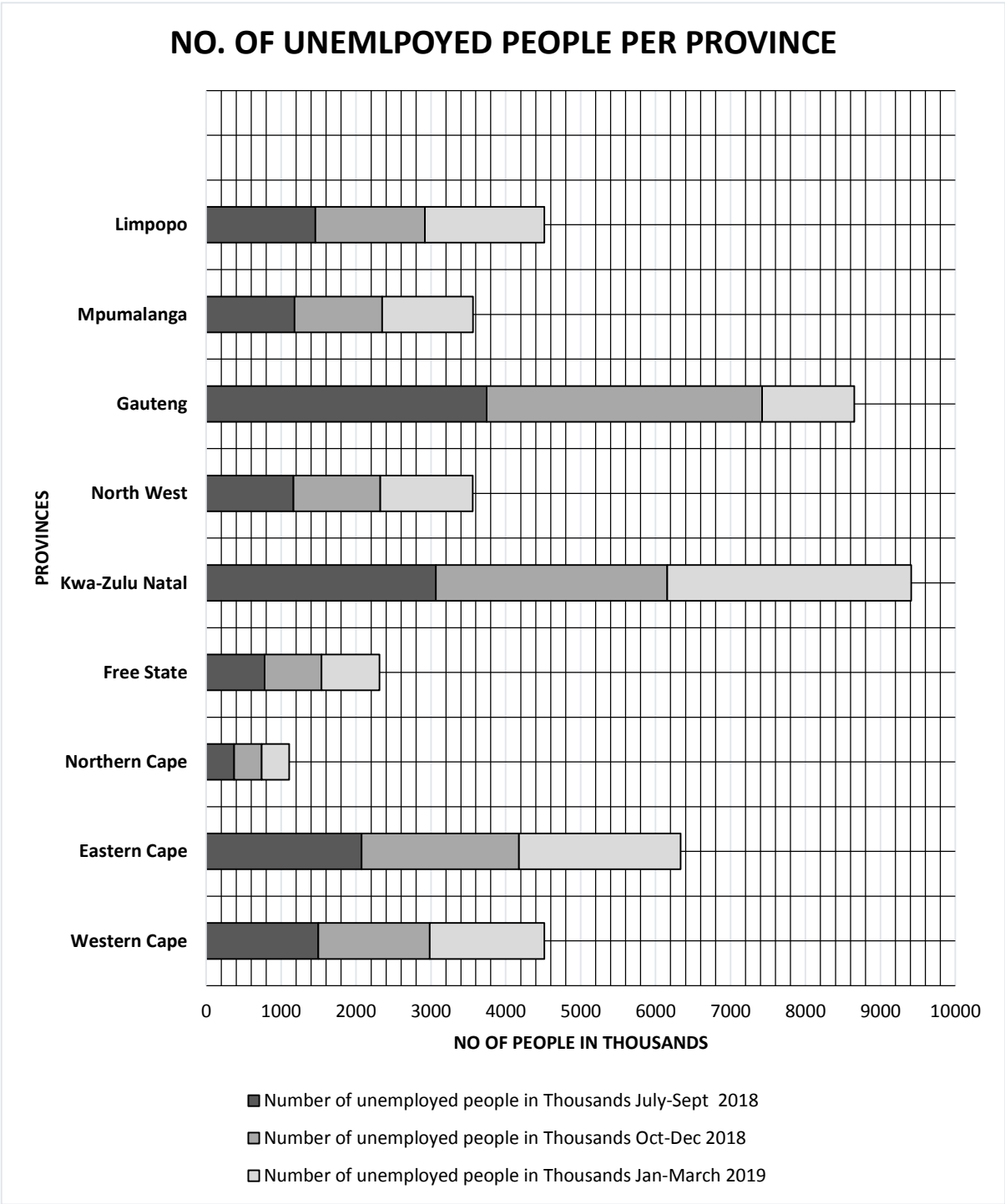
Codes	Explanation
M	Method
MA	Method with Accuracy
CA	Consistent Accuracy
A	Accuracy
C	Conversion
D	Define
J	Justification / Reason / Explain
S	Simplification
RT / RD / RG	Reading from a table OR a graph OR a diagram OR a map OR a plan
F	Choosing the correct formula
SF	Substitution in a formula
O	Opinion
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**

QUESTION 1

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



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

Q	Answer	Explanation	Level
1.2.1	$r = \frac{6m}{2} = 3 \text{ m} \checkmark$ $\text{Area} = 3,142 \times (3 \text{ m})^2 \checkmark$ $= 28,278 \text{ m}^2 \checkmark$	1A value of radius 1SF correct values 1A answer (3)	M2
1.2.2	$\text{Area of the braai area} = 15 \times 15 = 225 \text{ m}^2 \checkmark$ $\text{Area needed to be paved} = 225 \text{ m}^2 - 28,278 \text{ m}^2$ $= 196,722 \text{ m}^2 \checkmark$ $\text{No. of bricks} = 196,722 \times 48$ $= 9\,442,656 \approx 9\,443 \text{ bricks} \checkmark$ $\text{No. of pallets} = 9\,443 \div 1\,000$ $= 9,44256 \approx 10 \checkmark$ $\text{Cost} = 10 \times \text{R}3\,500 \checkmark$ $= \text{R}35\,000 \checkmark$ Her claim is valid. \checkmark	1A correct area of square 1A correct area needs paving 1CA for number of bricks 1A correct number of pallets 1M multiplying by R3 500 1CA answer 1O justification (7)	F4
1.3.1	$\text{Medical credits} = \text{R}310 + \text{R}310 + \text{R}290 + \text{R}290 \checkmark$ $= \text{R}1\,200 \checkmark$ Then $\text{R}1\,200 \times 12 \checkmark$ $= \text{R}14\,400 \checkmark$	1M adding correct values 1M multiplying by 12 1CA answer (3)	F2
1.3.2	$\text{Payable tax before rebates}$ $= 63\,853 + 31\% \text{ of income above } 305\,850 \checkmark$ $= 63\,853 + 0,31 (370\,000 - 305\,850) \checkmark$ $= 63\,853 + 19\,886,50$ $= \text{R}83\,739,50 \checkmark$ $\text{Income tax} = \text{R}83\,739,50 - \text{Rebates} - \text{Medical credit}$ $= \text{R}83\,739,50 - \text{R}14\,067 - \text{R}14\,400 \checkmark \checkmark$ $= \text{R}52\,272,50 \checkmark$ $\text{Monthly income tax} = \text{R}52\,272,50 \div 12$ $= \text{R}4\,356,04 \checkmark$ \therefore Her complaint is invalid. \checkmark	1A correct tax bracket 1SF the value of 370 000 1A correct answer 1M subtracting rebates 1MCA subtracting medical credit 1CA answer 1M dividing by 12 1CA answer 1O for conclusion (8)	F4
			[42]

QUESTION 2

Q	Answer	Explanation	Level
2.1.1	$A = 5\,888\,373\,557 + 1\,822\,497\,265 \checkmark$ $= 7\,710\,870\,822 \checkmark$	1M addition 1A correct answer (2)	DH2
2.1.2	Range = Max Value – Min Value $= 10\,304\,756\,649 - 4\,848\,960\,105 \checkmark \checkmark$	1M range concept 1A correct values (2)	DH2
2.1.3	$\% \text{ Change} = \frac{8\,962\,470\,233 - 8\,701\,405\,578}{8\,701\,405\,578} \times 100 \checkmark$ $= 3\% \checkmark$	1SF correct values 1A correct answer (2)	F2
2.1.4	$402\,154 = \frac{332\,187 + 383\,114 + 416\,365 + 414\,802 + 414\,949 + C \checkmark}{6}$ $2\,412\,924 = 1\,961\,417 + C \checkmark$ $C = 2\,412\,924 - 1\,961\,417$ $= 451\,507 \checkmark$	1M mean concept 1A for 2 412 924 1A for 1 961 417 1CA answer (4)	DH3
2.1.5	$P = \frac{2}{6} \checkmark \checkmark$ $= 0,33 \checkmark$	1A numerator 1A denominator 1C for decimal (3)	P3
2.1.6	<ul style="list-style-type: none"> • Tuition fees increase annually $\checkmark \checkmark$ or • Student Residence rental fees increase annually $\checkmark \checkmark$ or • Student study material costs increase annually $\checkmark \checkmark$ or • Student catering/food costs increase annually $\checkmark \checkmark$ or • Inflation rate increases annually $\checkmark \checkmark$ Any sensible reason	2O opinion (2)	DH4
2.1.7	<ul style="list-style-type: none"> • Decreases in 2012 \checkmark • Increases in 2013 \checkmark • Decreases in 2014 – 2015 \checkmark • Increases in 2016 \checkmark 	1A trend and year 1A trend and year 1A trend and years 1A trend and year (4)	DH2

<p>2.2</p>	<p>1st year = $(\frac{5,5}{100} \times R58\ 000) + R58\ 000$ ✓ = R61 190 ✓</p> <p>2nd year = $(\frac{5,5}{100} \times R61\ 190) + R61\ 190$ = R64 555,45 ✓</p> <p>Interest for 6 months = $\frac{5,5\%}{12} \times 6 = 2,75\%$ ✓</p> <p>Last 6 months = $(\frac{2,75}{100} \times R64\ 555,45) + R64\ 555,45$ = R66 330,72 ✓</p> <p>∴ The claim is invalid. ✓</p> <p>OR</p> <p>1st year = $5,5\% + 1 = 1,055$ ✓</p> <p>2nd year = $5,5\% + 1 = 1,055$ ✓</p> <p>Interest for 6 months = $\frac{5,5\%}{2} + 1 = 1,0275\%$ ✓</p> <p>Last 6 months = $(1,055)(1,055)(1,0275)$ = R66 330,72 ✓</p> <p>∴ The claim is invalid. ✓</p>	<p>1M calculation 1A correct answer</p> <p>1CA answer</p> <p>1C for 2.75</p> <p>1CA correct answer 1O conclusion</p> <p>OR</p> <p>1M calculation 1A correct answer</p> <p>1CA answer</p> <p>1C for 1,0275</p> <p>1CA correct answer 1O conclusion</p> <p>(6)</p> <p>If learners use a Formula and the answer is : R66 306,96</p>	<p>F4</p>
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Q	Answer	Explanation	Level																		
2.3.1	<table border="1"> <thead> <tr> <th>Category</th> <th>Calculations</th> <th>Cost</th> </tr> </thead> <tbody> <tr> <td>A</td> <td>$6 \times R11,61$</td> <td>R69,66✓</td> </tr> <tr> <td>B</td> <td>$6 \times R16,56$</td> <td>R99,36✓</td> </tr> <tr> <td>C</td> <td>$6 \times R21,75$</td> <td>R130,50✓</td> </tr> <tr> <td>D</td> <td>$3 \times R25,16$</td> <td>R75,48✓</td> </tr> <tr> <td>Total</td> <td></td> <td>R375✓</td> </tr> </tbody> </table>	Category	Calculations	Cost	A	$6 \times R11,61$	R69,66✓	B	$6 \times R16,56$	R99,36✓	C	$6 \times R21,75$	R130,50✓	D	$3 \times R25,16$	R75,48✓	Total		R375✓	1A correct answer 1A correct answer 1A correct answer 1A correct answer 1CA total (5)	F2
Category	Calculations	Cost																			
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C	$6 \times R21,75$	R130,50✓																			
D	$3 \times R25,16$	R75,48✓																			
Total		R375✓																			
2.3.2	VAT Inclusive = $1,15 \times R375$ ✓ = R431,25 ✓ Ratio is 2 : 1 ✓ $\frac{2}{3} \times R431,25 = R287,50$ ✓	1M for calculations 1A correct answer 1A ratio 1CA correct answer (4)	F3																		
2.3.3	<table border="1"> <thead> <tr> <th>Category</th> <th>Calculations</th> <th>Cost</th> </tr> </thead> <tbody> <tr> <td>A</td> <td>$6 \times R11,61$</td> <td>R69,66</td> </tr> <tr> <td>B</td> <td>$6 \times R16,56$</td> <td>R99,36✓</td> </tr> <tr> <td>C</td> <td>$4 \times R21,75$</td> <td>R87,00✓</td> </tr> <tr> <td>Total</td> <td></td> <td>R256,02✓</td> </tr> </tbody> </table> <p>His claim is valid. ✓</p>	Category	Calculations	Cost	A	$6 \times R11,61$	R69,66	B	$6 \times R16,56$	R99,36✓	C	$4 \times R21,75$	R87,00✓	Total		R256,02✓	1A for first two answers 1A for correct answer 1A for total 1O for justification (4)	F4			
Category	Calculations	Cost																			
A	$6 \times R11,61$	R69,66																			
B	$6 \times R16,56$	R99,36✓																			
C	$4 \times R21,75$	R87,00✓																			
Total		R256,02✓																			
			[38]																		

QUESTION 3

Q	Answer	Explanation	Level
3.1.1	SE✓✓	2A correct answers (2)	MP2
3.1.2	$\text{Time} = \frac{350}{100}$ $= 3,50 \text{ h} \checkmark$ <p>Time (petrol refill & lunch) = 20 min + 40 min = 60 min = 1 hour✓</p> <p>Total time = 3,50h + 1h = 4,50 h = 4 h 30min✓</p> <p>Arrival time = 10 h10 + 4h 30 min = 2:40 p.m/14h40 ✓</p>	1S for simplification to 3,50 1C Conversion 1A correct answer 1CA answer (4)	M3
3.1.3	$\text{Actual distance} = \frac{\text{Measured distance}}{\text{Measured bar}} \times \text{scale factor}$ $= \frac{113 \text{ mm}}{25 \text{ mm}} \checkmark \checkmark \times 900 \text{ km} \checkmark$ $= 4 \text{ 068 km} \checkmark$ <p>His claim is invalid.✓</p>	1RG measured distance 1RG measured bar 1M multiplying by 900 1CA answer 1O justification <div style="border: 1px solid black; padding: 5px; width: fit-content; margin: 10px auto;"> NB: Measure the final printed copy. </div> (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	<ul style="list-style-type: none"> • Head South from waiting room.✓ • Pass business office and 1st examining room on the left.✓ • The destination will be the next room on your left.✓ 	1A for South 1A for specifying rooms for indicating left 1A for the destination (3)	MP2
3.2.3	$18' \times 15'1''$ $18' \times 12 = 216' \checkmark$ $(15' \times 12) + 1 = 181' \checkmark$ $216' \times 181' \checkmark = 39 \text{ 096 square inches}$	1C for converting to 216' 1C for converting to 181' 1M for multiplication (3)	M2

Q	Answer	Explanation	Level
3.2.4	$\frac{39\,096}{0,155} \checkmark = 252\,232 \checkmark$ $= 252\,232 \text{ cm}^2 \div 10\,000 \checkmark$ $= 25,2232 \text{ m}^2 \checkmark$	1M dividing correct values 1A correct answer 1C dividing by 10 000 1CA answer (4)	M3
3.2.5	$\frac{3}{13} \checkmark \times 100\%$ $= 23\% \checkmark$	1A correct answer 1C conversion to % and whole number <div style="border: 1px solid black; padding: 5px; width: fit-content; margin: 5px auto;"> Accept $\frac{1}{13} \checkmark \times 100\%$ $= 8\% \checkmark$ </div> (2)	P3
3.3.1	<ul style="list-style-type: none"> • Below 3rd percentile ✓ • Underweight ✓ 	1RG for percentile 1RT for status (2)	M3
3.3.2	<ul style="list-style-type: none"> • Risk of being overweight ✓ • Exercise ✓✓ or • Eat balanced diet ✓✓ 	1RT for answer 2J for reasons (3)	M4
3.3.3	$\text{BMI} = \frac{55}{1,5^2} \checkmark$ $= \frac{55}{2,25} \checkmark$ $= 24,4 \text{ kg/m}^2 \checkmark$ <ul style="list-style-type: none"> • His weight places him between the 75th and 85th percentile curve. ✓ • He is healthy. ✓ • The claim is valid. ✓ 	1SF correct values 1S for 2,25 1A correct answer 1RG for percentiles 1RT for status 1O for conclusion (6)	M4
			[38]

QUESTION 4

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

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

TOTAL: 150