education

Department:
Education
PROVINCE OF KWAZULU-NATAL

NATIONAL SENIOR CERTIFICATE

GRADE 12

MATHEMATICAL LITERACY P2

MARKING GUIDELINE

PREPARATORY EXAMINATION

SEPTEMBER 2019

MARKS: 150

SYMBOL	EXPLANATION
M	Method
MA	Method with accuracy
CA	Consistent accuracy
A	Accuracy
C	Conversion
S	Simplification
RT/RG/RD/RM	Reading from a table/ graph/ diagram/Map
SF	Correct substitution in a formula
O	Opinion/ reason/deduction/example/Explanation
J	Justification
R	Rounding off
F	deriving a formula
AO	Answer only full marks
P	Penalty e.g. for units, incorrect rounding off etc.
NPR	No penalty for rounding / units

This marking guideline consists of 14 pages.

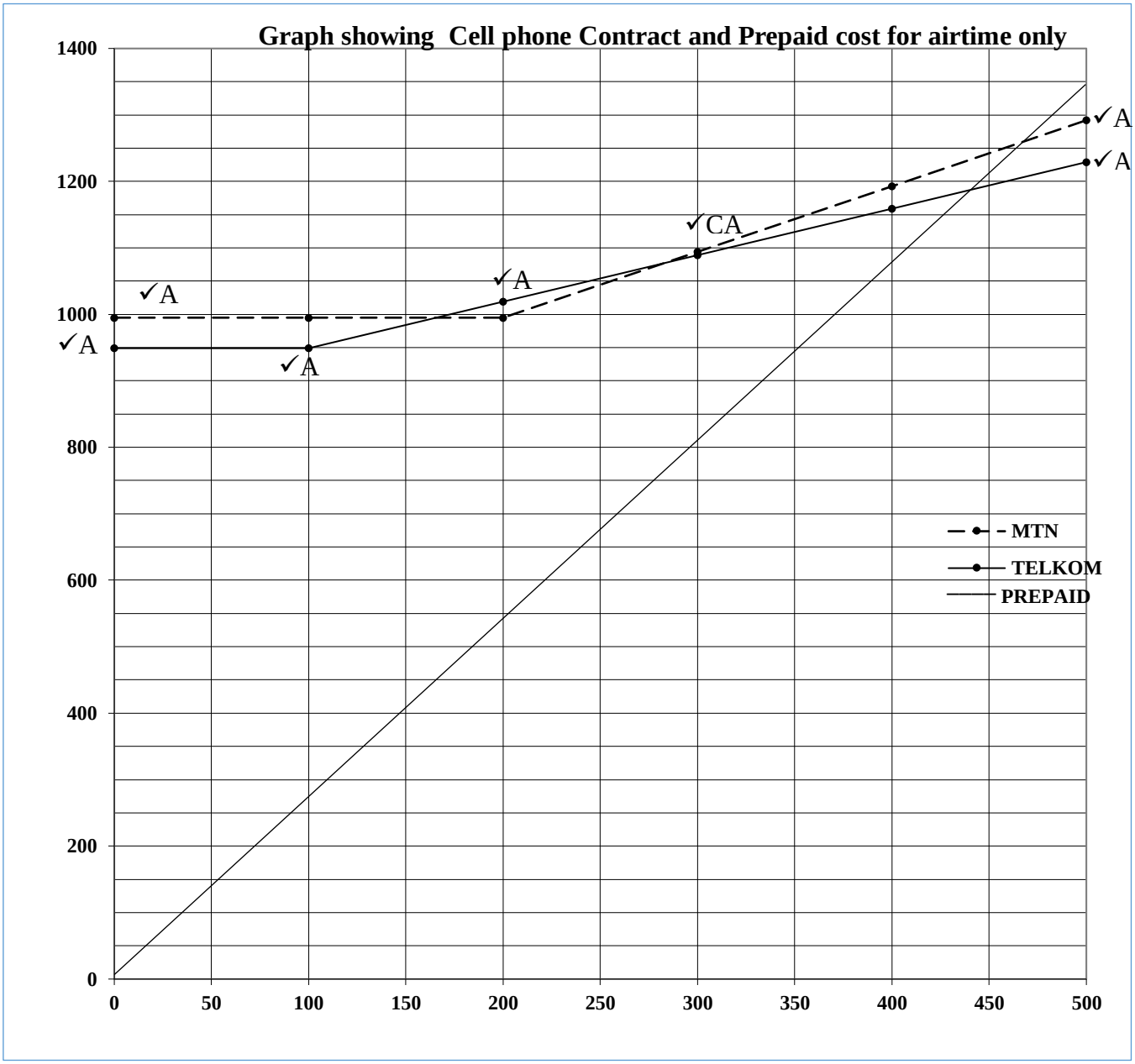
Copyright Reserved

QUESTION 1 [42 MARKS]

Quest.	Solution	Explanation	T & L
1.1.1	Annual Taxable income = R 45 995 × 12 ✓MA = R551 940 ✓A	1MA multiplying by 12 1A annual taxable income **AO** (2)	F L2
1.1.2	✓A Monthly tax = 100 263 + 0,36(551 940 – 423 300) ✓SF =146 573,40 ✓CA =146 573,40 – (14 067 + 7 713) ✓MA =124 793,40 = 124 793,40 ÷ 12 ✓MA = R10 399,45 ✓CA	1A correct tax bracket 1SF amount above 1CA answer 1MA subtracting 2 rebates 1MA dividing by 12 1CA monthly tax (6)	F L3
1.1.3	National Treasury pays for; Social grants ✓✓O **OR** Health ✓✓O **OR** Defense ✓✓O **OR** Infrastructure ✓✓O **OR** **Any valid answer.**	2O explanation (2)	F L4
1.2.1	Cell C % increase = $\frac{1,98-0,21\checkmark RT}{0,21} \times 100\%$ = 842,86%✓A Telkom % increase = $\frac{2,10-0,13}{0,13}\checkmark RT \times 100\%$ = 1 515,38% ✓CA Telkom has the biggest % price increase. ✓CA	1RT reading from the table 1A correct increase 1RT reading from the table 1CA correct increase 1CA conclusion (5)	F L4
1.2.2	Lower data rates compared to cellular call rates ✓✓O **OR** **Any valid answer**	2O explanation (2)	F L4

Quest.	Solution	Explanation	T &L
1.2.3	Telkom cost per minute = R2,10 ÷ 3 ✓MA = R0,70	1MA dividing by 3	F L4
	Telkom airtime cost = R0,70 × (400 min – 100 min) ✓MA = R210	1MA subtracting 100 free minutes	
	Telkom Data cost = R99 × (3GB – 1GB) ✓MA = R198	1MA subtracting 1 free gigabyte	
	Total Cost for Telkom Contract = R949 + 210 + R198✓M = R1 357 ✓CA	1M adding values 1CA total cost for Telkom	
	Vodacom cost per minute = R3,69 ÷ 3 ✓M = R1,23	1M dividing by 3	
	Vodacom airtime cost = R1,23 × (400 min – 100 min) ✓MA = R369	1MA subtracting 100 free minutes	
	Total Cost for Vodacom Contract = R875 + R369 + R149 = R1 393 ✓CA The claim is valid.✓O	1CA total cost for Vodacom 1O explanation	
	OR	**OR**	
	400 – 100 = 300 minutes 300 ÷ 3-minute call = 100 minutes Telkom airtime cost = R2,10 × (100 min) ✓MA = R210		
	Telkom Data cost = R99 × (3GB – 1 GB) ✓MA = R198	1MA multiplying by 100 minutes 1MA subtracting 1 free gigabyte	
	Total Cost for Telkom Contract = R949 + 210 + R198 ✓M = R1 357 ✓CA	1M adding values 1CA total cost for Telkom	
	Vodacom airtime cost = R3,69 × (100 min) ✓MA = R369	1MA multiplying by 100	
	Vodacom data cost = R149 × (3 GB– 2 GB) ✓MA = R149	1MA subtracting 2 free gigabyte	
	Total Cost for Vodacom Contract = R875 + R369 + R149 ✓M = R1 393 ✓CA The claim is valid.✓O	1M adding values 1CA total cost for Vodacom 1O explanation (9)	

1.2.4



F

L3

1A Telkom R949 ✓

1A MTN R995 ✓

1A (0 minutes – 100 minutes) ✓

1A (0 minutes - 200 minutes) ✓

1A Telkom 500 minutes =R1 229 ✓

1A MTN 500 minutes = R1 292 ✓

1CA Joining points of increasing straight line graphs ✓ (7)

Quest.	Solution	Explanation	T &L
1.3.1	50% of 17-year-old girls with Downs Syndrome weigh more than other 17-year-old girls with Downs Syndrome ✓✓J **OR** 50% of 17 year old girl with Downs Syndrome weigh less than other 17 year old girls with Downs Syndrome ✓✓J **OR** A 17 year old girl with Downs Syndrome has a median age to weight ratio compared to other 17 year old girls with Downs Syndrome ✓✓J	2J justification (2)	DH L4
1.3.2	Weight in pounds: 71 kg ÷ 0,454 ✓C = 156,39 pounds ✓A = 95th percentile curve ✓RG = 18 years old ✓RG Claim is incorrect ✓CA **OR** 17-year-old on 75th percentile ✓✓RG Weight in kg: 125 – 130 pounds × 0,454 ✓C = 56 – 59,02 kg ✓A Claim is incorrect ✓CA	1C conversion 1A weight in pounds IRG 95th percentile curve RG 18 years 1CA conclusion **OR** 2RG reading 125 – 130 pounds 1C conversion 1A weight in kg's 1CA conclusion (5)	DH L4
1.3.3	Boys with Downs Syndrome have a different growth rate compared to girls with Downs Syndrome. ✓✓O	2O explanation (2)	DH L4
		[42]	

QUESTION 2 [34 MARKS]

Quest.	Solution	Explanation	T & L
2.1.1	✓MA ✓MA ✓MA Total number of hay bales = (9 × 2) + (21 × 2) = 60 hay bales✓CA **OR** ✓MA ✓MA ✓MA Total number of hay bales = (3×3) + (7 × 3) ×2 = 60 hay bales✓CA **OR** ✓MA ✓MA✓MA Total number of hay bales = 10 × 3 × 2 = 60 hay bales ✓CA	2MA multiplying 1MA adding 1CA number of hay bales **OR** 2MA multiplying 1MA adding 1CA number of hay bales **OR** 3MA multiplying 1CA number of hay bales (4)	M L2
2.1.2	Length of trailer excluding the gap in feet = 3 feet × 10 ✓MA = 30 feet ✓C Length of trailer in metres = (30 feet × 0,3048) + 1 m ✓M = 10,144 m ✓CA Height of trailer in feet = 4 feet × 3 ✓MA = 12 feet Height of trailer in metres = 12 feet × 0,3048 ✓C = 3,658m ✓CA	1MA multiplying by 10 1C conversion 1M adding 1 metre 1 CA answer **NPR** 1MA multiplying by 3 1C conversion 1CA answer **NPR** (7)	M L3
2.1.3	Diameter = (3 feet × 0,3048) ✓C = 0,9144m ✓A Height = (4 feet × 0,3048) = 1,2192 m✓A Radius=0,9144m÷2 ✓M =0,4572m ✓SF Volume of a cylinder = (3,142 × (0,4572)^2 × 1,2192) × 60 ✓M = 48,044m^3 Claim is correct ✓CA **OR**	1C conversion 1A answer in metres 1A height in metres 1M dividing diameter by 2 1SF substitution 1M multiplying by value from 2.1.1 1CA **NPR** (7)	M L3

	Radius = 3 feet ÷ 2 ✓M = 1,5 feet ✓A Radius in metres = 1,5 x 0,3048 ✓C = 0,4572 m✓A ✓SF Volume of a cylinder = $(3{,}142 \times (0{,}4572)^2 \times 1{,}2192) \times 60$ ✓M = $48{,}044 m^3$ Claim is correct ✓CA	1M dividing diameter by 2 1A radius 1C conversion 1A answer in metres 1SF substitution 1M multiplying by value from 2.1.1 1CA **NPR**	

Quest.	Solution	Explanation	T &L
2.1.4	**Service provider A:** Cost = 27,68 + (6,95 × 356 km) ✓SF = AUD 2 501,88 = 2 501,88 × 9,9333 ✓C = R24 851,92 ✓A **Service provider B:** Cost = 17,62 + (356 km – 50 km) × 12,08 ✓SF = AUD 3 714,10 = 3 714,10 × 9,9333 ✓C = R36 893,27 ✓CA Option A is cheaper ✓O	1SF substitution 1C conversion 1A cost in rands 1SF subtracting 50 km 1C conversion 1CA cost in rands 1O opinion (7)	F L3
2.2.1	Bars to the left show a decrease in the price of the item.✓ ✓O Bars to the right show an increase in the price of the item. ✓O	3E explanation (3)	DH L4
2.2.2	Range = 9,1% – (–5,3%) ✓RG ✓M = 14,4% ✓CA	1RG reading correct values 1M concept of range 1CA range (3)	DH L2
2.2.3	Change in price of bread in 2018 = R10,49 × 3,1% ✓MA = 0,33 cents = R10,49 – 0,33 ✓MA = R10,16 ✓A **OR** Change in price of bread in 2018 =100% - 3,1%✓MA = 96,9% =R10,49×0,969✓MA =R10,16✓A	1MA multiplying by 3,1% 1MA subtracting 1A price of bread **OR** 1MA subtracting 3,1% 1MA multiplying by 0,969 1A price of bread (3)	F L2
		[34]	

QUESTION 3 [30 MARKS]			
Quest.	**Solution**	**Explanation**	**T & L**
3.1.1	North West / NW ✓✓RM	2RM reading from the map (2)	MP L2
3.1.2	Travel from Malelane gate; Drive past Pretoriuskop ✓RM Turn left at Skukuza✓RM Pass Paul Kruger gate, Phabeni gate is at the end of the road✓RM	1RM correct direction 1RM correct direction 1RM correct direction (3)	MP L2
3.1.3	Time = $\frac{127\text{ km}}{25\text{ km/h}}$ ✓MA = 5,08 hours ✓A = 0,08 × 60 ✓C = 4,8 minutes = 5 hours 5 minutes ✓R	1MA dividing by 25 1A correct time 1C multiplying by 60 1R rounding time (4)	MP L3

Quest.	Solution	Explanation	T &L
3.1.4	19mm : 30km ✓A ✓C 19mm : 30 000 000mm 19mm 19mm ✓M 1 : 1 578 947 ✓CA✓R **OR** 38mm : 60km ✓A ✓C 38mm : 60 000 000mm 38mm 38mm ✓M 1 : 1 578 947 ✓CA✓R **OR** 57mm : 90km ✓A ✓C 57mm : 90 000 000mm 57mm 57mm ✓M 1 : 1 578 947 ✓CA✓R	1A measuring **Accept: 18 mm to 20 mm** 1C converting to mm 1M dividing by 19mm 1CA scale 1R rounded answer **OR** 1A Measuring **Accept: 37 mm to 39 mm** 1C converting to mm 1M dividing by 38mm 1CA scale 1R rounded answer **OR** 1A Measuring **Accept: 56 mm to 58 mm** 1C converting to mm 1M dividing by 57mm 1CA scale 1R rounded answer (5)	MP L3
3.1.5	Crocodile Bridge to Satara 1 : 1 578 947 ✓A 60: actual distance Actual distance = 60 × 1 578 947 ✓M = 94 736 820 mm ✓CA = 94,74 km ✓CA **OR** ✓A Actual distance = 38 mm : 60 km 60 mm : ? km = $\frac{60 \times 60}{38}$ ✓ M = 94,74 km ✓CA	**CA from 3.1.4** 1A for measuring **Accept: 59 mm - 61 mm** 1M multiply by scale 1CA mm 1CA actual distance **OR** 1A for measuring 2M multiplication and division 1CA actual distance (4)	MP L3

3.1.6	Distance measured as a straight line ✓✓O **OR** Distances in the chart are estimates ✓✓O **OR** The distance calculated using the scale is a straight line distance. ✓✓O	2O Explanation (2)	MP L4

Quest.	**Solution**	**Explanation**	**T &L**
3.2.1	✓M ✓MA Accommodation = 3 × (2490 + 430 + 215) = R9 405 ✓ MA Conservation fee = 3 days (R93 × 5 adults) + 3 days(R47) Total cost = R 10 941 ✓CA	1M multiplying by 3 1MA adding values 1MA multiplying by 3 1CA total cost (4)	F L2
3.2.2	Total distance = (725 km + 127 km) × 2 ✓ M = 1704 km ✓A Number of litres = (1704 × 8) ÷ 100✓ C = 136,32 ✓CA Cost of trip = 136,32 × R16,79 ✓M = R2 288,81 ✓CA	1M multiplying 852 km by 2 1A distance of 1704km 1 C conversion 1CA number of litres 1M correct rate 1CA cost of trip **Accept R1 947,64** (6)	F L3
3.3	P (temperature less than 15^0C) = $\frac{5}{12}$ ✓A ✓A = 0,42 ✓CA	1A numerator 1A denominator 1CA decimal probability answer (3)	P L2
		[33]	

QUESTION 4 [40] MARKS]			
Quest.	**Solution**	**Explanation**	**T & L**
4.1.1	**A** = 105 – (15 + 1 + 38 + 11 + 3 + 3 + 3 + 31) ✓MA **A** = 0 ✓CA **OR** **A** = 1 227 482 – (10 050 + 858 039 + 70 167 + 26 513 + 12 + 262 701) ✓MA **A** = 0 ✓CA **B** = 2 796 423 + 1 011 606 + 2 658 574 + 3 938 973 + 2 513 686 + 1 492 397 + 1 227 482 + 467 476 + 1 599 995 ✓MA **B** = 17 706 612 ✓CA **OR** **B** = 149 745+12 440 728+1 058 263+ 345 560+ 190 478 +3 521 733 + 105✓MA **B** = 17 706 612 ✓CA	1MA subtracting correct values 1CA value of A 1MA adding correct values 1CA value of A 1MA adding correct values 1CA value of B 1MA adding correct values 1CA value of B (4)	DH L2
4.1.2	Old age grant = $\frac{3\ 521\ 733}{17\ 706\ 612} \times 100$ ✓RT ✓M = 19,89% ✓CA $\frac{19,89}{100}$ ✓C $= \frac{1}{5}$ Statement is VALID ✓O	**CA from 4.1.1 value for B** 1RT reading from table 1M % concept CA % of old age grant 1C conversion 1O opinion (5)	DH L4
4.1.3	3 521 733 : 1 058 263✓✓ MA 3,33 :1 ✓A Claim is INVALID ✓O	1MA correct values 1MA correct order 1 A correct answer 1O opinion (4)	P L3
4.1.4	P(Child support grant in Gauteng) = $\frac{1\ 862\ 846}{17\ 706\ 612}$ $\frac{✓A}{✓CA}$ × 100 ✓MA = 10,52% ✓CA	**CA from 4.1.1** 1A numerator 1 CA denominator 1 MA % concept 1CA probability (4)	P L2

Question	Solution	Explanation	T &L
4.1.5	Median province: 467 476, 1 011606,1 227 482, 1 492 397, 1 599 995, 2 513 686, 2 658 574, 2 796 423, 3 938 973 ✓A Western Cape 1 599 995 ✓A	1A arranging 1A median (2)	DH L2
4.1.6	No ✓A the median does not take into consideration all the data values ✓✓O	1A No 1O reason (3)	DH L4
4.1.7	✓RT KZN disability payout = 232 674 × R1 695 ✓MA = R394 382 430 ✓A % of the total budget = $\frac{394\ 382\ 430}{22\ 100\ 000\ 000} \times 100$✓M ✓MA = 1,78% This claim is TRUE. ✓O OR ✓RT KZN disability payout = 232 674 × R1 695 ✓MA = R394 382 430 ✓A % of the total budget = $\frac{0{,}394\ 382\ 43\ bn}{22{,}1\ bn} \times 100$✓M ✓MA = 1,78% This claim is TRUE ✓O	1RT correct value 1MA multiplying by R1 695 1A correct answer 1MA dividing by 22,1 billion 1M multiplying by 100 1O opinion OR 1RT correct value 1MA multiplying by R1 695 1A correct answer 1MA dividing by 22,1 billion 1M multiplying by 100 1O opinion (6)	DH L4

4.2.1	Total length of the lines ✓MA ✓M = 2(2400 + 1200) + 2(4800 + 1200) + 4800 + 2400 = 26 400 mm ✓A = 26 400 ÷1000 ✓C = 26,4 m ✓CA	1MA adding correct values 1M adding values 1A correct answer 1C dividing by 1000 1CA answer in metres (5)	M L2
4.2.2	✓C 70 ÷ 1000 = 0,07m✓A Area = 26,4m × 0,07m ✓MA =1,848 m^2 ✓CA	**CA from 4.2.1** 1C dividing by 1000 1A answer 1M multiplying by 0,07 1CA total area (4)	M L2
4.2.3	Litres of paint = 1,848 ÷ 0,5 ✓C = 3,70 litres Cost of paint = 4 litres ×R195,99✓M = R783,96 ✓CA	**CA from 4.2.2** 1M dividing by 0,5 1M multiplying 1CA cost of paint (3)	F L3
		[40]	

TOTAL: 150

Copyright Reserved