NATIONAL
SENIOR CERTIFICATE

GRADE 12

SEPTEMBER 2022

MATHEMATICAL LITERACY P2

MARKS: 150

TIME: 3 hours

This question paper consists of 12 pages and an addendum with 2 annexures.

INSTRUCTIONS AND INFORMATION

1.   This question paper consists of FIVE questions.

2.   Use the ANNEXURES in the ADDENDUM to answer the following questions:

- ANNEXURE A for QUESTION 2.1 and 2.2
- ANNEXURE B for QUESTION 4.1

3.   Answer ALL the questions.

4.   Number the questions correctly according to the numbering system used in this question paper.

5.   Diagrams and maps are NOT necessarily drawn to scale.

6.   Round off ALL the final answers appropriately according to the context used, unless stated otherwise.

7.   Indicate units of measurement, where applicable.

8.   Start EACH question on a NEW page.

9.   Show ALL calculations clearly.

10.   Write neatly and legibly.

QUESTION 1

1.1

Mrs Bester sells 450 g packs of rusks at R49,50 per pack.

The table below shows the main ingredients of the rusks.

TABLE 1: MAIN INGREDIENTS TO BAKE 5 000 g OF RUSKS

Ingredients	Quantities
Self-rising flour	1,56 kg
Bran flour	6,25 cups
Raisins	125 g
Butter	625 g
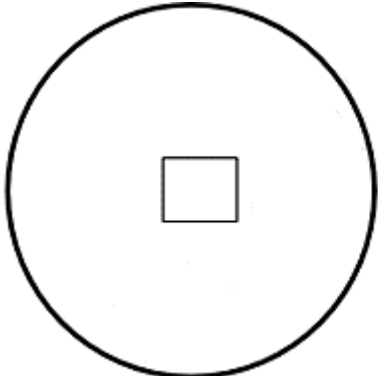
NOTE: A rusk is a hard, dry biscuit or twice baked bread.

[Adapted from www.food24.com/Recipes-and-Menus/ South-African-Recipes]

Use the information above to answer the questions that follow.

1.1.1   Convert 1,56 kilogram (kg) to gram (g).   (2)

1.1.2   Write in simplified ratio form, the mass of raisins to mass of butter.   (2)

1.1.3   Calculate the number of cups of bran flour needed if Mrs Bester bakes 8 kg
        of rusks.   (3)

1.1.4   Calculate the mass of raisins needed to bake a 450 g pack of rusks.   (3)

1.2 Below is a coin that has a square hole in its centre.

PICTURE OF A COIN WITH A HOLE IN THE MIDDLE	DIAGRAM OF THE TOP SURFACE OF THE COIN
	Diameter of circular coin = 32 mm

NOTE:
- The square hole has an area of 0,9025 cm²
- The circular coin has an area of 8,04 cm^2
- The weight of the coin (mass of the coin) is 28,25 g

[Source: www.pinterest.com and www.bin.com]

Use the information above and answer the questions that follow.

1.2.1 Define the term '*diameter*' regarding the diagram of the top surface of the coin. (2)

1.2.2 Calculate the difference between the area of the circular coin and the square hole area in mm^2. (4)

1.2.3 Write the square hole area of the coin as a percentage of the circular coin area in the diagram shown above. (2)

1.2.4 Express the weight of the coin in kg. (2)

1.2.5 Calculate the radius of the coin in mm. (2)

1.2.6 Calculate the total weight of 15 coins in grams. (2)

1.2.7 Write down the exact time (in hours and minutes) if it was bought at 11:15 and sold 4 hours and 50 minutes later. (3)

1.3   The diagram below shows the top view of a vegetable garden. The perimeter of the vegetable garden is 8,9 m.

VEGETABLE GARDEN

A = 1 m

B = 2,7 m   E = 1,70 m

C
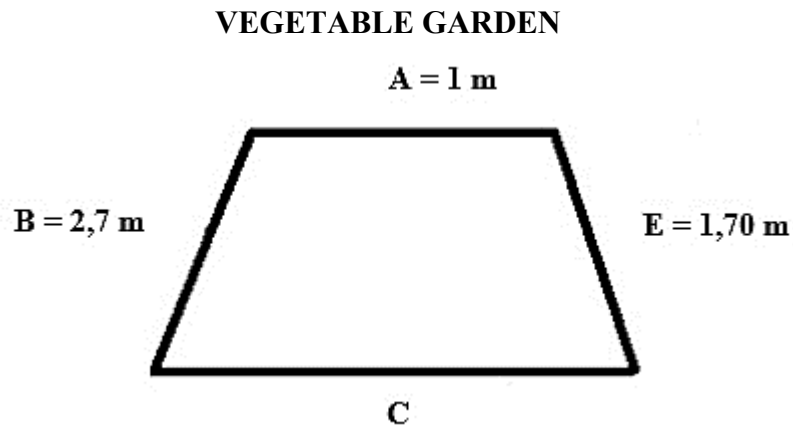
NOTE: The drawing is not drawn to scale.

[Adapted from https://www.topperlearning.com]

Use the above information to answer the questions that follow.

1.3.1   Explain what it means when a drawing is not drawn to scale.   (2)

1.3.2   Calculate the length of side **C**.   (2)

[31]

QUESTION 2

2.1 | A couple from Netherland decided to have a three-day vacation at the Mapungubwe National Park in the Republic of South Africa.

ANNEXURE A contains a map that they used to get to the Mapungubwe National Park.

Use ANNEXURE A to answer the questions that follow.

| 2.1.1 | Give the grid reference of the Vhembe Trails Camp. | (2) |

| 2.1.2 | Identify the provincial road between Musina and the Mapungubwe National Park. | (2) |

| 2.1.3 | Name the national road on the map. | (2) |

| 2.1.4 | In which general direction is Pointdrift from Pretoria? | (2) |

| 2.1.5 | Describe using towns and/or route numbers as references, TWO possible routes from Pretoria to Mapungubwe National Park. | (6) |

2.2 | South African friends of the Netherlands couple departed from Pretoria at 04h30 am to spend the holiday with them. Their journey is described as follows:

- On their way from Polokwane they took the turn-off to the R521 route
- Rest for 45 minutes at Dendron and
- took 15 minutes to do some shopping and fill up the car's fuel tank at Alldays.

2.2.1	If the scale of the map is given as 1 : 3 000 000 and the distance measured on the map between Beitbridge and Musina is 1,3 cm.
	Calculate (in km) the actual distance between Beitbridge and Musina.	(3)

| 2.2.2 | Determine, showing ALL calculations, the distance from Pretoria to Mapungubwe National Park as it appears on the map. | (2) |

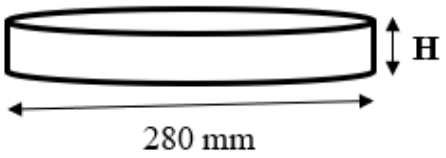| 2.2.3 | The South African friends travelled at an average speed of 120 km/h between Pretoria and Mapungubwe National Park aiming to arrive at 10:00 am. Also considering ALL stoppages, show with calculations whether they will make it at this aimed time. |
| | | |
| | You may use the following formula: **Distance = Average Speed × Time** | (8) |

2.2.4	The petrol consumption of the car is 0,79 litres per 10 km.
	(a)	Determine the total litres of fuel to be used between Pretoria and Mapungubwe National Park.	(4)
	(b)	Calculate the cost of petrol to drive from Pretoria to the Mapungubwe National Park. The petrol price is R23,90 per litre.	(2)

[33]

QUESTION 3

3.1 | Miss Bagley's son owns a small bakery. She uses a cylindrical baking pan as shown below.

PICTURE OF A BAKING PAN	**DIMENSIONS OF A BAKING PAN**

Other information:
- A cylindrical baking pan has a 3 079,16 cm³ capacity
- The oven must be preheated to 430 °F before placing the baking pans

[Source: www.google.com]

Use the information above to answer the following questions.

3.1.1 Calculate (in cm) the circumference of the cylindrical baking pan.

Use the formula: **Circumference of circle = 2 × 3,142 × radius**   (3)

3.1.2 Determine (in cm) the height of the cylindrical baking pan.

You may use the formula:
Volume of a cylindrical baking pan = 3,142 × (radius)² × height   (5)

3.1.3 Convert 430 °F to degrees (°C).

Use the formula: **°C = (°F − 32) ÷ 1,8**   (3)

3.2 | Miss Bagley is concerned about the amount of sugar intake she consumes. She reads an article on the internet about the amount of sugar contained in some drinks.

TABLE 2 below shows the sugar content per volume of some drinks.

TABLE 2: SUGAR CONTENT PER VOLUME OF SOME DRINKS

NAME OF DRINK	VOLUME (IN mℓ)	NUMBER OF GRAMS OF SUGAR PER mℓ	NUMBER OF CALORIES
Energade	500	20 g	80
Vitamin water	500	5,5 g	90,9
Monster	500	57,3 g	**A**
Dry Lemon	330	**B**	169,2
Coca-Cola	330	35 g	140
Orange juice	240	21,1 g	-

NOTE: 1 g of sugar   = 4 calories
       1 teaspoon sugar = 4 g

[Adapted from www.mobilefatsecret.com]

Use the information above to answer the questions that follow.

3.2.1   Calculate the missing values **A** and **B**.   (4)

3.2.2   Determine the total amount of sugar (in grams) that will be consumed by Miss Bagley if she drinks THREE cans of Monster per week.   (2)

3.2.3   Miss Bagley decided to be more health conscious and changed her drinks to:

- TWO 500 mℓ vitamin water per day
- ONE 500 mℓ Energade per week

Verify, by show of calculation, whether her sugar intake per week is now 56,4% of the previous intake.   (6)

3.2.4   Calculate the total mass of sugar (in kilograms) that will be consumed by ONE person in ONE year by drinking TWO 330 mℓ cans of Coca-Cola daily.   (4)

3.2.5   Suggest TWO ways on how Miss Bagley can reduce her sugar intake.   (4)

                                                    [31]

QUESTION 4

4.1 | Mrs Arison has a floor plan with dimensions in *feet* and *inches* for a house she intends to build.
Refer to **ANNEXURE B** which shows an image of the floor plan of this house.

Use ANNEXURE B to answer the questions that follow.

4.1.1   The plan for the house is an open kitchen living room plan. Explain the meaning of this concept '*open kitchen living room plan*' using the information in the plan. (2)

4.1.2   Name TWO bathrooms that are adjacent (i.e. share a back wall) to each other. (2)

4.1.3   In which general direction do bedrooms 3 and 4 windows face? (2)

4.1.4   Determine the number of doors shown on this floor plan. (2)

4.2 | Mrs Arison needs to convert the measurements of the plan to metres since she will be building the house in South Africa.

     NOTE: 1 foot (**"**) = 30,48 cm
              1 inch (**'**) = 0,0254 m

     Dimensions:

Bedroom no.	Length	Width
2	14 feet 5 inches	10 feet 9 inches
4	12 feet 2 inches	10 feet 3 inches

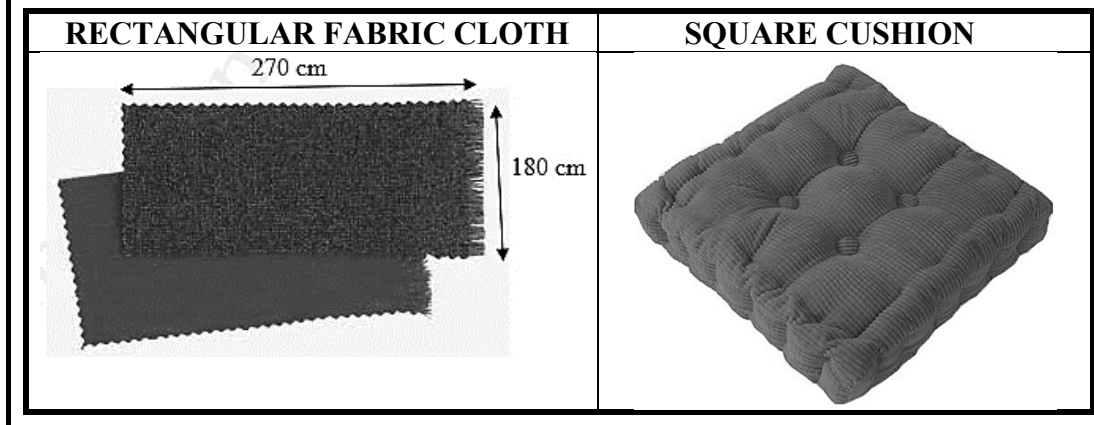Use the information above to answer the questions that follow.

4.2.1   Use the measurements given to calculate the total length of bedroom 2 and bedroom 4 in metres. (6)

4.2.2   Ceilings of bedroom 2 needs to be painted with one coat of paint. Mrs Arison states that one 2,5 litre tin of paint will be enough for painting bedroom 2. The spread rate of paint is 6 m^2 per litre.

         Verify, by showing ALL calculations, whether Mrs Arison is CORRECT.

         You may use the formula: **Area of rectangle = Length × Width** (8)

4.3   Mrs Arison needs to redecorate her living room. She bought a piece of fabric (material) that is 180 cm wide and 270 cm long. She wants to cut the piece of fabric into squares to make cushions. She uses lace to decorate right round the cushions.

RECTANGULAR FABRIC CLOTH	SQUARE CUSHION
270 cm 180 cm	

Use the information above to answer the following questions.

4.3.1   The top of the square shaped cushions has an area of 2 025 cm². Mrs Arison states that the total length of the lace needed for one cushion's top or face is less than 2 m. Prove, with the necessary calculations, if her statement is valid.

You may use the following formula:

Area of a square $=$ Side²
Perimeter of a square $=$ Side $\times$ 4   (6)

4.3.2   Determine the number of cushions Mrs Arison will be able to cut from the piece of fabric cloth. Show ALL calculations.   (6)

[34]

QUESTION 5

5.1 | A customer plans to buy the 2021 ISUZU SUV that is advertised at a reputable car dealership company. The salesman said to the customer that the company stocks a variety of colours for this SUV.

Currently in stock are:

- 6 black
- 5 metallic grey
- 4 metallic blue
- 3 red and
- 2 white

Below is a photo showing the 2021 ISUZU SUV that arrived in South Africa.
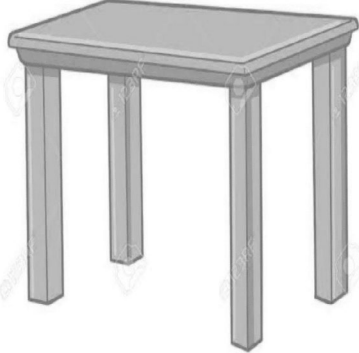

[Source: https://www.carsguide.com.aumu-x]

Use the information above to answer the questions that follow.

5.1.1 The customer has a garage at home with a width of 3,5 m. He claims that when the car is parked exactly in the middle of the garage, there will be an empty space of more than 0,82 m on each side of the car. With calculations, prove if his claim is valid or not. (5)

5.1.2 The customer randomly picks a metallic grey SUV as his favourite choice. Calculate the probability (as a decimal) of choosing a metallic grey SUV. (3)

5.1.3 Show that the probability as a percentage of selecting a non-metallic paint ISUZU SUV, is less than 56%. (4)

5.2   A company built a three-dimensional (3D) model of the Isuzu MU-X to be used as a toy car displayed on a table. A scale of 1 : 8 is used in the models.

3D model of Isuzu MU-X	Table used for the scale model

NOTE:
The actual dimensions of the Isuzu MU-X model are:

- **Length** = 482,5 cm
- **Width** = 186 cm
- **Height** = 186 cm

Furthermore, the 3D scale model of the Isuzu MU-X car:
- Must fit on a square tabletop
- The area of the table is 3 716,1216 cm^2
- Only 35% of the tabletop area must be used for the scale model

Verify, by showing ALL calculations, whether a scale of 1 : 8 will be suitable for the scaled model.   (9)

[21]

TOTAL: 150