



**[eduresourceza.com](http://eduresourceza.com)**



NATIONAL SENIOR CERTIFICATE EXAMINATION  
NOVEMBER 2017

## MATHEMATICAL LITERACY: PAPER II

### MARKING GUIDELINES

Time: 3 hours

150 marks

---

These marking guidelines are prepared for use by examiners and sub-examiners, all of whom are required to attend a standardisation meeting to ensure that the guidelines are consistently interpreted and applied in the marking of candidates' scripts.

The IEB will not enter into any discussions or correspondence about any marking guidelines. It is acknowledged that there may be different views about some matters of emphasis or detail in the guidelines. It is also recognised that, without the benefit of attendance at a standardisation meeting, there may be different interpretations of the application of the marking guidelines.

---

#### Topics

Finance  
Maps and Plans  
Measurement  
Probability  
Data Handling

|           |                                                                                                                                                                                                                                                                                                                                                                                                                             |               |                                         |
|-----------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------|-----------------------------------------|
| 1.1       | <b>Salary for:</b>                                                                                                                                                                                                                                                                                                                                                                                                          |               | <b>Salary Increase of 6% at end of:</b> |
|           | Year 1: R216 000                                                                                                                                                                                                                                                                                                                                                                                                            | 6% × R216 000 | Year 1: R12 960                         |
|           | Year 2: R228 960                                                                                                                                                                                                                                                                                                                                                                                                            | 6% × R228 960 | Year 2: R13 737,60                      |
|           | Year 3: R242 697,60                                                                                                                                                                                                                                                                                                                                                                                                         |               |                                         |
| 1.2       | $  \begin{array}{rcl}  \text{R216 000} \times 15\% & = & \text{R32 400} \\  \text{R228 960} \times 15\% & = & \text{R34 344} \\  \text{R242 697,60} \times 15\% & = + & \text{R36 404,64} \\  & & \hline  & & \text{R103 148,64}  \end{array}  $ <p><b>OR</b></p> $  \begin{array}{l}  \text{R216 000} + \text{R228 960} + \text{R242 697,60} \\  = \text{R687 657,60} \times 15\% \\  = \text{R103 148,64}  \end{array}  $ |               |                                         |
| 1.3.1     | $  \begin{array}{l}  \frac{\text{R3 640}}{\text{R20 800}} \times 100\% \\  = 17,5\% \\  \therefore 27 \text{ years old}  \end{array}  $                                                                                                                                                                                                                                                                                     |               |                                         |
| 1.3.2     | $  \begin{array}{l}  \text{R290 000} \times 21,4\% \\  = \text{R62 060}  \end{array}  $                                                                                                                                                                                                                                                                                                                                     |               |                                         |
| 1.3.3     | $  \begin{array}{l}  27,5\% - 28,5\% \\  \text{Between } 27\% - 27,4\% \\  \text{Between } 26,2\% - 26,9\% \qquad \qquad \text{Between } 28,6\% - 29,9\%  \end{array}  $                                                                                                                                                                                                                                                    |               |                                         |
| 1.3.4 (a) | <p>Each year, the amount increases by an additional 0,1% from the previous increase.</p> <p><b>OR</b></p> <p>+ 1 ; + 1,1 ; + 1,2 ; + 1,3 ; + 1,4 etc.</p>                                                                                                                                                                                                                                                                   |               |                                         |
| 1.3.4 (b) | $  \begin{array}{l}  29,9\% + 2\% + 2,1\% \\  = 34\%  \end{array}  $                                                                                                                                                                                                                                                                                                                                                        |               |                                         |
| 1.4.1     | $  \begin{array}{l}  \text{R2 250 000} \times \frac{1}{3} \text{ (or } \div 3) \\  = \text{R750 000} \text{ or } \text{R0,75 million}  \end{array}  $                                                                                                                                                                                                                                                                       |               |                                         |
| 1.4.2     | $  \begin{array}{l}  \text{Tax} = \text{R36 000} + 27\% \times (\text{R750 000} - \text{R700 000}) \\  = \text{R36 000} + 27\% \times \text{R50 000} \\  = \text{R36 000} + \text{R13 500} \\  = \text{R49 500} \\  \\  \therefore \text{R750 000} - \text{R49 500} \\  = \text{R700 500} \\  \therefore \frac{\text{R700 500}}{\text{R750 000}} \times 100\% \\  = 93,4\% \\  \approx 93\%  \end{array}  $                 |               |                                         |

|       |                                                                                                                                                                                              |
|-------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1.5.1 | 3 inches = 7,5 cm = 0,075 m<br>12 feet = 3,6 m<br>3,6 m + 0,075 m<br>= 3,675 m                                                                                                               |
| 1.5.2 | 3,675 m × 4,8 m<br>= 17,64 m <sup>2</sup><br>= 18 m <sup>2</sup>                                                                                                                             |
| 1.5.3 | <div> 3 cm = 2,4 m<br/>3 cm = 240 cm<br/>1 : 80 </div> <b>OR</b> <div> 3 cm = 2,4 m<br/>1 cm = 0,8 m<br/>1 cm = 80 cm<br/>1 : 80 </div>                                                      |
| 1.5.4 | Continue along Padfield Road until you get to a 4-way stop/intersection.<br>Turn right into Doone Road.<br>Keep right and the entrance will be on your left.<br>*Can use compass directions. |
|       |                                                                                                                                                                                              |
| 2.1.1 | 25 <sup>th</sup>                                                                                                                                                                             |
| 2.1.2 | 8,8 (kg)                                                                                                                                                                                     |
| 2.1.3 | 4 (months)                                                                                                                                                                                   |
| 2.1.4 | <div> 31 lb – 24,5 lb = 6,5 lb<br/>6,5 lb = 2,95 kg<br/>≈ 2,95 / 3 kg </div> <b>OR</b> <div> 14,1 kg – 11,2 kg<br/>= 2,9 kg </div>                                                           |
| 2.1.5 | (27 months) 90 <sup>th</sup> percentile                                                                                                                                                      |
| 2.1.6 | 90 (%)                                                                                                                                                                                       |
| 2.2.1 | $\frac{176\,000 - 114\,000}{114\,000} \times 100$ = 54,39%<br>≈ 54%<br><br><b>OR</b><br>$\frac{176\,000}{114\,000} \times 100$ = 154,4%<br>154,4% – 100%<br>= 54,4%                          |
| 2.2.2 | Number of years is different<br>2016 – 2021 = 5 years<br>2029 – 2034 = 5 years<br>2021 – 2029 = 8 years                                                                                      |

2.2.3

| YEAR | GRADE    | AMOUNT                   |
|------|----------|--------------------------|
| 2016 | 1        | R29 000                  |
| 2017 | 2        | R29 000                  |
| 2018 | 3        | R29 000                  |
| 2019 | 4        | R29 000                  |
| 2020 | 5        | R29 000                  |
| 2021 | 6        | R45 000                  |
| 2022 | 7        | R45 000                  |
| 2023 | 8        | R176 000                 |
| 2024 | 9        | R176 000                 |
| 2025 | 10       | R176 000                 |
| 2026 | 11       | R176 000                 |
| 2027 | 12       | R176 000                 |
| 2028 | 1st Year | R77 000                  |
| 2029 | 2nd Year | R154 000                 |
| 2030 | 3rd Year | R154 000                 |
|      |          | <b><u>R1 500 000</u></b> |

**OR**

2016–2020 : 5 × R29 000 = R145 000

2021–2022 : 2 × R45 000 = R90 000

2023–2027 : 5 × R176 000 = R880 000

2028 : 1 × R77 000 = R77 000

2029–2030 : 2 × R154 000 = R308 000

**TOTAL = R1 500 000**

2.3.1

Mean = 
$$\frac{50\,000 + 42\,010 + 40\,700 + \dots + 14\,507}{10}$$
$$= \frac{345\,996}{10}$$
$$= R34\,599,60 / R34\,600$$

2.3.2

Range = R50 000 – R14 507  
= R35 493

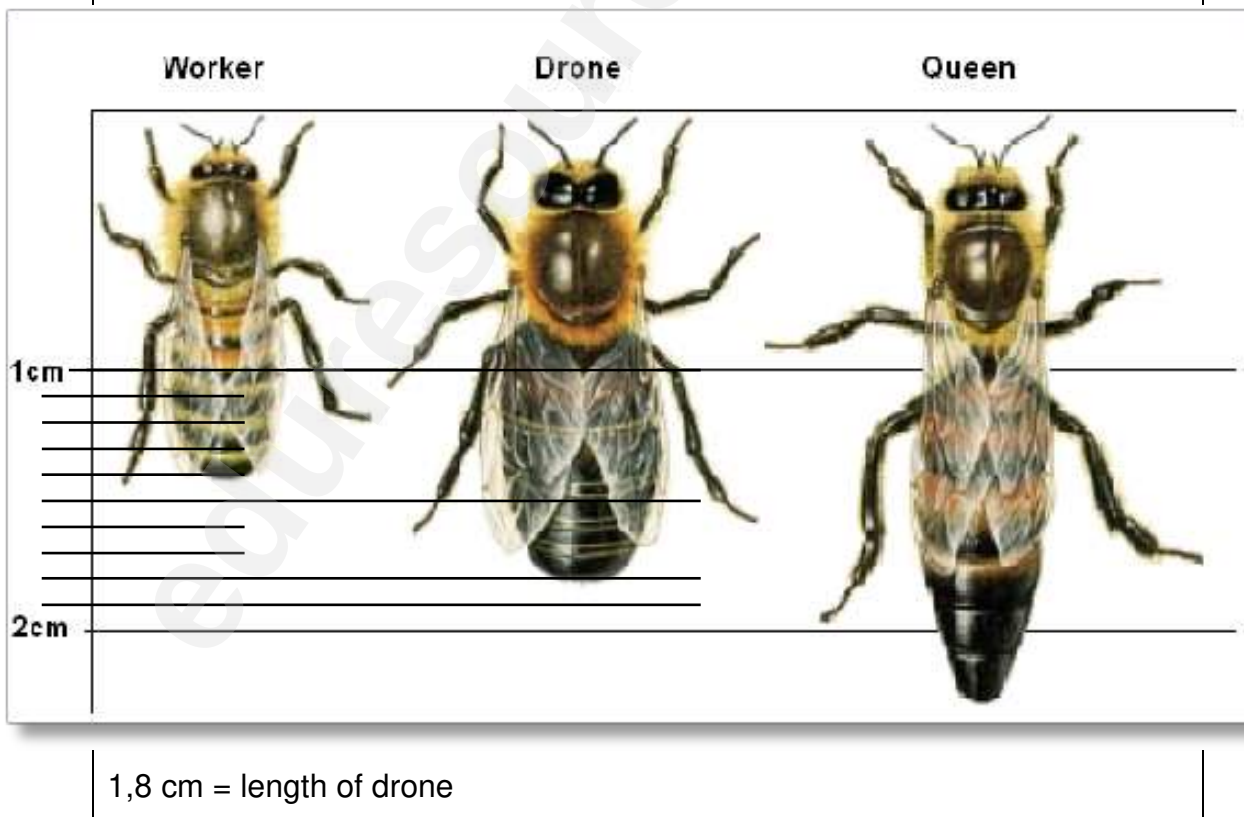
2.3.3

University of Limpopo would fall between University of Venda and Unisa.  
11 Values. Value 6 is the median.

Stellenbosch University

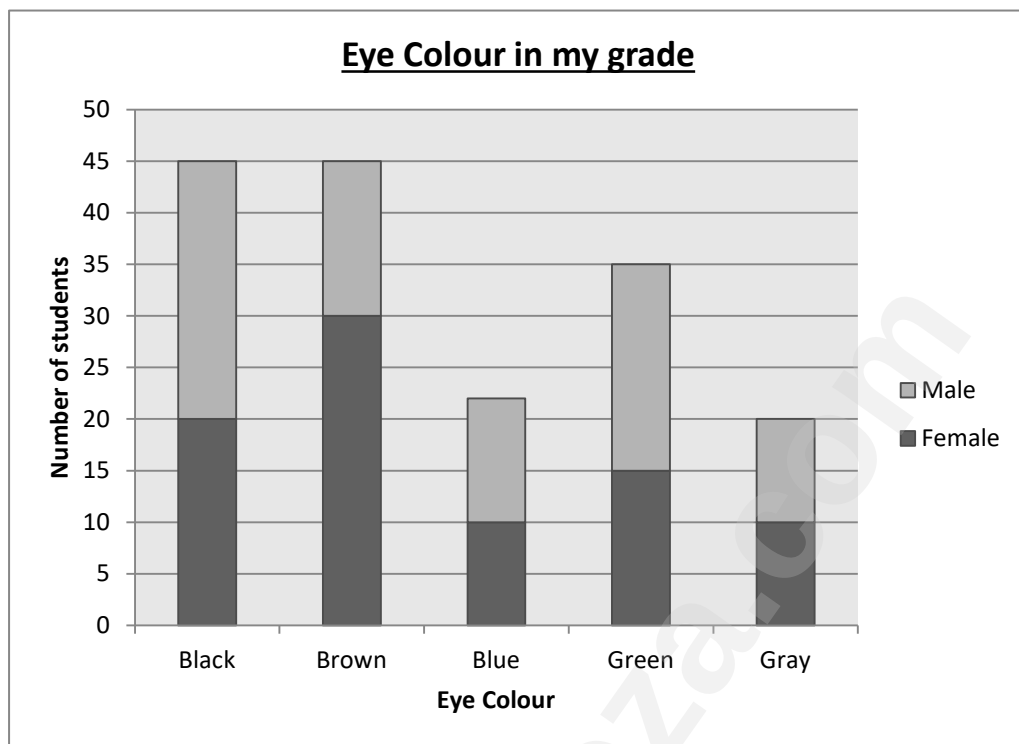
|     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                                                                                                                                                                                                                              |
|-----|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 3.1 | <p>Depth 2 – Depth 1<br/> <math>= 1,2 \text{ m} - 0,6 \text{ m}</math><br/> <math>= 0,6 \text{ m}</math> (Half)</p> <p><math>V = (1/2 \times 0,6 \times 7) \times 4,8</math><br/> <math>V = 2,1 \times 4,8</math><br/> <math>V = 10,08 \text{ m}^3</math></p> <p><math>V = 10,08 \text{ m}^3 \times 1\,000 = 10\,080 \text{ l}</math><br/> Total volume <math>= 20\,160 \text{ l} + 10\,080 \text{ l}</math><br/> <math>= 30\,240 \text{ l}</math></p> <p>She is correct.</p> | <p><b>OR</b> <math>20\,160 \div 2</math><br/> <math>= 10\,080 \text{ l}</math><br/> <math>20\,160 \text{ l} + 10\,080 \text{ l}</math><br/> <math>= 30\,240 \text{ l}</math><br/> <math>\therefore</math> she is correct</p> |
| 3.2 | <p><math>30\,000 \text{ l} \div 1\,000 = 30 \text{ m}^3</math></p> <p><math>V = \pi \times r^2 \times \text{ht}</math><br/> <math>30 \text{ m}^3 = 3,14 \times (2,4)^2 \times \text{ht}</math><br/> <math>30 \text{ m}^3 = 18,0864 \text{ m}^2 \times \text{ht}</math></p> <p><math>\frac{30 \text{ m}^3}{18,0864 \text{ m}^2} = \text{ht}</math></p> <p><math>1,6587 \dots = \text{ht/depth}</math><br/> <math>1,7 \text{ m} = \text{ht/depth}</math></p>                    |                                                                                                                                                                                                                              |
| 3.3 | <p><math>P = 7 \text{ m} + 4,8 \text{ m} + 7 \text{ m} + 4,8 \text{ m} = 23,6 \text{ m}</math><br/> <math>C = \pi \times 4,8 \text{ m} = 15,08 \text{ m}/15,07 \text{ m}</math><br/> <math>23,6 \text{ m} + 15 \text{ m} = 38,6 \text{ m}</math><br/> <math>38,6 \times 110\%</math><br/> <math>\approx 42,3 \text{ m}</math> (could be 42,5 m if only rounded at the end)</p>                                                                                                |                                                                                                                                                                                                                              |
| 3.4 | <p><math>30\,000 \text{ l} \div 10\,000 \text{ l}</math><br/> <math>= 3 \times 40 \text{ g}</math><br/> <math>= 120 \text{ g per day} \times 31 \text{ days}</math><br/> <math>= 3\,720 \text{ g for the month}</math></p> <p><math>10\,000 \text{ g} = \text{R}325,00</math><br/> <math>1 \text{ g} = \frac{325}{10\,000}</math><br/> <math>3\,720 \text{ g} = \frac{325}{10\,000} \times 3\,720</math><br/> <math>= \text{R}120,90</math></p>                               | <p><b>OR</b> <math>10 \text{ kg} : \text{R}325</math><br/> <math>3,72 \text{ kg}</math><br/> <math>= \text{R}120,90</math></p> <p>[1 g = R0.0325]</p>                                                                        |
| 3.5 | <p><math>19^\circ\text{C}</math> to <math>25^\circ\text{C}</math></p> <p><math>19 \times 9 \div 5 + 32</math><br/> <math>= 66,2</math></p> <p><math>25 \times 9 \div 5 + 32</math><br/> <math>= 77^\circ\text{F}</math></p> <p><math>77^\circ\text{F} - 66,2^\circ\text{F}</math><br/> <math>= 10,8^\circ\text{F}</math></p> <p><math>25 - 19 = 6^\circ\text{C}</math><br/> <math>6 \times 9 \div 5 + 32 = 42,8^\circ\text{F}</math> ***<b>INCORRECT</b>***</p>               |                                                                                                                                                                                                                              |

|              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
|--------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 4.1.1<br>(a) | <p>0,5 inches = 12,7 mm<br/> 1 inch = 12,7 mm × 2<br/> = 25,4 mm<br/> 15 inches = 25,4 mm × 15<br/> = 381 mm</p> <p>∴ 381 mm ÷ 10<br/> = 38,1 cm</p> <p>38,1 cm ÷ 2 cm<br/> = 19,05 times bigger</p> <p><b>OR</b></p> <p>0,5 inches = 12,7 mm<br/> 15 inches = 381 mm<br/> 381 ÷ 20 mm = 19,05 times bigger</p> <p><b>OR</b></p> <p><b>Model:</b> 19 × 20 mm = 380 mm<br/> 380 mm ÷ 12,7 mm × 0,5 = 14,96 inches<br/> 14,96 ≈ 15</p> <p><b>OR</b></p> <p>0,5 inches = 12,7 mm<br/> 20 mm = 0,7874 inches<br/> 15 ÷ 0,7874 /0,8<br/> = 19,05 times bigger</p> |
| 4.1.1<br>(b) | 19 : 1 <b>OR</b> 381 : 20                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| 4.1.2        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |



|       |                                                                                                                                                                                                                                                                                                         |                                                                                                                                                                                        |
|-------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 4.1.3 | <p>24 km = 60 min</p> <p>1 km = <math>\frac{60}{24}</math></p> <p>10 km = <math>\frac{60}{24}</math></p> <p>= 25 min</p> <p>25 min × 60</p> <p>= 1 500 sec × 200 times/sec</p> <p>= 300 000 times</p> <p><b>OR</b></p> <p>3600 sec × 200</p> <p>= 720 000</p> <p>720 000 × 10 ÷ 24</p> <p>= 300 000</p> | <p><b>OR</b></p> <p>24 km = 1 hour</p> <p>10 km = 0,416 ... Hr</p> <p>= 25 min</p> <p>= 1 500 sec</p> <p>[0,42 = 302 400]</p> <p>200 times : 1 sec</p> <p>1 500 sec = 300 00 times</p> |
| 4.2.1 | <p>a – 20</p> <p>b – 12</p> <p>c – 85</p> <p>d – 167</p>                                                                                                                                                                                                                                                |                                                                                                                                                                                        |
| 4.2.2 | <p><math>\frac{20}{167}</math></p>                                                                                                                                                                                                                                                                      |                                                                                                                                                                                        |
| 4.2.3 | <p><math>\frac{10}{85}</math>      <b>OR</b>      <math>\frac{2}{17}</math></p>                                                                                                                                                                                                                         |                                                                                                                                                                                        |
| 4.2.4 | <p>Male chosen at random</p> <p>Has black eyes</p>                                                                                                                                                                                                                                                      |                                                                                                                                                                                        |
| 4.2.5 | <p><math>\frac{35}{167} + \frac{20}{167}</math></p> <p>= <math>\frac{55}{167} \times 100\%</math></p> <p>= 32,93%</p>                                                                                                                                                                                   |                                                                                                                                                                                        |

4.2.6



Total: 150 marks