



education

Department:
Education
REPUBLIC OF SOUTH AFRICA

NATIONAL SENIOR CERTIFICATE

GRADE 12

MATHEMATICAL LITERACY P2

NOVEMBER 2009

MEMORANDUM

MARKS: 150

| SYMBOL | EXPLANATION |
|---------------|--|
| A | Accuracy |
| CA | Consistent accuracy |
| C | Conversion |
| J | Justification (Reason/Opinion) |
| M | Method |
| MA | Method with accuracy |
| P | Penalty, e.g. for no units, incorrect rounding off, etc. |
| R | Rounding off |
| RT/RG | Reading from a table/Reading from a graph |
| S | Simplification |
| SF | Correct substitution in a formula |
| O | Own opinion |

This memorandum consists of 23 pages.

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Please turn over

| QUESTION 1 [29] | | Penalise only once for rounding off | |
|-----------------|--|--|----------------------------|
| Ques | Solution | Explanation | AS |
| 1.1.1 | $\checkmark A$ $\checkmark A$ Limpopo and Western Cape Difference = $30,1\% - 6,7\%$ = $23,4\%$ $\checkmark CA$ | 2A Solution 1CA Solution (3) <div style="border: 1px solid black; padding: 2px; width: fit-content;"> ANSWER ONLY – FULL MARKS If name 2 provinces incorrectly but do the subtraction from the computer data correctly :1 mark </div> | 12.4.4 12.1.1 |
| 1.1.2 | Did not use a computer = $(100\% - 9,1\%)$ of 911 118 $\checkmark M$ = $90,9\%$ of 911 118 = 828 206,262 $\checkmark A$ $\approx 828 206$ (or 828 207) $\checkmark CA$ OR $9,1\%$ of 911 118 = 82 911,738 $\checkmark A$ Did not use a computers = $911 118 - 82 911,738$ $\checkmark M$ = 828 206,262 $\approx 828 206$ (or 828 207) $\checkmark CA$ | 1M Subtraction of % 1A Solution 1CA Rounding up or rounding down 1A Number using computers (could round off here) 1M Subtraction 1CA Rounding up or rounding down (3) <div style="border: 1px solid black; padding: 2px; width: fit-content;"> ANSWER ONLY – FULL MARKS </div> | 12.1.1 12.1.2 12.4.4 |

| Ques | Solution | Explanation | AS |
|-------|--|--|----------------------------|
| 1.1.3 | $\checkmark A$ Difference in % = 61,8% – 13,2% = 48,6% Difference in usage = 48,6% of 264 654 $\checkmark M$ $= 128\,621,844$ $\approx 128\,622 \checkmark CA$ OR No. of cellphone users – No. of computer users $= 61,8\% \text{ of } 264\,654 - 13,2\% \text{ of } 264\,654 \checkmark M$ $= 163\,556,172 - 34\,934,328$ $= 128\,621,844 \checkmark A$ $\approx 128\,622 \checkmark CA$ | 1A Difference in % 1M Calculating % 1CA Solution 1M Calculating % and subtraction 1A Simplification 1CA Solution (3) <div style="border: 1px solid black; padding: 2px; text-align: center;">ANSWER ONLY – FULL MARKS</div> | 12.1.1 12.1.2 12.4.4 |
| 1.1.4 | Total number of households surveyed $= 9 \times 1\,388\,957 \checkmark M$ $= 12\,500\,613 \checkmark A$ Number surveyed in Mpumalanga $= 12\,500\,613 - (1\,586\,739 + 802\,872 + 3\,175\,578 + 2\,234\,129 + 1\,215\,936 + 911\,118 + 264\,654 + 1\,369\,181) \checkmark M$ $= 12\,500\,613 - 11\,560\,207$ $= 940\,406 \checkmark CA$ OR $\text{Mean} = \frac{x + 11\,560\,207}{9} = 1\,388\,957 \checkmark A$ $\therefore x + 11\,560\,207 = 1\,388\,957 \times 9 \checkmark M$ $x + 11\,560\,207 = 12\,500\,775 \checkmark CA$ $\therefore x = 940\,406 \checkmark CA$ | 1M Multiplying 1A Total surveyed 1M Subtraction of households 1M Addition of given values 1CA Solution 1M Calculating mean 1A Correct substitution 1M Calculations 1CA Multiplication 1CA Solution (5) <div style="border: 1px solid black; padding: 2px; text-align: center;">ANSWER ONLY – FULL MARKS</div> | 12.1.1 12.4.4 |

| Ques | Solution | Explanation | AS |
|-------|--|--|------------------|
| 1.1.5 | <p>The provinces with ^{✓✓✓✓O}high cellphone usage have a corresponding relatively high computer usage.</p> <p>OR</p> <p>The provinces with a low cellphone usage have a corresponding relatively low computer usage. ^{✓✓✓✓O}</p> <p>OR</p> <p>Cellphone usage is more. ^{✓✓O}</p> <p>Give a valid reason or calculation ^{✓✓O}</p> <p>OR ^{✓✓O}</p> <p>No trend in NC, MPU and LIM. ^{✓✓O}</p> <p>Any other justification</p> | <p>4O Acceptable/relevant opinion</p> <p>OR</p> <p>2 O Acceptable/relevant opinion 2O Valid reason or calculation</p> <p>OR</p> <p>2O No trend 2O Valid justification</p> <p>(4)</p> | 12.4.4 |
| 1.2.1 | <p>Increase for P500 = $1\ 520 - 980 = 540$ or ^{✓A}</p> <p>Increase for Q600 = $1\ 500 - 600 = 900$</p> <p>∴ Q600 has the greatest increase in sales ^{✓✓A}</p> | <p>1A Range of P500 OR Range of Q600</p> <p>2A Highest range</p> <p>(3)</p> <div style="border: 1px solid black; padding: 2px; width: fit-content;"> <p>If give correct answer and no calculations : 2 marks</p> </div> | 12.1.1 12.4.4 |

| Ques | Solution | Explanation | AS |
|-------|--|--|------------------|
| 1.2.2 | <p>Width of screen on diagram = 18 mm to 20 mm ^{✓A}</p> <p>Length of screen on the diagram = 36mm to 38 mm ^{✓A}</p> <p>Scale is 2:5. This means that the actual width is $\frac{5}{2}$ (or 2,5) times the given width. ^{✓M}</p> <p>Actual width of screen = $\frac{5}{2} \times 20 \text{ mm} = 50 \text{ mm}$ ^{✓CA}</p> <p>Actual length of screen = $\frac{5}{2} \times 38 \text{ mm} = 95 \text{ mm}$ ^{✓CA}</p> <p>OR</p> <p>Scale drawing : width of screen</p> $2 : 5 = 20 : x \quad \checkmark M$ $2x = 5 \times 20 \quad \checkmark A$ $x = \frac{100}{2} = 50 \text{ mm}$ <p>∴ width of screen = 50 mm ^{✓CA}</p> <p>Scale drawing : length of screen</p> $2 : 5 = 38 : y \quad \checkmark A$ $y = \frac{38 \times 5}{2} = 95$ <p>∴ length of screen = 95 mm ^{✓CA}</p> <p>NB: Width with 18 mm = 45 mm Width with 19 mm = 47,5 mm</p> <p>Length with 36 mm = 90 mm Length with 37 mm = 92,5 mm</p> | <p>1A Width on diagram</p> <p>1A Length on diagram</p> <p>1M Using the given scale</p> <p>1CA Actual width</p> <p>1A Actual length</p> <p>1M Using the given scale</p> <p>1A Width on diagram</p> <p>1CA Actual width</p> <p>1A Length on diagram</p> <p>1A Actual length</p> <p>(5)</p> <div style="border: 1px solid black; padding: 5px; width: fit-content;"> <p>ANSWERS ONLY – FULL MARKS 4 marks if correct answer given in cm</p> </div> | 12.3.1 12.3.3 |
| 1.2.3 | <p>Graph B OR Q600 ^{✓✓A} ^{✓O}</p> <p>The graph was drawn with the months reversed.</p> | <p>2A Identifying the graph</p> <p>1O Support of statement</p> <p>(3)</p> | 12.4.6 |

| Ques | Solution | Explanation | AS |
|-------|--|--|---|
| 2.1.2 | <p>$P(\text{Afrikaans and isiXhosa}) = 21\%$ ✓A</p> <p>$P(\text{not Afrikaans and isiXhosa})$</p> <p>$= 100\% - 21\%$ ✓M</p> <p>$= 79\%$ (or 0,79 or $\frac{79}{100}$ or $\frac{2\ 342\ 824}{2\ 969\ 600}$) ✓CA</p> <p>OR</p> <p>Percentage speaking Afrikaans and isiXhosa</p> <p>$= 11,9\% + 9,1\% = 21\%$ ✓A</p> <p>Percentage not speaking Afrikaans and isiXhosa</p> <p>$= 100\% - 21\% = 79\%$ ✓M</p> <p>$P(\text{not Afrikaans and IsiXhosa}) = 79\%$ ✓CA</p> <p>OR</p> <p>Percentage speaking Afrikaans and isiXhosa = 0,21 ✓A</p> <p>Percentage not speaking Afrikaans and isiXhosa</p> <p>$= 1 - 0,21 = 0,79$ ✓M ✓CA</p> <p>OR</p> <p>Percentage not speaking Afrikaans and isiXhosa</p> <p>$= \% \text{ speaking other languages} + \% \text{ speaking Sesotho}$</p> <p>$= 14,6\% + 64,4\%$ ✓M ✓A</p> <p>$= 79\%$ ✓CA</p> | <p>1A Identifying the percentage</p> <p>1M Subtraction</p> <p>1CA Solution</p> <p>1A Identifying the percentage</p> <p>1M Subtraction</p> <p>1CA Solution</p> <p>1A Identifying the percentage</p> <p>1M Subtraction</p> <p>1CA Solution</p> <p>1A Identifying the percentage</p> <p>1M Addition</p> <p>1CA Solution</p> | <p>12.4.5</p> <p>12.1.1</p> <p>(3)</p> <p>ANSWER ONLY – FULL MARKS</p> |

| Ques | Solution | Explanation | AS |
|----------|---|---|----------------------------|
| 2.1.3(a) | <p>✓A ✓A</p> <p>They are children / the elderly,/people who are sick/ill / don't have an identity document / may not speak the correct language for the area/lack of skills/ lack of qualifications</p> <p>Accept any other possible correct reasons.</p> | <p>2A Any two valid reasons for them being unemployed</p> <p>(2)</p> | 12.4.4 |
| 2.1.3(b) | <p>Workforce = 60% of 2 965 600 ✓M</p> <p>= 1 779 360 ✓A</p> <p>Unemployed = 26,4% of 1 779 360 ✓M</p> <p>= 469 751,04 ✓S</p> <p>≈ 469 751 ✓CA</p> <p>OR</p> <p>Unemployed = $26,4\% \times 60\% \times 2\,965\,600$ ✓M ✓A ✓M</p> <p>= 469 751,04 ✓S</p> <p>≈ 469 751 ✓CA</p> | <p>1M Calculating %</p> <p>1A Workforce</p> <p>1M Calculating % of unemployed</p> <p>1S Simplifying</p> <p>1CA Number unemployed (rounded up or down)</p> <p>OR</p> <p>1M Calculating %</p> <p>1A Workforce</p> <p>1M Calculating % of unemployed</p> <p>1S Simplifying</p> <p>1CA Number unemployed (rounded up or down)</p> <p>(5)</p> <div style="border: 1px solid black; padding: 2px; width: fit-content; margin: 0 auto;"> <p>ANSWER ONLY – FULL MARKS If only work out 26,4% : 2 marks</p> </div> | 12.1.1 12.1.2 12.4.4 |
| 2.2.1 | <p>Gauteng has the highest economic activity in the country. It has many mines and most of the large factories, head offices of companies and banks, as well as the Stock Exchange are in Gauteng. ✓✓J</p> | <p>2J Candidates' valid reasons (1 mark per reason; must have sentences; do not accept single words)</p> <p>(2)</p> | 12.4.4 |

| Ques | Solution | Explanation | AS |
|-----------|--|---|---|
| 2.2.2 (a) | <p>Total area of South Africa ✓M</p> $= (129\,370 + 169\,580 + 92\,100 + 361\,830 + 129\,480 + 116\,320 + 17\,010 + 79\,490 + 123\,910) \text{ km}^2$ $= 1\,219\,090 \text{ km}^2 \quad \checkmark\text{A}$ <p>Land for farming ✓M</p> $= 80\% \text{ of } 1\,219\,090 \text{ km}^2$ $= 975\,272 \text{ km}^2 \quad \checkmark\text{CA}$ <p>OR</p> <p>Free State = 10,6% of SA = 129 480 ✓M</p> $\text{SA} = \frac{129\,480 \text{ km}^2}{10,6\%}$ $= 1\,221\,509,434 \text{ km}^2 \quad \checkmark\text{A}$ <p>80% of 1 221 509,434 km² ✓M</p> $= 977\,207,5472 \text{ km}^2$ $\approx 977\,208 \text{ km}^2 \quad \checkmark\text{CA}$ | <p>1M Addition</p> <p>1A Total</p> <p>1M Calculating 80%</p> <p>1CA Total area for agriculture</p> <p>1M Calculating %</p> <p>1A Area of South Africa</p> <p>1M Calculating %</p> <p>1CA Total area for agriculture</p> <p>(4)</p> <p>ANSWER ONLY – FULL MARKS</p> | <p>12.4.4</p> <p>12.3.1</p> <p>12.1.1</p> |

| Ques | Solution | Explanation | AS |
|----------|--|---|---|
| 2.2.2(b) | $\begin{aligned} \text{Arable land} &= 11\% \text{ of } 975\,272 \text{ km}^2 \quad \checkmark\text{M} \\ &= 107\,279,92 \text{ km}^2 \quad \checkmark\text{CA} \\ 3\,200\,000 \text{ ha} &= 3\,200\,000 \times 0,01 \text{ km}^2 \\ &= 32\,000 \text{ km}^2 \quad \checkmark\text{C} \\ \text{\% arable land in the Free State} \\ &= \frac{32\,000 \text{ km}^2}{107\,279,92 \text{ km}^2} \times 100\% \quad \checkmark\text{M} \\ &= 29,828 \dots\% \\ &\approx 29,83\% \quad \checkmark\text{R} \end{aligned}$ <p>OR</p> <p><i>Continuing from 2nd solution in 2.2.2 (a):</i></p> $\begin{aligned} \text{Arable land} &= 11\% \text{ of } 977\,208 \text{ km}^2 \quad \checkmark\text{M} \\ &= 107\,492,88 \text{ km}^2 \quad \checkmark\text{CA} \\ &= \frac{1 \times 107\,492,88}{0,01} \text{ ha} \quad \checkmark\text{C} \\ &= 10\,749\,288 \text{ ha} \\ \text{\% arable land in the Free State} \\ &= \frac{3\,200\,000 \text{ ha}}{10\,749\,288 \text{ ha}} \times \frac{100\%}{1} \quad \checkmark\text{M} \\ &\approx 29,77\% \quad \checkmark\text{R} \end{aligned}$ | <p>1M Calculating 11%</p> <p>1CA Arable land in the country</p> <p>1C Conversion</p> <p>1M Calculating %</p> <p>1R Rounding off</p> <p>1M Calculating %</p> <p>1CA Arable land in the country</p> <p>1C Conversion</p> <p>1M Calculating %</p> <p>1R Rounding off</p> <p style="text-align: right;">(5)</p> <div style="border: 1px solid black; padding: 2px; width: fit-content; margin-left: auto;">ANSWER ONLY – FULL MARKS</div> | <p>12.1.1</p> <p>12.3.2</p> <p>12.4.4</p> |

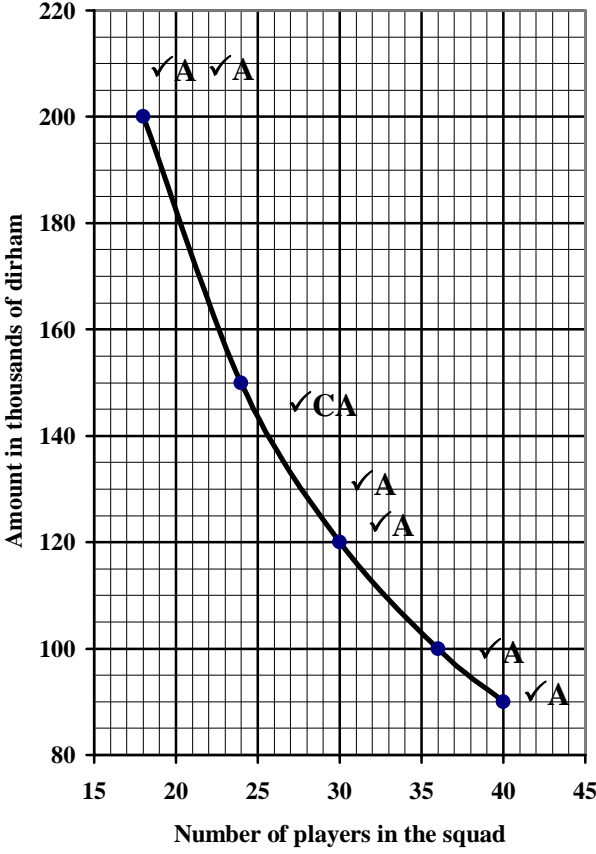
| Ques | Solution | Explanation | AS |
|-----------|---|---|----------------------------|
| 2.2.3 (a) | <p>The province with the smallest land surface is Gauteng ✓A</p> <p>Population density (GAU)</p> $= \frac{9\,688\,100 \text{ people}}{17\,010 \text{ km}^2} \quad \checkmark M$ $= 569,55... \text{ people/km}^2 \approx 570 \text{ people/km}^2 \quad \checkmark CA$ | <p>1A Identifying Gauteng</p> <p>1M Substitution in formula</p> <p>1CA Simplification</p> <p>(3)</p> <div style="border: 1px solid black; padding: 5px; width: fit-content;"> <p>ANSWER ONLY – FULL MARKS Correct calculation without mentioning Gauteng – full marks No rounding off penalty</p> </div> | 12.2.1 12.4.4 |
| 2.2.3 (b) | <p><u>Tebogo's statement:</u> The province with the smallest population is the Northern Cape ✓A</p> <p>Population density (NC)</p> $= \frac{1\,102\,200 \text{ people}}{361\,830 \text{ km}^2} \quad \checkmark M$ $= 3,046... \text{ people/km}^2$ $\approx 3 \text{ people/km}^2 \quad \checkmark CA$ <p>Tebogo is correct. ✓A</p> <p>The population density of the Northern Cape is less than the population density of Gauteng. ✓✓J</p> <p>OR</p> <p>Gauteng has a large population living on a small land surface area. ✓✓J</p> <p>OR</p> <p>Northern Cape has a small population living on a large land surface area. ✓✓J</p> <p>OR</p> <p>Any other valid explanation. ✓✓J</p> | <p>1A Identifying NC</p> <p>1M Substitution</p> <p>1CA Simplification</p> <p>1A Identifying who is correct</p> <p>2J Reason</p> <p>(6)</p> <div style="border: 1px solid black; padding: 5px; width: fit-content;"> <p>If get the province wrong but the rest of the answer is correct: 5 marks</p> </div> | 12.2.1 12.1.1 12.4.4 |

| QUESTION 3 [34] | | | |
|------------------------|---|---|------------------|
| Ques | Solution | Explanation | AS |
| 3.1.1 | <p>Total Income $\checkmark A$</p> $= (\text{number of Category 1 tickets}) \times R1\ 400 \checkmark A$ $+ (\text{number of Category 2 tickets}) \times R1\ 050$ $+ (\text{number of Category 3 tickets}) \times R700$ $+ (\text{number of Category 4 tickets}) \times R350 \checkmark A$ <p>OR</p> <p>Total Income $\checkmark A$ $\checkmark A$</p> $= (x_1) \times R1\ 400 + (x_2) \times R1\ 050 + (x_3) \times R700$ $+ (x_4) \times R350 \checkmark A$ | <p>1A Naming categories/using a variable</p> <p>1A Prices of tickets</p> <p>1A Summing all 4 categories</p> <p>(3)</p> <div style="border: 1px solid black; padding: 5px; margin-top: 10px;"> <p>Ignore the unit. Accept variables in the place of words Uses 1, 2, 3 and 4 instead of categories : 2 marks Uses the same variable or word for all 4 categories : 2 marks</p> </div> | 12.2.1 |
| 3.1.2 (a) | <p>Total Income</p> $= (12\ 425 \times R1\ 400) + (8\ 672 \times R1\ 050) \checkmark A \checkmark M$ $+ (4\ 546 \times R700) + (14\ 424 \times R350)$ $= R34\ 731\ 200 \checkmark CA$ | <p>1A Correct number of tickets with corresponding price</p> <p>1M Summing the products</p> <p>1CA Total income</p> <p>(3)</p> <div style="border: 1px solid black; padding: 5px; margin-top: 10px;"> <p>ANSWER ONLY – FULL MARKS Summing of tickets only – no marks</p> </div> | 12.2.1 12.1.1 |

| Ques | Solution | Explanation | AS |
|--------------|---|--|---|
| 3.1.2 (b) | <p>Total expected number of tickets sold = 40 067 ✓A</p> <p>Number of expected unsold tickets</p> $= 42\,000 - 40\,067 = 1\,933 \quad \checkmark\text{CA}$ <p>Average price</p> $= R \frac{700 + 350}{2} = R525 \quad \checkmark\text{A}$ <p>48% of average price</p> $= 0,48 \times R525 = R252 \quad \checkmark\text{CA}$ <p>Additional income = $R252 \times 1\,933$ ✓CA</p> $= R487\,116 \quad \checkmark\text{CA}$ <p>OR</p> <p>Number of expected unsold tickets</p> $= 42\,000 - 40\,067 = 1\,933 \quad \checkmark\checkmark\text{C}$ <p>Average price</p> $= R \frac{700 + 350}{2} = R525 \quad \checkmark\text{A}$ <p>Income from unsold tickets</p> $= 1\,933 \times R525 = R1\,014\,825 \quad \checkmark\text{CA} \quad \checkmark\text{CA}$ <p>Additional income after discount</p> $= 48\% \text{ of } R1\,014\,825 = R487\,116 \quad \checkmark\text{CA}$ | <p>1A Number of tickets sold</p> <p>1CA Number of tickets not sold</p> <p>1A Finding average price</p> <p>1A Average price for Cat. 3 & 4</p> <p>1CA 48% of average price</p> <p>1CA Calculations</p> <p>1CA Additional income</p> <p>2C Number of unsold tickets</p> <p>2A Average price</p> <p>2CA Calculations</p> <p>1CA Additional income</p> | <p>12.1.1</p> <p>12.2.1</p> <p>12.4.3</p> <p>(7)</p> <div style="border: 1px solid black; padding: 5px; width: fit-content;"> <p>ANSWER ONLY – FULL MARKS 48% of answer : 6 marks</p> </div> |

| Ques | Solution | Explanation | AS |
|--------------|---|---|------------------|
| 3.2.1 | $\begin{aligned} \text{Total cost} &= (5 \times \text{R1 120}) + (1 \times \text{R1 400}) \\ &= \text{R7 000} \end{aligned}$ | 1A Cost for group matches 1A Cost for round 1 1CA Total cost (3) <div style="border: 1px solid black; padding: 5px; margin-top: 10px;"> ANSWER ONLY – FULL MARKS Find the sum off all Category 1 tickets : 0 marks </div> | 12.1.1 12.4.4 |
| 3.2.2 (a) | $\begin{aligned} i &= 7\% \div 12 \\ &= 0,5833... \% \\ &= 0,58\% \text{ or } 0,0058 \text{ or } \frac{0,58}{100} \end{aligned}$ | 1A Divided by 12 1CA Value of i (2) <div style="border: 1px solid black; padding: 5px; margin-top: 10px;"> ANSWER ONLY – FULL MARKS Disregard rounding off to 2 decimal places. Relate answer to Quest.3.2.2 (c) </div> | 12.1.3 |
| 3.2.2 (b) | 14 months | 1A Number of monthly deposits (1) <div style="border: 1px solid black; padding: 5px; margin-top: 10px;"> ANSWER ONLY – FULL MARKS </div> | 12.1.3 |
| 3.2.2 (c) | $\begin{aligned} x &= \frac{\text{R7 000} \times 0,0058}{[(1 + 0,0058)^{14} - 1]} \\ &= \text{R481,422...} \\ \text{He must save R481,42 monthly.} \end{aligned}$ | 2SF Substituting 1CA Simplification 1CA Rounding off (4) <div style="border: 1px solid black; padding: 5px; margin-top: 10px;"> ANSWER ONLY – FULL MARKS Substitute 3 values correct : 2 SF marks Substitute 2 values correct : 1 SF mark </div> | 12.1.3 12.2.1 |

| Ques | Solution | Explanation | AS |
|------|---|--|--------|
| 3.3 | <p>150 US dollars = $150 \times 0,72025$ euros ✓M = 108,0375 euros ✓A</p> <p>108,0375 euros = $108,0375 \div 0,0230344$ rouble ✓M = 4 690,27 rouble ✓CA</p> <p>OR</p> <p>150 US dollars ✓M = $150 \times 0,72025 \div 0,0230344$ rouble ✓A ✓M = 4 690,27 rouble ✓CA</p> <p>OR</p> <p>Conversion factor: $0,72025 \div 0,0230344$ ✓M = 31,26845... ✓A</p> <p>150 US dollars = $150 \times 31,26845...$ ✓M = 4 690,27 rouble ✓CA</p> <p>OR</p> <p>Conversion factor : $0,0230344 \div 0,72025$ ✓M = 0,031981... ✓A</p> <p>150 US dollars = $150 \div 0,031981$ ✓M = 4 690,28 roubles ✓A</p> | <p>1M Using conversion to euro</p> <p>1A Amount in euro</p> <p>1M Conversion to rouble</p> <p>1CA Amount in rouble</p> <p>1M Multiplication</p> <p>1M Division</p> <p>1A Correct values</p> <p>1CA Amount in rouble</p> <p>1M calculating conversion factor</p> <p>1A correct value</p> <p>1M multiplying</p> <p>1CA Amount in rouble</p> <p>1M calculating conversion factor</p> <p>1A correct value</p> <p>1M Dividing</p> <p>1CA Amount in rouble</p> <p>(4)</p> <div style="border: 1px solid black; padding: 2px; width: fit-content; margin: 10px auto;"> <p>ANSWER ONLY – FULL MARKS Penalise only once for rounding off</p> </div> | 12.1.3 |

| Quest | Solution | Explanation | AS |
|-------|--|--|--------------------------|
| 3.4 | <p style="text-align: center;">PLAYERS' SHARE OF THE BONUS OF 3,6 MILLION DIRHAM</p>  | <p>1A 18 players (x-intercept) 1A 200 000 (y-intercept) 1A 40 players (x-intercept) 1A 90 000 (y-intercept) 1A Any other point calculated 1A Correct plotting of point 1A Joining the points</p> <p style="text-align: right;">(7)</p> <div style="border: 1px solid black; padding: 5px; margin-top: 10px;"> <p>If join maximum and minimum point with a straight line : 5 marks Plot 2 points and draw a curve : 6 marks Work out all the points and join the points with straight lines – 7 marks Bar graph where vertical bars are drawn as straight lines for every value between 18 and 40 : 6 marks</p> </div> | <p>12.2.1 12.2.2</p> |

| QUESTION 4 [32] | | | |
|------------------------|---|--|------------------|
| Ques | Solution | Explanation | AS |
| 4.1.1 | $P(\text{boy in Grade 12}) = \frac{60}{302} \quad \checkmark A$ $= \frac{30}{151} \quad (\approx 0,20 \text{ or } 19,87\%) \quad \checkmark A$ | 1A Numerator 1A Denominator (2) <div style="border: 1px solid black; padding: 2px; width: fit-content; margin-top: 10px;">ANSWER ONLY – FULL MARKS</div> | 12.4.5 |
| 4.1.2 | Number of learners NOT in Grade 10 $= 77 + 60 = 137 \quad \checkmark A$ $P(\text{not in Grade 10}) = \frac{137}{302} \quad \checkmark A$ $(\approx 0,45 \text{ or } 45,36\%)$ <p>OR $\checkmark A$</p> $P(\text{not in Grade 10}) = 1 - \frac{165}{302} = \frac{137}{302} \quad \checkmark A$ <p>OR</p> Number not in Grade 10 $= \text{Total number} - \text{Number in Grade 10}$ $= 302 - 165 = 137 \quad \checkmark A$ $P(\text{not in Grade 10}) = \frac{137}{302} \quad \checkmark A$ | 1A Number not in Grade 10 1A Numerator 1A Denominator 1A Number not in Grade 10 1A Numerator 1A Denominator 1A Number not in Grade 10 1A Numerator 1A Denominator (3) <div style="border: 1px solid black; padding: 2px; width: fit-content; margin-top: 10px;">ANSWER ONLY – FULL MARKS</div> | 12.4.5 |
| 4.2.1(a) | The return distance = $2 \times 45 \text{ km}$ $= 90 \text{ km} \quad \checkmark M$ 90 km is between 50 km and 100 km Cost = R800 $\checkmark CA$ | 1M Correct distance 1CA Cost for return distance between 50 km and 100 km (2) <div style="border: 1px solid black; padding: 2px; width: fit-content; margin-top: 10px;">ANSWER ONLY – FULL MARKS Write R600: 1 mark</div> | 12.2.1 12.3.1 |

| Ques | Solution | Explanation | AS |
|--------------|---|--|------------------|
| 4.3.1 (a) | $77 \div 15 = 5$ remainder 2 ✓A The minimum number of minibuses needed is 6 ✓CA | 1A Division 1CA Solution (2) ANSWER ONLY – FULL MARKS Answer of 5 only – 1 mark Answer of 5 with a good explanation : 2 marks | 12.2.1 |
| 4.3.1 (b) | Possible arrangement of passengers in the minibuses: 3 minibuses with 15 passengers each and 2 with 10 passengers and 1 with 12 passengers ✓✓O OR 5 minibuses with 13 passengers in each and 1 minibus with 12 passengers ✓✓O OR Accept any suitable combination as long as there are 10 or more passengers in a minibus, and a maximum of 15. ✓✓O | Explanation here must follow on from 4.3.1 (a) 2O For combination of minibuses OR 2O For combination of minibuses OR 2O For combination of minibuses (2) | 12.2.1 |
| 4.3.2 | $\checkmark A$ One bus holds 50 passengers, so two buses are needed Cost of using buses = $2 \times R600$ $= R1\ 200$ ✓CA Cost of using minibuses = $77 \times R14$ ✓A $= R1\ 078$ ✓CA The minibus option is cheaper ✓CA OR Cost of one bus with 50 learners = R600 ✓A $\checkmark CA$ Cost of 2 minibus holding 27 learners = $27 \times R14$ $= R378$ ✓CA $\begin{aligned} \text{Total cost} &= R600 + R378 \quad \checkmark M \\ &= R978 \quad \checkmark CA \end{aligned}$ 1 Bus + 2 minibus taxis is the cheapest | 1A Number of buses 1CA Cost of bus 1A Multiplying no. of learners by cost 1CA Taxi cost 1CA Decision 1A cost for 1 bus 1CA number of learners 1CA cost for learners 1M adding 1CA Total cost (5) | 12.1.3 12.2.1 |

| Ques | Solution | Explanation | AS |
|------|--|--|---|
| 4.4 | <p>Radius of bus tyre = 60 cm</p> <p>Radius of minibus tyre = $\frac{7}{12} \times 60$ cm</p> <p style="text-align: right;">= 35 cm ✓A</p> <p>Circumference of minibus tyre</p> <p>= $2 \times 3,14 \times 35$ cm ✓SF</p> <p>= 219,8 cm ✓CA</p> <p>= 0,002198 km ✓CA</p> <p>$1\ 862 = \frac{\text{distance travelled}}{0,002198 \text{ km}}$ ✓SF</p> <p>Distance travelled = $1\ 862 \times 0,002198$ km</p> <p style="text-align: right;">= 4,092676</p> <p style="text-align: right;">≈ 4 km ✓CA</p> <p>OR</p> <p>Diameter of minibus tyre = $\frac{7}{12} \times 120$ cm ✓A</p> <p style="text-align: right;">= 70 cm</p> <p>Circumference of minibus tyre</p> <p>= $3,14 \times 70$ cm ✓SF</p> <p>= 219,8 cm ✓A</p> <p>= 0,002198 km ✓CA</p> <p>$1\ 862 = \frac{\text{distance travelled}}{0,002198 \text{ km}}$ ✓SF</p> <p>Distance travelled = $1\ 862 \times 0,002198$ km</p> <p style="text-align: right;">= 4,092676</p> <p style="text-align: right;">≈ 4 km ✓CA</p> <p>OR</p> | <p>1A Radius of minibus tyre</p> <p>1SF Radius = $\frac{1}{2}$ diameter</p> <p>1CA Circumference of minibus tyre in cm</p> <p>1CA Converting to km</p> <p>1SF Substitution into formula</p> <p>1CA Distance travelled</p> <p>1A Diameter of minibus tyre</p> <p>1SF Substitution into formula</p> <p>1A Circumference of minibus tyre in cm</p> <p>1CA Converting to km</p> <p>1SF Substitution into formula</p> <p>1CA Distance travelled</p> <p>OR</p> | <p>12.3.1</p> <p>12.1.1</p> <p>12.2.1</p> |

| Ques | Solution | Explanation | AS |
|------|--|---|----|
| | <p>Radius of bus tyre = 60 cm</p> <p>Radius of minibus tyre = $\frac{7}{12} \times 60$ cm</p> <p style="text-align: right;">= 35 cm ✓A</p> <p>Distance = Rotation \times Circumference ✓SF</p> <p style="text-align: right;">= 1 862 \times 2 \times 3,14 \times 35 cm ✓A ✓SF</p> <p style="text-align: right;">= 409 267,6 cm ✓C</p> <p style="text-align: right;">= 4,092646 km</p> <p style="text-align: right;">\approx 4 km ✓CA</p> | <p>1A Radius of minibus tyre 1SF Substitution into formula</p> <p>1A Circumference of minibus tyre in cm</p> <p>1CA Converting to km 1SF Substitution into formula</p> <p>1CA Distance travelled</p> <p style="text-align: right;">(6)</p> <p>ANSWER ONLY – FULL MARKS</p> | |

| QUESTION 5 [21] | | | |
|------------------------|--|--|-----------|
| Ques | Solution | Explanation | AS |
| 5.1.1 | <p>Volume of a round cake (<i>Ronwyn</i>)</p> $= \pi \times (\text{radius})^2 \times \text{height} \quad \checkmark\text{F}$ $\quad \checkmark\text{SF} \quad \quad \checkmark\text{A}$ $= 3,14 \times \left(\frac{50}{2} \text{ cm}\right)^2 \times 15 \text{ cm}$ $= 29\,437,5 \text{ cm}^3 \quad \checkmark\text{CA}$ <p>Volume of a ring cake (<i>Bronwyn</i>)</p> $= \pi \times (R^2 - r^2) \times \text{height} \quad \checkmark\text{F}$ $\quad \checkmark\text{SF} \quad \quad \checkmark\text{A}$ $= 3,14 \times [(28 \text{ cm})^2 - (9 \text{ cm})^2] \times 14 \text{ cm}$ $= 30\,903,88 \text{ cm}^3 \quad \checkmark\text{CA}$ <p>The ring cake as it is the cake with the largest volume $\checkmark\checkmark\text{CA}$</p> | <p><i>No penalty for lack of units</i></p> <p>1 F Identifying correct formula</p> <p>1SF Substitution 1A Correct radius</p> <p>1CA Volume of round cake Answer using π on the calculator = 29 452,43 cm³ Answer using $\frac{22}{7}$ = 29 464,29 cm³</p> <p>1F Identifying correct formula</p> <p>1A Correct R and r 1SF Substitution into formula</p> <p>Answer using π on the calculator = 30 919,55,7 cm³ Answer using $\frac{22}{7}$ = 30 932 cm³</p> <p>1CA Volume of ring cake 2CA Cake with bigger volume</p> | 12.3.1 |

(10)

| Ques | Solution | Explanation | AS |
|-------|---|--|------------------|
| 5.1.2 | <p>Total outer surface area \checkmark_F</p> $= \pi \times (\text{radius})^2 + 2 \pi \times \text{radius} \times \text{height}$ $\checkmark_{SF} \quad \quad \checkmark_A \quad \quad \checkmark_A$ $= 3,14 \times (25 \text{ cm})^2 + 2 \times 3,14 \times 25 \text{ cm} \times 15 \text{ cm}$ $= 1\,962,5 \text{ cm}^2 + 2\,355 \text{ cm}^2$ $= 4\,317,5 \text{ cm}^2 \quad \checkmark_{CA} \quad \checkmark_A$ | <p>1F Identifying formula</p> <p>1SF Substitution into formula</p> <p>1A Value of radius</p> <p>1A Value of height</p> <p>1CA Surface area</p> <p>1A Correct units (6)</p> <div style="border: 1px solid black; padding: 5px;"> <p>Answer using π on the calculator $= 4\,319,7 \text{ cm}^2$</p> <p>Answer using $\frac{22}{7} = 4\,321,4 \text{ cm}^2$</p> <p>ANSWER ONLY – FULL MARKS</p> </div> | 12.3.1 |
| 5.2 | <p>Cost for Option 1:</p> $\text{Cost for 100 people} \quad \checkmark_A$ $= 100 \times R120 + R12\,000 \times \frac{14}{100}$ $= R12\,000 + R1\,680$ $= R13\,680 \quad \checkmark_{CA}$ <p>OR</p> $\text{Cost for 100 people} = R120 \times \frac{114}{100} \times 100 \quad \checkmark_A$ $= R13\,680 \quad \checkmark_{CA}$ <p>OR</p> $\text{Cost per head} = R120 \times \frac{14}{100} + R120 \quad \checkmark_A$ $= R136,80$ $\text{Cost for 100 people} = R136,80 \times 100 \quad \checkmark_{CA}$ $= R13\,680$ <p>Cost for Option 2:</p> $\text{Cost for 100 people} = R3\,200 + 100 \times R80 \quad \checkmark_M$ $= R11\,200 \quad \checkmark_{CA}$ <p>Option 2 is the cheaper option \checkmark_O</p> | <p>1A Multiplication/adding VAT</p> <p>1CA Simplification</p> <p>1A Multiplication/adding VA</p> <p>1CA Simplification</p> <p>1A Multiplication/adding VAT</p> <p>1CA Simplification</p> <p>1M Addition/multiplication</p> <p>1CA Simplification</p> <p>1O Own opinion (5)</p> | 12.1.3 12.1.2 |
| | | TOTAL: | 150 |