NATIONAL SENIOR CERTIFICATE EXAMINATION
NOVEMBER 2021

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.

QUESTION 1

QUESTION NUMBER	MARKING GUIDELINE	MARK ALLOCATION	COGNITIVE LEVEL
1.1 1.1.1	1 400 ÷ 2 = 700 bottles		1
1.1.2	1 400 420		1
1.1.3	1 820 × 350 ml = 1 820 × 0,35 litres = 637 litres **OR** 1 820 x 350 ml = 637000 ml =637 litres		1
1.2	1 820 × R55 = R100 100		1
1.3 1.3.1	350 ml ÷ 29,57ml = 11,84 fl ounces Accept: 11,835; 11,8; 12		1
1.3.2	12 fl oz		1
1.3.3 (a)	B		1
(b)	A		1
(c)	100% – 83% = 17% = 0,17 **OR** 1 – 0,83 = 0,17 **OR** Area of logo 8,89 x 7,62 = 67,7418 0,83 x 67,7418 = 56,225694 11,52 ÷ 67,7418 x 100 = 17% = 0,17%		1
1.4	I = 55 × N		1
1.5	Number of Jars (N): **5**, **550** Income (I): **R275**, **R30 250**		1
1.6 1.6.1	R1 000		1
1.6.2	1 000 + (36 × 550) = R20 800		1
1.6.3	P = 30 250 – 20 800 = R9 450 **OR** R55 – R36 = R19 (profit for one) R19 x 550 = R10 450 Profit 10 450 – R 1000 = R9 450		1

QUESTION 2

QUESTION NUMBER	MARKING GUIDELINE	MARK ALLOCATION	COGNITIVE LEVEL
2.1	East		1
2.2	$\frac{1}{3} \times 90° = 30°$ **OR** $\frac{2}{3} \times 90° = 60°$ $90° – 60° = 30°$		2
2.3	Width of bathroom: 5 ft × 30,48 cm = 152,4 cm Width of two walls: 110 mm × 2 = 11 cm × 2 = 22 cm Width for bath: 152, 4 – 22 = 130,4 cm Therefore, not wide enough for bath that is 150 cm long **OR** Bath to feet 150 ÷ 30,48 = 4,92 ft Width of two falls to feet 11 cm ÷ 30,48 x 2 = 0,72 ft Available space 5 ft – 0,72 ft = 4,28 ft Therefore, not wide enough for bath that is 150 cm long		4
2.4	3 × 3 = 9 options		2
2.5	$\frac{1}{3} \times \frac{1}{3} = \frac{1}{9}$		2
2.6 2.6.1	Area of floor = 1,95 m² Area of side of bath = 150 × 40 = 1,5 × 0,4 m = 0,6 m² Total Area to be tiled = 1,95 + 0,6 = 2,55m² 2,55 × 1,1		3

		= 2,805 m² including wastage 2,805 ÷ 1,8 = 1, 5 = 2 boxes **OR** Area of floor = 1,95 m^2 Area of side of bath = 152,4 x 40 = 1,524 x 0,4 m = 0,6096 m^2 Total area to be tiled = 1,95 + 0,6096 =2,5596m^2 2,5596 x 1,1 =2,81556 m^2 including wastage 2,81556 ÷ 1,8 =1,5642 = 2 boxes **OR** Area of floor = 1,95 m^2 Area of side of bath = 130,4 x 40 = 1,304 x 0,4 m = 0,5216 m^2 Total area to be tiled = 1,95 + 0,5216 =2,4716 m^2 2,4716 x 1,1 =2,71876 m^2 including wastage 2,71876 ÷ 1,8 =1,5 = 2 boxes		
	2.6.2	250,20 × 2 = R500,40		1
2.7	2.7.1	a = 0,7 **OR** a = 0,1 ÷ 1,3 $= \frac{1}{3}$ b = 0,9		2
	2.7.2	0,03 + 0,49 = 0,52 = 52%		2

QUESTION 3

QUESTION NUMBER	MARKING GUIDELINE	MARK ALLOCATION	COGNITIVE LEVEL
3.1	92 cm × 46 cm × 48 cm = 203 136 cm³		2
3.2	203 136 cm³ ÷ 1 hr 13 min = 203 136 ÷ 73 min = 2 782,68 cm³/min		3
3.3	2 782,68 ml/min ÷ 1 000 = 2,78268 litres/min Accept any correctly rounded answer		2
3.4	Water (gallons) needed for 26 fish = 26 gallons Total water in tank 203 136 cm³ = 203 136 ml = 203,136 litre 203,136 ÷ 3,78541 = 53,66 gallons Therefore, have a big enough tank for total of 26 fish. **OR** Water (gallons) needed for 26 fish = 26 gallons 16 x 3,78541 = 98,421 litres How much water can a full tank hold: 203,136 cm³ = 203 136 ml = 203, 136 litre Therefore, have a big enough tank for total of 26 fish. **OR** Wants to have 26 fish How many fish can a full tank hold: 203,136 cm³ = 203 136 ml = 203, 136 litre 203, 136 ÷ 3,78541 = 53,66 gallons = 53 fish Therefore, have a big enough tank for total of 26 fish.		4

3.5	3.5.1	Area required = 92 × 48 = 4 416 cm² Accepted (if using dimensions from diagram) 7,2 x 4,2 = 30,24 cm^3		2
	3.5.2	Full area of sheet = 100 × 50 = 5 000 cm² 5 000 – 4 416 = 584 cm² $\frac{584}{5\,000} \times 130$ = R15,18 wasted **OR** Full area of sheet = 100 × 50 = 5 000 cm² 4 416 ÷ 5 000 x 100 = 588,32% 100 – 88,32 = 11,6% 0,1168 x 130 = R15,18		4
3.6		2 × 92 × 48 + 2 × 46 × 48 = 13 248 cm²		3

QUESTION 4

<table>
<tr><th>QUESTION NUMBER</th><th>MARKING GUIDELINE</th><th>MARK ALLOCATION</th><th>COGNITIVE LEVEL</th></tr>
<tr><td>4.1 4.1.1</td><td>3,14 × 41²
5 278 mm²
OR
3,14 x 4,1²
= 52,78 x 10²
= 5 278 mm²
Accept
π × 41²
= 5 281 mm²
OR
π × 4,1²
= 52,81 × 10²
= 5 281 mm²</td><td></td><td>3</td></tr>
<tr><td>4.1.2</td><td>$\frac{8}{9}$ × 5 281
= 4 694,22 mm²
0,23 × 4 694,22
= 1 079,06 mm²
= 1 079 mm²
Accept
$\frac{8}{9}$ × 5 281
= 4 694,22 mm²
0,23 × 4 694,22
1 079,67
= 1 080 mm²</td><td></td><td>4</td></tr>
<tr><td>4.2 4.2.1</td><td>125 : 400
5 : 16</td><td></td><td>2</td></tr>
<tr><td>4.2.2</td><td>400 × 3 = 1 200 ml
1 200 ml ÷ 1000
= 1,2 litre</td><td></td><td>2</td></tr>
<tr><td>4.2.3</td><td>3 min 12 seconds</td><td></td><td>2</td></tr>
<tr><td>4.2.4 (a)</td><td><table><tr><td>Number of milkshakes (m)</td><td>12</td><td>14</td></tr><tr><td>Time taken in minutes (t)</td><td>19,2</td><td>22,4</td></tr></table></td><td></td><td>2</td></tr>
<tr><td>(b)</td><td>Direct</td><td></td><td>1</td></tr>
<tr><td>(c)</td><td>2 milkshakes in 3,2 min
Therefore, 1,6 min/milkshake
60 ÷ 1,6
= 37,5
= 37 milkshakes</td><td></td><td>2</td></tr>
</table>

		OR 30 ÷ 3,2 × 2 = 37,5 37 milkshakes Accept 36 milkshakes recipe in multiples of 2, but not 38 milkshakes		
	4.2.5	°F = [1,8 × (–17 °C)] + 32 = –30,6 + 32 = 1 °F The statement is incorrect **OR** 0 °F = 1,8 × °C + 32 °C = –32 ÷ 1,8 = – 17,78 = – 18 °C The statement is incorrect (less than -17)		4
4.3	4.3.1	12 min later Therefore, delivery will be at: 11:06 + 12 min = 11:18 **OR** 11:06 – 10:51 = 0:15 11:03 + 0:15 = 11:18 **OR** 30 min later Therefore, delivery will be at: 11:03 + 30 min = 11:33		1
	4.3.2	N17		1
	4.3.3	Bloubos Street		1
	4.3.4	North West		1
	4.3.5	Either turned left after the Church into Barry Marais Road and then turned right. **OR** At the fork turned right instead left into Bloubos and continued straight. Accept Bullet 3		4

QUESTION 5

QUESTION NUMBER	MARKING GUIDELINE	MARK ALLOCATION	COGNITIVE LEVEL
5.1	1 860 ÷ 5 = R372/kg		1
5.2	337 × 322 × 180 = 19 532 520 mm³		2
5.3	19 532 520 ÷ 1000³ = 0,019 m³		2
5.4	1 ÷ 0,019 × 5 = 255,98 kg **OR** 1 000 000 000 ÷ 19 532 520 X 5 = 255,98 kg		2
5.5	Other variations give same solution Length 2,2 ÷ 0,337 = 6,5 = 6 boxes in the length Width 1,5 ÷ 0,332 = 4,65 = 4 boxes in the width Height 1,6 ÷ 0,18 = 8,89 = 8 boxes stacked 6 × 4 × 8 = 192 boxes		3
5.6	337 ÷ 50 = 6,74 mm 332 ÷ 50 = 6,44 mm 180 ÷ 50 = 3,6 mm 7 × 6 × 4 mm		4
5.7 5.7.1	S = 1 397 ÷ 13h 2 min = 1 397 ÷ 13,0333 = 107,19 km/hr		2
5.7.2	12,6 cm = 1 262 km 12,6 cm = 126 200 000 cm 126 200 000 cm ÷ 12,6 = 10 015 873,02 1 : 10 015 873,02 Accept: 1 : 10 000 000		2

5.7.3	1 : 100 ? : 400 400 ÷ 100 = 4 cm Line to be drawn is 4 cm, Durban to: Queenstown OR Bloemfontein OR Maputo OR Kroonstad		4
			
5.7.4	1 262 km ÷ 784 miles = 1,6096 km/mile = 1,6 km/mile		2

Total: 150 marks