education

Department of
Education
FREE STATE PROVINCE

NOVEMBER EXAMINATION 2022

GRADE 11

MATHEMATICAL LITERACY

PAPER 2

MARKS: 100

TIME: 2 HOURS

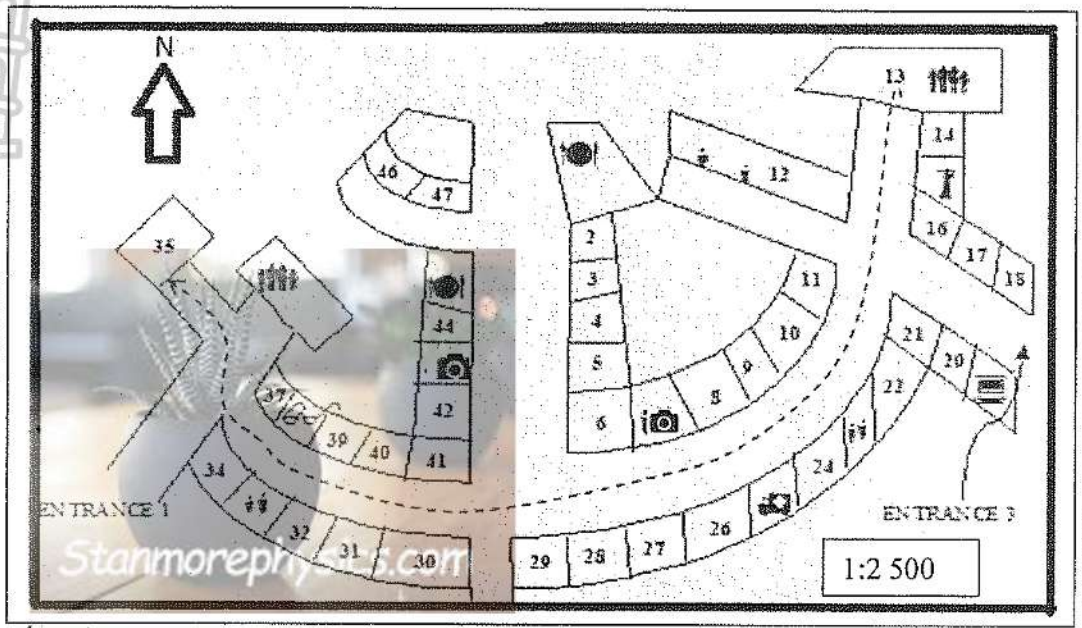
This question paper consists of 13 pages including 4 ANNEXURES.

INSTRUCTIONS AND INFORMATION

1. This question paper consists of FOUR questions. Answer ALL the questions.
2. Use the ANNEXURES to answer the following questions:
   - ANNEXURE A to answer question 2.1.
   - ANNEXURE B to answer question 2.2.
   - ANNEXURE C to answer question 3.
   - ANNEXURE D to answer question 4.
3. Number the questions correctly according to the numbering system used in this question paper.
4. An approved calculator (non-programmable and non-graphical) may be used 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. Start EACH question on a NEW page.
9. Write neatly and legibly.

QUESTION 1

1.1 The layout of the Mankinki mall is shown below:



KEY			
	Restaurant		Sports shop
	Camera shop		Optometrist
	Electrical appliances shop		Family clothing shop
	Pharmacy		Toilets

Use the layout plan above to answer the questions that follow.

1.1.1 What is the number of the optometrist shop? (2)

1.1.2 How many restaurants are there in the mall? (2)

1.1.3 What is the probability of finding a pharmacy out of all the shops in the mall? Give your answer as a common fraction. (2)

1.1.4 What does the shop sell which is directly North of shop nr. 27? (2)

1.1.5 Which one of the following statements is true:

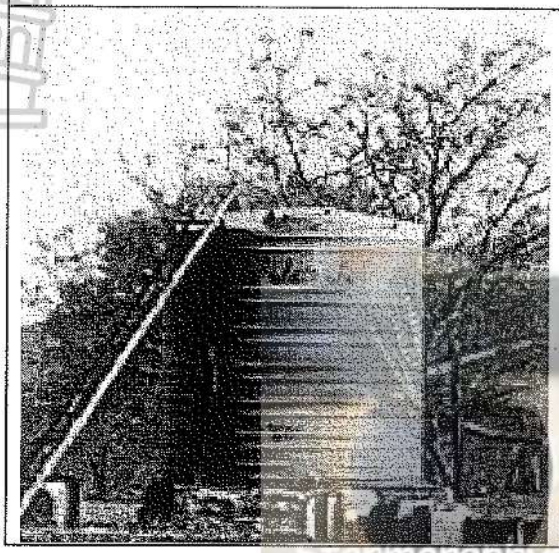
A: Every 1 cm on the layout plan is 2 500 m in real life.

B. The layout plan is 2 500 times bigger than real life.

C. The layout plan is 2 500 times smaller than real life.

(2)

1.2 The community in the Mangaung municipality is experiencing a water crisis. The municipality decided to install Jojo tanks in each street to assist the community.

PICTURE OF JOJO	DIMENSIONS OF JOJO TENK
	Capacity = 5 250ℓ Height = 226 cm Diameter = 182 cm

The price of one Jojo tank is R5 399,99.

[Source: www.businesslive.co.za]

Use the information above and answer the following questions.

1.2.1 Define the concept *volume* in the context of the question. (2)

1.2.2 Convert the capacity of the Jojo tank to mℓ. (2)

1.2.3 Calculate the radius of the tank in cm. (2)

1.2.4 How much will 150 Jojo tanks cost? (2)

1.2.5 The community can choose between a green or brown Jojo tank. The municipality puts the tanks on a stand made of steel which can either be painted red, blue or green. Out of how many options can the community choose when they select a Jojo and a stand from the municipality? (2)

[20]

QUESTION 2

2.1 The route map showing the route between Johannesburg and Durban in ANNEXURE A is given.

Use ANNEXURE A to answer the following questions:

2.1.1 Write down the national roads shown on the map. (2)

2.1.2 What is the probability of finding a regional (provincial) road out of all the roads on the map? Give your answer as a decimal number rounded to three decimal places. (3)

2.1.3 Identify the towns on the route between Newcastle and Heidelberg when regional (provincial) roads are used. (4)

2.1.4 If a person travels from Harrismith to Cape Town, through which province will the person travel according to the route map? (2)

2.1.5 Mr. Joseph works in Johannesburg but travels regularly to Durban for business. Instead of taking the N3 directly to Durban, Mr Joseph decides to take another route. Describe the route. (4)

2.1.6 Give one reason why Mr. Joseph would travel the route with a longer distance than the route with the shorter distance. (2)

2.2 Mr. Joseph travels regularly from Johannesburg to sell TV stands which he makes. The parts of the TV stands are packed in boxes to be assembled when needed. The assembled TV stand will look as follows:

The assembly diagram with pictures in mixed order, is shown in ANNEXURE B.

Use **ANNEXURE B** to answer the questions the following questions.

2.2.1 Rearrange the pictures in ANNEXURE B in the correct order so that the final product will look like the TV stand shown in the picture above. Just write 1, 2, 3, 4, 5 in your answer book and the corresponding letter A, B, … to indicate where it will fit into the sequence. (5)

2.2.2 Give one reason why the parts of the TV stands are packed in boxes and only assembled when needed. (2)

[24]

QUESTION 3

3.1 Below is a photo of the soccer field of Louw Wepner Combined school, situated in the south-eastern side of Free State. The lines of the soccer field are marked based on the minimum measurements.

In ANNEXURE C the layout of the soccer field is shown, and dimensions are given.

The following formulae may be used in calculations:

Area of Rectangle = length × width

Circumference of circle = 3,142 × diameter

Use the information given above as well as ANNEXURE C and answer the following questions.

3.1.1 Define the term *area* in the given context. (2)

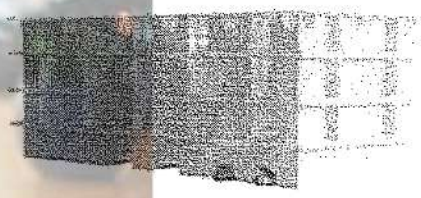
3.1.2 Write down the ratio of the maximum length of the soccer field to the minimum length of the soccer field in simplified form. (3)

3.1.3 Determine the area of the soccer field in m^2 if the minimum dimensions are used. (3)

3.1.4 A learner comment that the value of **K**, the distance from the side of the field to the edge of the penalty area, is 2,35metres. Show how this value was calculated. (4)

3.1.5 Some of the lines on the field is not very visible anymore and the school wants to repaint those lines. The lines are the following: Halfway line, the outer border of the centre circle and the outer border of the quarter circles of the corner areas. Calculate the total length of the lines that must be repainted. Give your answer to the nearest meter. (7)

3.2 The school relies mainly on rains for the lawn of the soccerfield to remain green. The diagrams below show different shapes of the tanks that the school can choose from to store rainwater.

TANK A	TANK B
	
Diameter = 2200mm **Height =3m**	**Length = 3m** **Width = 1,5m** **Height = 2m**

The following formulae may be used in calculations:

Volume of the Cylinder = $\pi \times$ radius$^2 \times$ height
Volume of the Rectangle = length $\times$ width $\times$ height
$\pi = 3,142$
$1\text{m}^3 = 1000\ell$

Use the information above to answer the following questions:

3.2.1 The principal advised that the school should buy a tank that has a capacity of more than 10 000litres. Mr. Matete, a teacher at the school indicates to the principal that tank A will fulfil the requirement set by the principal. Is Matete correct? Do calculations to verify your answer. (7)

3.2.2 Why is it generally a good idea to have a tank filled with water at any school? (2)

3.2.3 If tank A is full to a capacity of 50%, how high will the water be in the tank? (2)

[30]

QUESTION 4

The Naidoo family lives in Pietermaritzburg and wish to go for the holidays to Johannesburg. The total distance between Pietermaritzburg and Johannesburg is 600km. The map of South Africa with neighbouring countries and main roads are shown in ANNEXURE D.

Use the information on ANNEXURE D to answer the following questions:

4.1 In which general direction is Pietermaritzburg from Johannesburg? (2)

4.2 Name the provinces through which the family will travel from Pietermaritzburg to Johannesburg if they use the N3. (3)

4.3 Use the scale on the map to determine the distance from Harrismith to Johannesburg. (4)

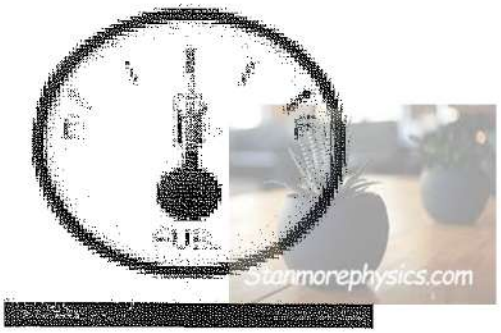
4.4 Mr. Naidoo was driving the car in which the family travelled. He drove at an average speed of 110 km/h. The family stopped twice on the way to Johannesburg. Once to eat breakfast for 45 min and once to stretch their legs for 20 min. Mr. Naidoo says that if they departed at 08:15 they will arrive in Johannesburg at 14:30. Is Mr. Naidoo correct? Do calculations to verify your answer.

You might use the following formula: **DISTANCE = SPEED × TIME** (7)

4.5 The family left Pietermaritzburg with a full tank of petrol. The fuel consumption of the car is 12km/ℓ. After they travelled 360 km they stopped at a petrol station to refuel at a cost of R768.

The capacity of the tank is 60 litres and the cost of fuel is R25,60 per litre.

Just before refuelling, the fuel gauge looked as follows:



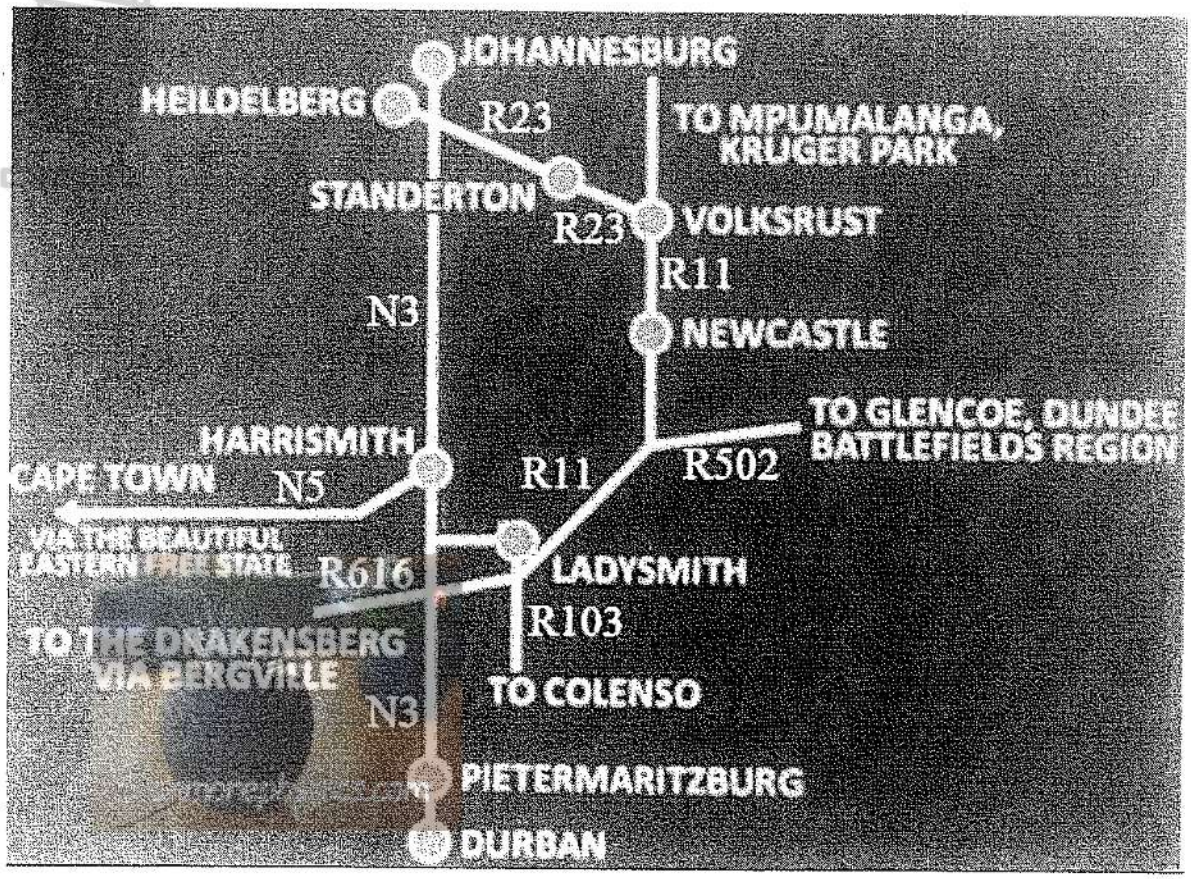
. Verify, showing ALL calculations, whether the fuel gauge was working properly. (6)

4.6 After their visit in Johannesburg, the family decides to return via Bloemfontein to Durban. What is the name of the national roads that go through Bloemfontein? (4)

[26]

ANNEXURE A

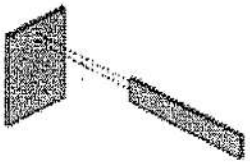
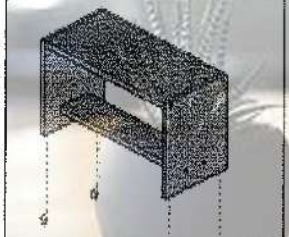
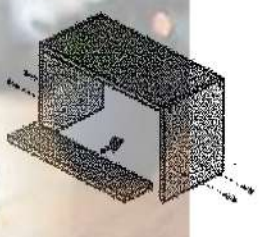
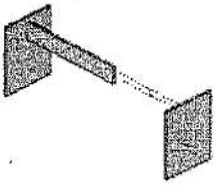
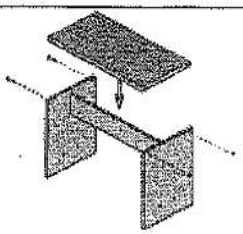
Question 2.1



ANNEXURE B

QUESTION 2.2

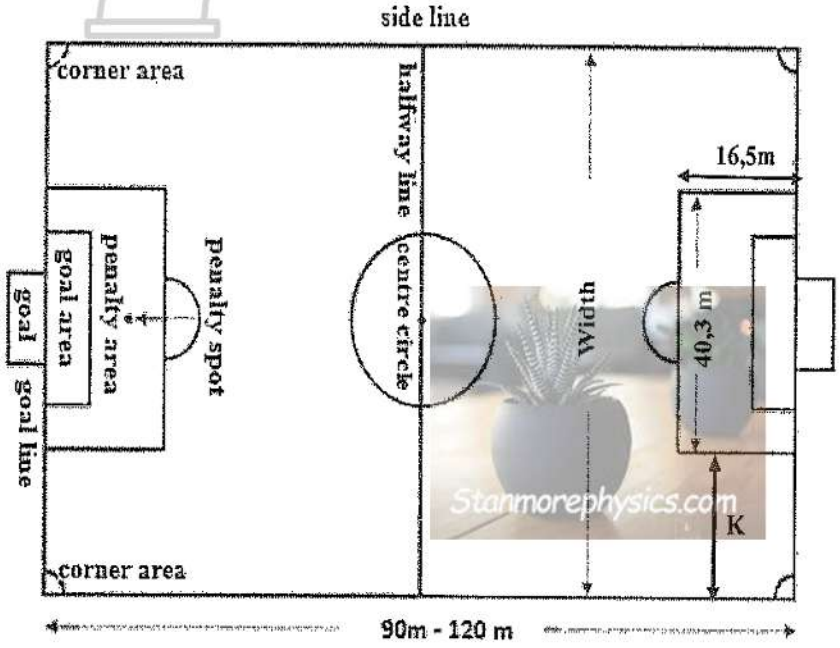
ASSEMBLY OF TV STAND

A	B	C	D	E
				

[Source: https://graphics.stanford.edu/]

ANNEXURE C

Question 3



Information:

Radius of the centre circle: 9,15 m

Width of the soccer field: 45m – 90 m

Radius of $\frac{1}{4}$ circles of corner areas: 1 m

ANNEXURE D

Question 4