KWAZULU-NATAL PROVINCE

EDUCATION
REPUBLIC OF SOUTH AFRICA

NATIONAL SENIOR CERTIFICATE

GRADE 12

MATHEMATICAL LITERACY P2

COMMON TEST

JUNE 2023

MARKS: 100

TIME: 2 hours

This question paper consists of 10 pages.

INSTRUCTIONS AND INFORMATION

1. This question paper consists of FOUR questions. Answer ALL the questions.
2. Number the answers correctly according to the numbering system used in this question paper.
3. Start EACH question on a NEW page.
4. You may use an approved calculator (non-programmable and non-graphical), unless stated otherwise.
5. Show ALL calculations clearly.
6. Round off ALL final answers appropriately according to the given context, unless stated otherwise.
7. Indicate units of measurement, where applicable.
8. Maps and diagrams are NOT necessarily drawn to scale, unless stated otherwise.
9. Write neatly and legibly.

QUESTION 1

1.1

The map of the Gautrain route and the Metrorail stations are given below.

MAP OF GAUTRAIN ROUTE

[Source:www.johannesburg-airport.com]

Use the map of the Gautrain above to answer the questions that follow.

1.1.1 Identify the type of map shown above. (2)

1.1.2 Determine how many train routes to OR Tambo airport are shown on the map. (2)

1.1.3 Which direction is OR Tambo airport from Hatfield Metrorail. (2)

1.1.4 Determine the number of trains stops on the longest route. (2)

1.1.5 Which metro rail stations are on the direct route to OR Tambo airport (3)

1.2 An extract of the Weekday Gautrain timetable is shown in TABLE 1 below.

TABLE 1: WEEKDAY GAUTRAIN TIMETABLE

Peak period – 05:30 to 8:30			
Departure OR Tambo	**Arrival Rhodes Field**	**Arrival Marlboro**	**Arrival Sandton**
05:30	**05:32**	**05:39**	**05:43**
05:42	**05:44**	**05:51**	**05:55**
05:54	**05:56**	**06:03**	**06:07**
06:06	**06:08**	**06:15**	**06:19**

[Adapted source:www.searchnetworxbusiness.com]

Use the information in TABLE 1 above to answer the questions that follow.

1.2.1 Explain the term *peak period*. (2)

1.2.2 Identify the time format given in TABLE 1 above. (2)

1.2.3 Determine how often, in minutes, a train departs from OR Tambo airport. (2)

1.2.4 Determine the time taken to travel from Rhodesfield to Sandton. (3)

1.2.5 Convert the time from Question 1.2.4 to seconds. (2)

[22]

QUESTION 2

2.1 Distances from various cities in South Africa are shown below.

	George	Bloemfontein	Cape Town	Durban	East London	Grahamstown	Johannesburg	Kimberly	Ladysmith	Mafikeng	Port Elizabeth	Umtata	Welkom
Bloemfontein	773												
Cape Town	438	1004											
Durban	1319	634	1753										
East London	645	584	1079	674									
Grahamstown	465	601	899	854	180								
Johannesburg	1171	398	1402	578	982	999							
Kimberly	762	177	962	811	780	667	472						
Ladysmith	1183	410	1431	236	752	932	356	587					
Mafikeng	1203	464	1343	821	1048	1065	287	380	597				
Port Elizabeth	335	677	769	984	310	130	1075	743	1062	1548			
Umtata	880	570	1314	439	235	415	869	747	517	1003	545		
Welkom	926	153	1156	564	737	754	258	294	340	451	830	718	
Messina	1701	928	1932	1118	1512	1529	530	1002	894	808	1605	1403	788

[Source: http://pattayathailand.ru/]

Use the information above to answer the questions that follow.

2.1.1 Identify the type of chart shown above. (2)

2.1.2 The chart above shows the shortest distance between two cities. Name the type of road that would connect cities in different provinces. (2)

2.1.3 Name one advantage of using this type of road from Question 2.1.2 instead of a regional road. (2)

2.1.4 Determine the distance between Port Elizabeth and Cape Town. (2)

2.1.5 Determine the difference in the distance of a trip from Johannesburg to Cape Town compared from Durban to Cape Town. (3)

2.2 A map of South Africa is shown below.

[Source:https://en.wikipedia.org/]

Use the map above and the chart in Question 2.1 to answer the questions that follow.

2.2.1 Identify the type of scale shown on the map above. (2)

2.2.2 Measure the scale. Explain in words what the scale represents. (4)

2.2.3 Use the scale on the map to determine the actual distance from Pretoria to Cape Town in km. (4)

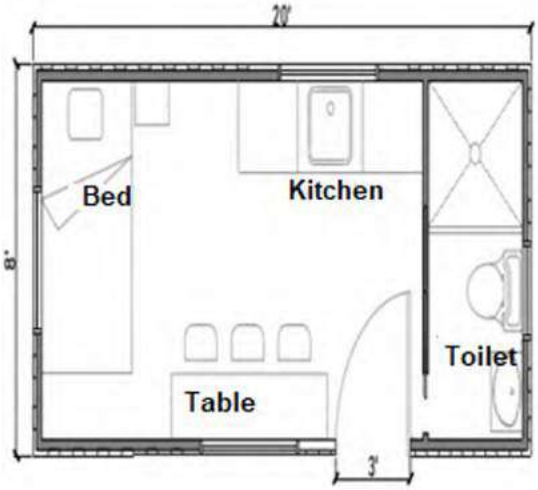
2.2.4 If a map is resized, identify the type of scale that is more accurate. Give a reason for your answer. (4)

[25]

QUESTION 3

3.1

Shipping containers can be used for housing and provides a cost-effective alternative to traditional houses.

Shipping Container	Floor Plan of a Container House
	
Dimensions of the container: Width = 8 feet Height = 8.5 feet Length = 20 feet	**Dimensions of the toilet**: Width = 3.9 feet Length = 7.4 feet

NOTE: 1 foot = 0.3048 metres

[Source: https://targetbox.ca/]

Use the image and floor plan above to answer the questions that follow

3.1.1 A statement was made that the living area, excluding the toilet. should be approximately $15m^2$.

Verify, using calculations if this statement is CORRECT.

You may use the formula:

Area = length × width (8)

3.1.2 The container must be painted. Calculate the surface area of the container (in m^2), excluding the underneath.

You may use the formula:

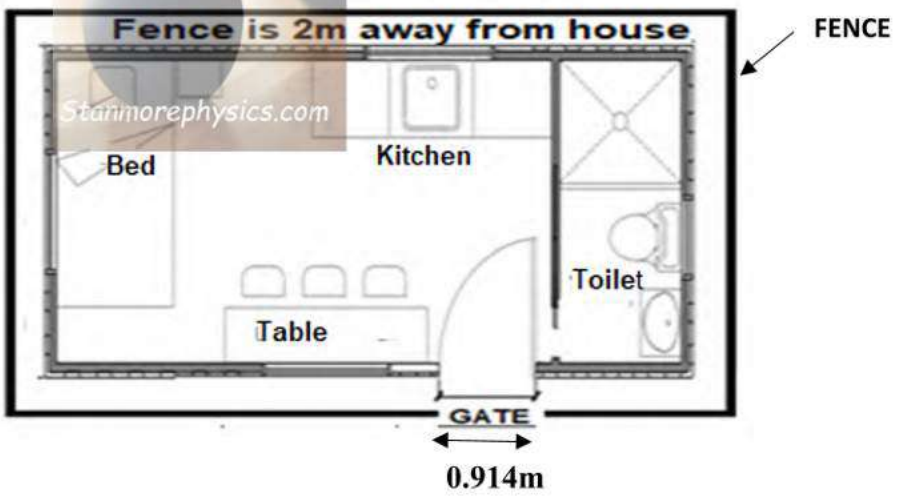
SA = 2(L×H)+ 2(W×H)+ 2(L×W) (4)

3.1.3 The contractor stated that he will buy 15 litres of paints.
The container needs two coats of paint. One litre of paint covers $8m^2$.

Verify, using calculations that quantity of paint that must be bought is CORRECT. (5)

3.2

A fence is installed around the container house. The fence is 2 metres away all-round the house. A gate, 0.914m wide, is used to gain access to the house.



NB: Drawing is not drawn to scale

Use the diagram above and the dimensions given in Question 3.1 to answer the questions that follow.

3.2.1 Verify, using calculations, if the total length of fencing required to fence the house is more than 30 metres.

You may use the formula:

Perimeter = 2 (L) + 2 (W) (5)

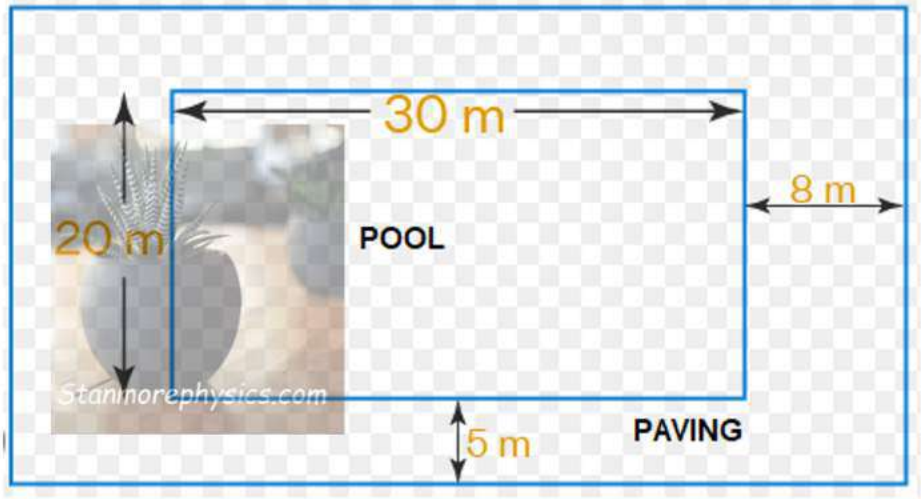
3.2.2 Fencing is sold in 3000 mm lengths. Determine the total number of fencing lengths that must be bought. (6)

3.2.3 Determine the length of the gate in yards, if 1m = 1,094yards. (2)

[30]

QUESTION 4

4.1 The diagram below shows a swimming pool that is surrounded by paving.



NOTE: $1m^3 = 1000$ litres

[Source:www. donut.com]

Use the information above to answer the questions that follow.

4.1.1 The capacity of the pool is 810 000 litres. Calculate the depth of the pool.

You may use the following formula:

Volume of a rectangular prism = l × b × h (5)

4.1.2 Determine the area of the paving around the pool.

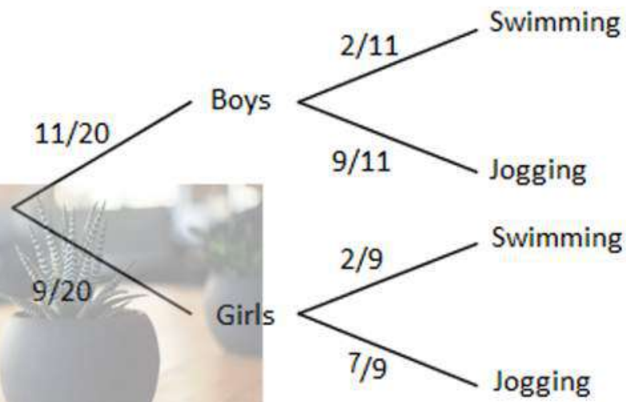
You may use the following formula:

Area = length × width (8)

.

4.1.3 Measure the length of the pool and determine the number scale used to draw the pool. (5)

4.2 The tree diagram below shows boys and girls who prefers swimming to jogging.



[Source:www.study.com]

Use the diagram above and answer the question that follows.

4.2.1 Determine the total number of boys and girls. (2)

4.2.2 Determine the probability, as a decimal, that a boy would prefer swimming. (3)

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TOTAL [100]

FINAL

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MARKING GUIDELINE

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Symbol	Explanation
M	Method
M/A	Method with Accuracy
CA	Consistent Accuracy
A	Accuracy (Answer)
AO	Answer only full marks
C	Conversion
S	Simplification
RT / RG / RM/RP	Reading from table / Reading from graph / Reading from map/Reading from plan
F	Choosing the correct formula
E	Explanation
D	Correct definition
SF	Substitution in formula
O	Opinion
J	Justification
P	Penalty e.g. for no units, incorrect rounding, etc
R	Rounding off / Reason

This marking guideline consists of 7 pages

QUESTION 1 [22 MARKS]			
Ques	**Solution**	**Explanation**	**T&L**
1.1.1	Rail map✓✓RM	2RM correct answer **Accept Route map** (2)	MP L1
1.1.2	1 route✓✓RM	2RM correct answer **Accept 3** (2)	MP L1
1.1.3	South East✓✓A	2A correct answer (2)	MP L1
1.1.4	8✓✓RM	2RM correct answer (2)	MP L1
1.1.5	Sandton✓✓, Marlboro ✓RM	3RM correct answer **Penalty for every incorrect answer** (3)	MP L1
1.2.1	Busy time in the morning /afternoon when most people are going to/from work or school ✓✓E	2E correct explanation (2)	M L1
1.2.2	24-hour time format ✓✓A	2A correct answer (2)	M L1
1.2.3	Every 12 minutes✓✓RM	2RM correct answer (2)	M L1
1.2.4	✓RT Time taken = 05:43 – 5:32✓M = 11 minutes✓CA	1RT correct reading from table 1M subtracting 1CA answer Accept any of the 4 times given from Rhodes Field to Sandton (3)	M L1
1.2.5	Time in seconds = 11 × 60✓C = 660 ✓CA	**CA from Q1.2.4** 1C multiply by 60 1CA answer (2)	
		[22]	

QUESTION 2 [25 MARKS]			
Ques	**Solution**	**Explanation**	**T&L**
2.1.1	Distance chart✓✓A	2A correct answer (2)	MP L1
2.1.2	National road✓✓E	2E correct type of road (2)	MP L1
2.1.3	Travel time is quicker✓✓O	2O opinion (2)	
2.1.4	769 km✓✓RM	2RM correct distance (2)	MP L3
2.1.5	✓RM Distance = 1 753 – 1 402✓MA = 351 km✓CA	1RM correct distance 1MA subtracting 1402 1CA answer (3)	MP L2
2.2.1	Bar/Line scale✓✓A	2A correct answer (2)	MP L2
2.2.2	1,9cm = 250km✓✓A 1,9 cm on the map represents 250 km in reality✓✓E	2A measuring bar Accept 1.8cm to 2cm 2E correct answer (4)	MP L2
2.2.3	Line scale: 1,9 cm: 250km ✓A ✓MCA Actual distance = (8,9cm × 250) ÷ 1,9✓MCA = 1 171,05 km✓CA	**CA from Q2.2.2** 1A correct distance 1MCA multiplying by 250 1MCA dividing by 1,9 1CA answer **Accept 8,8 to 9 cm NPR** (4)	MP L2
2.2.4	Line OR Bar scale✓✓A A bar or line scale is more accurate because it will change in proportion if a map is resized. ✓✓O	2A correct answer 2O explanation (4)	MP L2
		[25]	

QUESTION 3 [30 MARKS]			
Ques	**Solution**	**Explanation**	**T& L**
3.1.1	Length of the living area = 20feet - 3,9feet✓MA = 16,1feet✓A = 16,1 × 0,3048✓C = 4,90728m✓CA	1MA subtracting 3,9 feet 1A correct answer 1C conversion 1 CA correct length	M L4
	Width of the living area = 8 ×0,3048m = 2,4384 m✓CA	1CA correct width	
	Living area = 4,90728m ×2,4384 m✓SF	1SF correct substitution	
	= 11,96591155m^2✓CA	1CA correct area	
	Statement is INCORRECT✓O	1O explanation	
	OR	**OR**	
	Width of the container = 8 ×0,3048m✓C = 2,4384 m✓A	1C conversion 1A correct answer	
	Length of the container = 20 ×0,3048m = 6,096 m		
	Width of the toilet = 3,9 ×0,3048m = 1,18872 m		
	Area of container = 6,096 × 2,4384 m✓SF = 14,8644864 m^2✓CA	1SF correct substitution 1 CA correct area	
	Area of toilet = 2,4384 m × 1,18872 m = 2,898574848 m^2✓CA	1CA correct area	
	Living area = 14,8644864 m^2 - 2,898574848 m^2✓MCA = 11,96591155m^2✓CA	1 MCA subtracting 1CA correct area	
	Statement is INCORRECT✓O	1O explanation (8)	

3.1.2	Height = 8.5 × 0.3048m✓C = 2.5908 m ✓SF SA = 2(6,096 × 2,5908) + 2(2,4384× 2,5908) + (6,096 × 2,4384) ✓MA = 59,08633344 m^2✓CA	1C multiplying by 0.3048 1SF substitution 1MA excluding the underneath 1CA answer (4)	M L3
3.1.3	Total area = 59,08633344 × 2✓MA =118,17266m^2✓CA Litres of paint = 118,17266 ÷ 8✓MCA = 14.77✓CA = 15 Statement is CORRECT ✓J **OR** Total area = 59,08633344÷ 8 ✓MCA = 7,38579168m^2✓CA Litres of paint = 7,38579168m^2 × 2 ✓MA = 14.77✓CA = 15 Statement is CORRECT ✓J	1MA multiplying by 2 1CA answer 1MCA dividing by 8 1CA answer 1J Justification **OR** 1MCA dividing by 8 1CA correct answer 1MA multiplying by 2 1CA answer 1J Justification (5)	MP L4

3.2.1	✓SF ✓MCA ✓MCA Perimeter = 2 (6,096 + 4) + 2(2,4384 + 4) – 0.914✓M = 32.1548 m Statement is CORRECT✓O	1SF substitution 1MCA adding 4 to length 1MCA adding 4 to width 1M subtracting gate 1O explanation (5)	M L4
3.2.2	Metres = $\frac{3000}{1000}$✓ C = 3m✓A Number of lengths = 32. 1548 ÷ 3✓MCA = 10.72 = 11 ✓CA	**CA from Q3.2.1** 1C convert to metres 1A correct answer 1MCA dividing by 3 1CA answer (4)	M L2
3.2.3	Length in cm = 0,914 × 1,094✓MA = 1 yard✓A	1MA multiplying by 1,094 1A correct answer (2)	M L2
		[30]	

QUESTION 4 [23 MARKS]

Ques	Solution	Explanation	T &L
4.1.1	Conversion = 810 000 ÷ 1000✓C = 810 m^3✓A 810 m^3 = 30 × 20 × h✓SF 810 ÷ (30 × 20) = height ✓M Height = 1.35m✓CA	1C dividing by 1000 1A correct answer 1SF substitution 1M changing the subject of the formula 1CA answer (5)	M L3
4.1.2	✓MA ✓MA Total area = (30+8+8) × (20+5+5) ✓SF = 1 380m^2✓A Area of the pool = 20×30✓SF = 600m^2✓A Area of paving = 1 380 – 600✓MCA = 780 m^2✓CA	1SF substitution 1MA adding 16 to length 1MA adding 10 to the width 1A correct answer 1SF substitution 1A correct answer 1MCA subtracting area 1CA answer (8)	M L3
4.1.3	✓A 7,4cm: 30m✓M 7,4 cm :3000cm✓C 1cm : 405,41cm ✓S 1: 405✓CA	1A measuring length 1M concept of scale 1C convert to cm 1S simplification 1CA correct answer **Accept 7,3 to 7,5 cm** **NPR** (5)	MP L2
4.2.1	Total = 9+11✓MA = 20 learners✓A	1MA adding correct values 1A correct answer **AO** (2)	P L2
4.2.2	Probability = $\frac{2\checkmark A}{11\checkmark A}$ = 0.18✓CA	1A correct numerator 1A correct denominator 1CA answer (3)	P L2
		[23]	
		TOTAL MARKS [100]	