



NATIONAL SENIOR CERTIFICATE EXAMINATION
SUPPLEMENTARY EXAMINATION – MARCH 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.

Key:

a	accuracy
m	method
ma	method accuracy
ca	continuous accuracy
r	rounding

Topics

F	Finance
MP	Maps and Plans
M	Measurement
P	Probability
DH	Data Handling

QUESTION 1					
1.1	April 1679	2 marks	<i>a</i> <i>a</i>	April 1679	2
1.2	$4 \times R15 = R60$ $15 \times R30 = R450$ $6 \times R15 = R90$ Total = R600	1 mark 1 mark 1 mark 1 mark 1 mark	<i>a</i> <i>a</i> <i>a</i> <i>a</i> <i>a</i>	4 R60 15 R450 R90 Total	6
1.3	$(R1\ 459 \times 2) = R2\ 918$ $R2\ 918 \times 6 = R17\ 508$ $R17\ 508 \times 0,06$ $= 1\ 050,48$ euros $= 1\ 050$ euros	1 mark 1 mark 1 mark 1 mark 1 mark	<i>m</i> <i>m</i> <i>a</i> <i>m</i> <i>ca</i> <i>car</i>	$\times 2$ $\times 6$ R17 508	6
1.4.1	Arrive 9h30 Key Ceremony: 10h00–10h07 Horse and Carriage Ride: 10h30–11h30 Guided Tour: 12h00–13h00	1 mark 1 mark 1 mark	<i>a</i> <i>a</i> <i>a</i>		3
1.4.2	9h30–10h00 = 30 min 10h07–10h30 = 23 min 11h30–12h00 = 30 min Total rest 83 min/1 hour 23 min	1 mark 1 mark 1 mark 1 mark	<i>ca</i> <i>ca</i> <i>ca</i> <i>ca</i>	From previous question.	4
1.5.1	$P = (2,2\text{ cm} + 0,7\text{ cm} + 3,1\text{ cm} + 0,7\text{ cm} + 2,2\text{ cm}) \times 5\text{ sides}$ $= 8,9\text{ cm} \times 5\text{ sides}$ $= 44,5\text{ cm} (43,5\text{ cm} - 45,5\text{ cm})$ $44,5\text{ cm} \times 1\ 500$ $= 66\ 750 \div 100$ $= 667,5\text{ m} (652,5\text{ m} - 682,5\text{ m})$	1 mark 1 mark 1 mark 1 mark 1 mark	<i>m</i> <i>a</i> <i>m</i> <i>m</i> <i>a</i>		5
1.5.2	5 cm : 100 m 5 cm : 10 000 cm 1 cm : 2 000 cm 1 : 2 000 \therefore not the same distance	1 mark 1 mark 1 mark 1 mark	<i>m</i> <i>m</i> <i>a</i> <i>a</i>		4
1.6	$C = \pi \times 15\ 150\text{ cm}$ $C = 47\ 595,1287\text{ cm}$ $= 476\text{ m}$ No prize	1 mark 1 mark 1 mark 1 mark	<i>a</i> <i>a</i> <i>ca</i> <i>ca</i>	diameter	4
1.7.1	Diameter = 9,5 cm (Width and Length) Height = 12 cm	1 mark 1 mark	<i>a</i> <i>a</i>		2

1.7.2	$15,4 \text{ pounds} \div 2,2$ $= 7 \text{ kg}$ $7 \text{ kg} \times 20\%$ $= 1,4 \text{ kg}$ $1,4 \text{ kg} \div 0,63 \text{ kg}$ $= 2,2 \dots$ $= 2 \text{ souvenirs}$	1 mark 1 mark 1 mark 1 mark 1 mark 1 mark	m a m ca m ca ca		7
1.8	Length of line on map = 15,8 cm (15,7–16 cm) Length of scale 1,4 cm = 1 km So 15,8 cm = 11,3 km (11,2–11,4 km) $> 10 \text{ km} \therefore$ You would not hear it.	1 mark 1 mark 1 mark 1 mark	a a m ca		4
1.9.1	Car $S = \frac{D}{T}$ $= \frac{19,2 \text{ km}}{\frac{17}{60}}$ $= 67,76 \text{ km/hr}$ Bus $S = \frac{D}{T}$ $= \frac{19,2 \text{ km}}{\frac{40}{60}}$ $= 28,8 \text{ km/hr}$ Difference = 67,76 km/hr – 28,8 km/hr $= 38,96$	1 mark 1 mark 1 mark 1 mark 1 mark 1 mark	m a a a a m a		7
1.9.2	The estimated time includes delays caused by traffic OR due to sightseeing.	2 marks	a		2
1.9.3	$19,2 \text{ km} \div 11,5 \text{ km} \times R13,85$ $= R23,12$	1 mark 1 mark 1 mark	m m a	\div \times	3
QUESTION 2					
2.1.1	Simple interest is based on the initial investment whereas compound interest is based on an increasing balance.	1 mark 1 mark	a a		2
2.1.2	$\frac{11\ 865 - 100}{100} \times 100\%$ $= 11\ 765\%$	1 mark 1 mark 1 mark 1 mark	a a m a	R100 (Starting value) Denominator answer	4

2.1.3	<p>$R60 \div 5$ years = R12 per year = 12 % per year</p> <p>OR $R100 \times \text{Interest Rate} \times 5 \text{ years} = R60$ Interest Rate = $R60 \div 5 \div 100$ Interest Rate = 0,12 = 12%</p>	<p>1 mark 1 mark 1 mark 1 mark</p> <p>1 mark 1 mark 1 mark</p>	<p><i>a</i> <i>m</i> <i>ca</i> <i>a</i></p> <p><i>m</i> <i>m</i> <i>a</i> <i>a</i></p>	<p>R60 interest</p>	4
2.2.1	<p>a = R51 132 b = R32 907 c = R3 198 d = R14 125</p>	<p>2 marks 2 marks 2 marks 2 marks</p>	<p><i>a</i> <i>a</i> <i>a</i> <i>a</i></p>		8
2.2.2	<p>$\frac{2014 - 2013}{2013} \times 100\%$ = $\frac{39\ 192 - 36\ 974}{36\ 974} \times 100$ = 5,998% = 6% increase In 2013 inflation was 5,77% so Gogo received a fair increase.</p> <p>OR She only received 0,23% more than inflation, so it was fair but not good.</p> <p>OR $1,0577 \times 36974$ = R39 107,40 ∴ Fair increase</p>	<p>1 mark</p> <p>1 mark 1 mark</p> <p>1 mark 1 mark</p>	<p><i>m</i></p> <p><i>a</i> <i>a</i></p> <p><i>ca</i> <i>ca</i></p>	<p>correct values from correct years correct denominator</p>	6
2.2.3	<p>If a person's increase is less than the inflation rate, they will not have enough money to afford the things they always could as the prices would have increased. It is ideal if a person's salary increases proportionally to the inflation rate.</p>	2 marks	<i>a</i>		2
2.2.4	<p>y-axis Heading y-axis (In thousands) x-axis heading Graph heading Key 2000–2015</p>	<p>1 mark 1 mark 1 mark 1 mark 2 marks 1 mark</p>	<p><i>a</i> <i>a</i> <i>a</i> <i>a</i> <i>a</i> <i>a</i></p>		7
2.2.5	<p>Gogo spent more than she earned that year and so was not able to save any money.</p>	2 marks	<i>a</i>		2

QUESTION 3					
3.1.1	$\frac{3 \text{ min } 41,71 \text{ sec} + 3 \text{ min } 43,27 \text{ sec} + \dots}{8}$ $= \frac{30 \text{ min } 0,47 \text{ sec}}{8}$ $= 3 \text{ min } 45,06 \text{ sec}$	1 marks 1 mark 1 mark 1 mark 1 mark	a m a a a	Adding all the values correctly $\div 8$ 30 min 0,47 sec	6
3.1.2	$3:50,06 - 3:41,71$ = 8 sec 21 hundredths of a second	1 mark 2 marks	m a	subtract 8 sec 21 hundredths	3
3.1.3	Backstroke	2 marks	a		2
3.1.4	$\frac{65}{100} - \frac{13}{100}$ $= \frac{52}{100} \text{ of a second}$ (Just over half a second)	1 mark 1 mark	a a	values 52	2
3.1.5	(a) Xu, Jiayu – 52.74 Peaty, Adam – 57.98 Codia, Piero – 51.59 Morozov, Vladimir – 47.29 (b) Total time = 209 sec $\frac{60}{100}$ 3 min 29,6 sec	1 mark 1 mark 1 mark 1 mark 1 mark 1 mark 2 marks 1 mark	a a a a ca a a m	3 29,6	9
3.2.1	$5 \times 3 = 15 \text{ m}^2$ $\text{R}74\,550 \div 15$ $= \text{R}4\,970/\text{m}^2$ $6 \times 3 = 18 \text{ m}^2$ $\text{R}83\,650 \div 18$ $= \text{R}4\,647,22/\text{m}^2$ $8 \times 4 = 32 \text{ m}^2$ $\text{R}106\,760 \div 32$ $= \text{R}3\,336,25/\text{m}^2$ 8×4 is most economical	1 mark 1 mark 1 mark 1 mark 1 mark 1 mark 1 mark	a a a a a a ca		7
3.2.2	$\text{R}106\,760 \times 1,14$ $= \text{R}121\,706,40$ $\text{R}121\,706,40 - \text{R}106\,760$ $= \text{R}14\,946,40$ $\text{R}14\,946,40 \div 32 \text{ m}^2$ $= \text{R}467,08 \text{ m}^2$ OR $\text{R}106\,760 \times 14\%$ $= \text{R}14\,946,40$ $\text{R}14\,946,40 \div 32$ $= \text{R}467,08$	1 mark 1 mark 1 mark 1 mark	m a m a		4

QUESTION 4					
4.1	$20 \times 24 \times R5$ $= R2\ 400$	2 marks 1 mark	<i>ma</i> <i>a</i>		3
4.2	$\frac{5}{550} \times 100\%$ $= 0,9$ $= 1\%$	1 mark 1 mark 1 mark 1 mark	<i>ma</i> <i>a</i> <i>a</i> <i>car</i>	fraction	4
4.3	$\frac{184}{360} \times 387$ $= 197,8$ \therefore either $197 \times R10$ $= R1\ 970$ or $198 \times R10$ $= R1\ 980$	1 mark 1 mark 1 mark 1 mark 1 mark	<i>a</i> <i>m</i> <i>a</i> <i>a</i> <i>ca</i> <i>ca</i>	fraction 387	6
4.4.1	$40\% \times 360$ $= 144$ degrees	1 mark 1 mark 1 mark	<i>a</i> <i>m</i> <i>ca</i>	40%	3
4.4.2	Raffle: $550 \times R5$ $= R2\ 750$ $R5\ 375 - Raffle$ $R5\ 375 - R2\ 750$ $= R2\ 625$ Suckers: $100\% - 88\%$ $= 12\%$ $12\% \times R2\ 625$ $= R315$	1 mark 1 mark 1 mark 1 mark 1 mark 1 mark 1 mark	<i>a</i> <i>m</i> <i>ca</i> <i>m</i> <i>a</i> <i>m</i> <i>ca</i>		7

Total: 150 marks