



NATIONAL SENIOR CERTIFICATE EXAMINATION  
NOVEMBER 2018

## MATHEMATICAL LITERACY: PAPER I

### MARKING GUIDELINES

Time: 3 hours

150 marks

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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.

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**Key:**

✓ <sup>a</sup>	accuracy
✓ <sup>m</sup>	method
✓ <sup>ma</sup>	method accuracy
✓ <sup>ca</sup>	continuous accuracy
✓ <sup>cam</sup>	continuous accuracy method
✓ <sup>r</sup>	rounding

**QUESTION 1**

1.1  $R6\,000\,000 - R500\,000 \checkmark^a(\text{values}) \checkmark^m = R5\,500\,000 \checkmark^a$  (3)

1.2  $6\,000\,000 \times 1,14 \checkmark^{ma} = R6\,840\,000 \checkmark^a$

OR

$6\,000\,000 \times 14\% \checkmark^{ma} = R840\,000$

$6\,000\,000 + 840\,000 = R6\,840\,000 \checkmark^a$  (2)

1.3 2015:  $6\,000\,000$

2016:  $6\,000\,000 \times 1,046 \checkmark^m(\text{for using compound interest}) = R6\,276\,00 \checkmark^a$

2017:  $6\,276\,000 \times 1,046 = R6\,564\,696 \checkmark^{ca}$

2018:  $6\,564\,696 \times 1,046 = R6\,866\,672,02 \checkmark^{ca}$  (4)

1.4  $771 \checkmark^a \times 136\,400 \times 12 \checkmark^{ma} = R1\,261\,972\,800 \checkmark^{ca}$  (3)

1.5 1.5.1  $4\% \checkmark^a \checkmark^a$  (2)

1.5.2  $4\% \times 8\,000\,000 \checkmark^{cam} = R320\,000 \checkmark^{ca}$  (2)

1.6 1.6.1 Pete McIntosh  $\checkmark^a \checkmark^a$  (2)

1.6.2 Vehicles  $\checkmark^a$  and Utilities  $\checkmark^a$  (2)

1.6.3  $78\,400 - 36\,000 \checkmark^{ma} = \$42\,400 \checkmark^a(\text{unit penalty})$  (2)

1.6.4  $\frac{42\,400}{78\,400} \times 100 \checkmark^m = 54,08\% \checkmark^{ca}(\text{must multiply with } 100)$  (3)

1.7 1.7.1  $(\$2 \times 2) \checkmark^m + \$1,50 + \$1,00 \checkmark^m(\text{adding of 3 values}) = \$6,50 \checkmark^a(\text{money rounding penalty})$  (3)

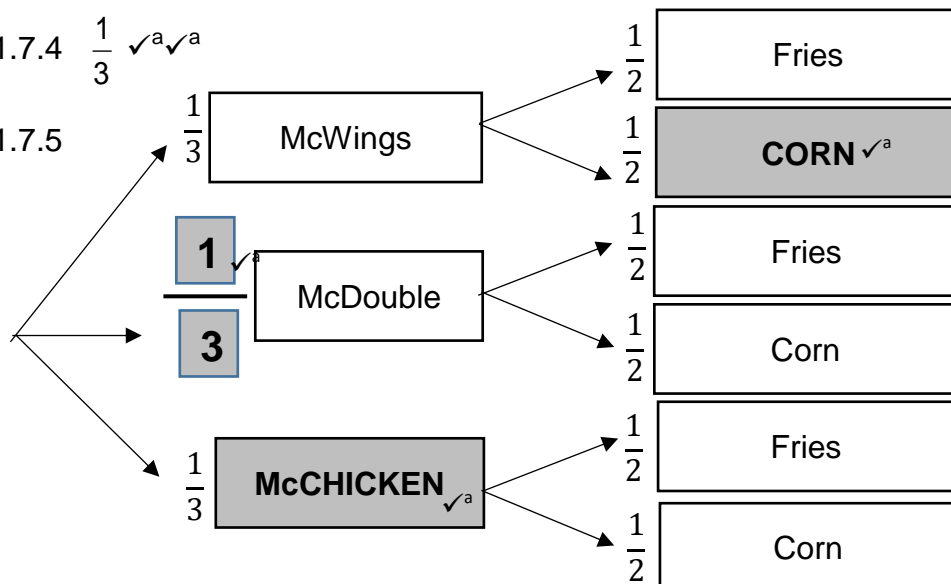
1.7.2  $6,50 \div 0,080944 \checkmark^{ma} = R80,30 \checkmark^{ca}$  (2)

1.7.3 (a)  $6,50 \times 12,354\,192 \checkmark^{ma} = R80,30 \checkmark^{ca}$  (2)

(b) No  $\checkmark^a \checkmark^a$  (2)

1.7.4  $\frac{1}{3} \checkmark^a \checkmark^a$  (2)

1.7.5  $\frac{1}{3}$  (3)



$$1.7.6 \quad \frac{1}{3} \times \frac{1}{2} \checkmark^{ma} = \frac{1}{6} \checkmark^a \quad (2)$$

$$1.8 \quad 1.8.1 \quad R111,50 \div 1,15 = R96,96 \checkmark^m \checkmark^a \quad (2)$$

$$\text{OR} \quad R111,50 - 13,70 = R97,80 \checkmark^m \checkmark^a$$

$$1.8.2 \quad 16 : 57 : 56 \checkmark^a + 13 \text{ min} = 17 \checkmark^a : 10 \checkmark^a : 56 \quad (3)$$

$$1.9 \quad 1.9.1 \quad R1,82 \times 12\,425 \text{ kWh} \checkmark^m = R22\,613,50 \checkmark^a$$

$$R22\,613,50 \times 115\% = R26\,005,53 \checkmark^a$$

$$\begin{aligned} &R26\,005,53 + (R34,64 \times 115\%) \\ &= R26\,005,53 + R39,84 \checkmark^a \\ &= R26\,045,37 \checkmark^{ca} \end{aligned}$$

OR

$$R1,82 \times 115\% = R2,093 \checkmark^a$$

$$R2,093 \times 12\,425 \text{ kWh} \checkmark^m = R26\,005,53 \checkmark^{ca}$$

$$\begin{aligned} &R26\,005,53 + (R34,64 \times 115\%) \\ &= R26\,005,53 + R39,84 \checkmark^a \\ &= R26\,045,37 \checkmark^{ca} \end{aligned}$$

OR

$$\begin{aligned} &34,64 + (1,82 \times 12\,425) \checkmark^{ma} \\ &= 34,36 + 22\,613,50 \checkmark^a \\ &= R22\,648,14 \checkmark^{ca} \end{aligned}$$

$$\begin{aligned} &22\,648,14 \times 1,15 \checkmark^a \\ &= R26\,045,36 \checkmark^{ca} \end{aligned}$$

(5)

$$\begin{aligned} 1.9.2 \quad &R26\,045,37 + R174,23 \checkmark^m \\ &= R26\,219,60 \checkmark^{ca} \\ &= R26\,220 \checkmark^r \end{aligned}$$

$$\begin{aligned} \text{OR} \quad &R26\,005,53 + R174,23 \checkmark^m \\ &= R26\,179,76 \\ &= R26\,182 \checkmark^r \end{aligned}$$

(3)

**[54]**

**QUESTION 2**

2.1 2.1.1  $152,5 \text{ cm} \checkmark^a + 15,25 \text{ cm} + 15,25 \text{ cm} \checkmark^{ma} \text{ (for both overhangs)}$   
 $= 183 \text{ cm} \checkmark^{ca}$  (3)

2.1.2  $152,5 \text{ cm} \times 274 \text{ cm} \checkmark^{ma}$   
 $= 41\,785 \text{ cm}^2 \checkmark^a$   
 $= 4,18 \text{ m}^2 \checkmark^{ca(\text{conversion})}$

OR

$1,525 \text{ m} \times 2,74 \text{ m} \checkmark^{ma} \checkmark^a(\text{conversions})$   
 $= 4,18 \text{ m}^2 \checkmark^{ca}$  (3)

2.2 2.2.1 in : mm  
 $10,24 : 260 \checkmark^a$   
 $10,24 : 26 \text{ (cm)} \checkmark^m \text{ conversion}$   
 $\therefore 26 \div 10,24 \checkmark^m$   
 $= 2,54 \text{ cm} \checkmark^{ca}$  (4)

2.2.2  $100 : 160 \checkmark^a$   
 $5 : 8 \checkmark^{ca}$  (2)

2.3 2.3.1  $10:08 + 1 \text{ hr } 58 \text{ min} \checkmark^m(\text{adding})$   
 $10:00 + 1 \text{ hr}$   
 $11:00$   
 $8 \text{ min} + 58 \text{ min}$   
 $= 66 \text{ min}$   
 $= 1 \text{ hr } 6 \text{ min}$   
 $\therefore 12:06$   
 $\checkmark^a \checkmark^a$  (3)

2.3.2 (a)  $272 \checkmark^a \times 1,5 \checkmark^m \text{ mult}$   
 $= 408 \text{ calories} \checkmark^{ca}$  (3)

(b)  $3\,500 \div 500 \checkmark^{ma} = 7 \text{ hours} \checkmark^a$  (2)

2.4 2.4.1  $C = 2 \times 3,142 \times 31 \checkmark^m(\text{Subs})$   
 $= 194,804 \checkmark^a$   
 $\therefore 194,80 - 10$   
 $= 184,804 \text{ mm} \checkmark^{ca}$

OR

$\pi \times 62 \text{ mm} \checkmark^m(\text{Subs})$   
 $= 194,778 \text{ mm} \checkmark^a$   
 $\therefore 194,778 - 10$   
 $= 184,778 \text{ mm} \checkmark^{ca} = 184,78$  (3)

2.4.2  $85\% \times 582\,680 \checkmark^m$   
 $= 495\,278 \text{ mm}^3 \checkmark^a$  (2)

2.4.3  $495\,278 \text{ mm}^3 \div 1\,000 = 495,278 \text{ cm}^3 \checkmark^{ca} \div 1\,000$   
 $= 0,5 \text{ l} \checkmark^{ca}$  (2)

**[27]**

**QUESTION 3**

3.1  $22 \checkmark^a \times R4\,000 = R88\,000 \checkmark^a$  (2)

3.2 3.2.1  $2,6 + 2,1 \text{ cm} = 4,7 \text{ cm} \checkmark^a \checkmark^a$

OR

$$26 + 21$$

$$= 47 \text{ mm}$$

$$= 4,7 \text{ cm} \checkmark^a \checkmark^a \text{ (accept mm too) (range accepted: 4,4 to 4,9 cm)} \quad (2)$$

3.2.2  $567 \text{ km}^{(\times 100 \checkmark^m \times 1000 \checkmark^m)} = 56\,700\,000 \text{ cm} \checkmark^a \text{ convert} \quad (3)$

3.2.3  $4,5 : 56\,700\,000 \checkmark^a \text{ ratio}$

$$1 : 12\,600\,000 \checkmark^m \div 4,5$$

$$1 : 13\,000\,000 \checkmark^{\text{car}} \quad (3)$$

3.2.4  $S = 1\,682 \div 19 \text{ h } 28 \text{ min} \checkmark^m$

$$= 1\,682 \div 19,47 \checkmark^a \text{ conv}$$

$$= 86,4 \text{ km/h} \checkmark^{\text{ca}}$$

OR

$$S = 1\,682 \div 19 \text{ h } 28 \text{ min} \checkmark^m$$

$$= 1\,682 \div 19,5 \checkmark^a \text{ conv}$$

$$= 86,3 \text{ km/h} \checkmark^{\text{ca}} \quad (3)$$

3.3 3.3.1 Stellenbosch  $\checkmark^a$ ; Hermanus  $\checkmark^a$  (2)

3.3.2 Shuttle  $\checkmark^a \checkmark^a$  (2)

3.3.3 2  $\checkmark^a \checkmark^a$  (2)

3.3.4 West  $\checkmark^a \checkmark^a$  (2)

**[21]**

**QUESTION 4**

- 4.1 96:100 ✓<sup>a</sup>  
1 cellphone sub : 1,04 people ✓<sup>a</sup>

OR

100:96

1 person : 0,96 (subscriptions) ✓<sup>a</sup> (do not accept 1 : 1)

(2)

- 4.2 23 : 100  
1,3 mill : ?

$$\begin{aligned} \therefore 1,3 \text{ mil} \div 23 \checkmark^a \times 100 \checkmark^m \\ = 5\,652\,173,913 \\ = 5\,652\,173 \checkmark^a \text{ accidents} \end{aligned}$$

OR

$$23\% \text{ of } x = 1,3 \text{ million} \checkmark^m$$

$$x = \frac{1\,300\,000}{23\%} \checkmark^a$$

$$x = 5\,652\,173 \checkmark^a \text{ accidents}$$

(3)

- 4.3 4.3.1 A driver talking on a cellphone ✓<sup>a</sup> ✓<sup>a</sup>

(2)

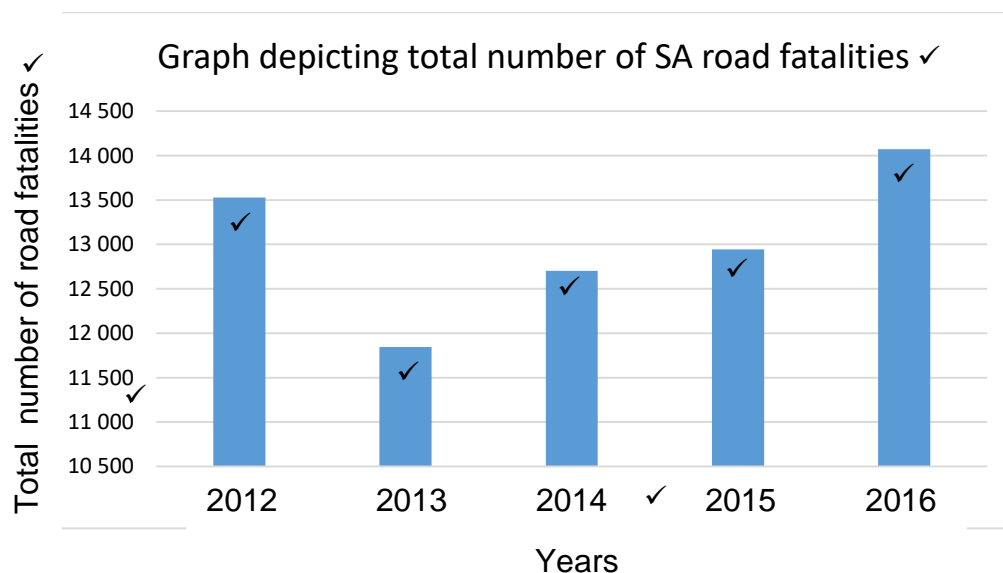
- 4.3.2 The driver is text messaging, playing a video game, or using some other kind of handheld electronic device ✓<sup>a</sup> ✓<sup>a</sup>

(2)

- 4.3.3 Broken-line graph (Do not accept pie chart as comparison graph) ✓<sup>a</sup> ✓<sup>a</sup>

(2)

4.4



- ✓ Graph Heading
- ✓ Heading on horizontal axis and vertical axis
- ✓ Suitable increment on the vertical axis
- ✓ Bar graph (not histogram)
- ✓ ✓ ✓ ✓ ✓ Accuracy of bars

(9)  
**[20]**

**QUESTION 5**

5.1  $8 + 3 \checkmark^m = 11 \text{ centuries } \checkmark^a$  (2)

5.2  $2020 \checkmark^a \checkmark^a$  (2)

5.3 5.3.1  $\bar{x} = \frac{2044000}{12} \checkmark^a \text{ (sum of all data points)} \checkmark^m \text{ (divide)} = \$170\,333,33 \checkmark^{ca}$  (3)

5.3.2  $\$753\,000 - \$15\,000 \checkmark^m = \$738\,000 \checkmark^a$  (2)

5.3.3 Median =  $\frac{66000 + 61000}{2} \checkmark^a \text{ (adding)} \checkmark^m \text{ (dividing by 2)} = \$63\,500 \checkmark^{ca}$  (3)

5.3.4  $\$15\,000 \checkmark^a \checkmark^a$  (2)

5.4 5.4.1  $2 \times 500\,000 = R1\,000\,000$   
 $6 \times 250\,000 = R1\,500\,000 \checkmark^a \text{ (values)}$   
 $2 \times 100\,000 = R \underline{200\,000} \checkmark^m \text{ (addition)} +$   
 $R2\,700\,000 \checkmark^a$  (3)

5.4.2  $500\,000 : 250\,000 : 100\,000 \checkmark^a \text{ (order)}$   
 $50 : 25 : 10$   
 $10 : 5 : 2 \checkmark^a$  (2)

5.5 5.5.1  $80 : 20$   
 $\therefore \frac{20}{100} \times 500\,000 \checkmark^m$   
 $= R100\,000 \checkmark^a$  (2)

5.5.2  $500\,000 - 100\,000$   
 $\therefore 400\,000 \text{ each}$   
 $\therefore 400\,000 \checkmark^a \times 2 \checkmark^m$   
 $= R800\,000 \checkmark^{ca}$   
 OR  
 $80\% \checkmark^a \times R1\,000\,000 \checkmark^m$   
 $= R800\,000 \checkmark^{ca}$  (3)

5.5.3 Earned R400 000  
 $61\,296 + 31\% \times (400\,000 - 293\,600) \checkmark^a \text{ (bracket)}$   
 $= 61\,296 + 0,31 \times 106\,400 \checkmark^a$   
 $= 61\,296 + 32\,984 \checkmark^{ca}$   
 $= R94\,280 \checkmark^{ca}$  (4)

**[28]****Total: 150 marks**