basic education

Department:
Basic Education
REPUBLIC OF SOUTH AFRICA

SENIOR CERTIFICATE EXAMINATIONS/ NATIONAL SENIOR CERTIFICATE EXAMINATIONS

MATHEMATICAL LITERACY P2

MAY/JUNE 2025

MARKS: 150

TIME: 3 hours

This question paper consists of 14 pages and a 17-page SPECIAL ANSWER BOOK.

INSTRUCTIONS AND INFORMATION

1. This question paper consists of FIVE questions.
2. Answer ALL the questions in the SPECIAL ANSWER BOOK provided.
3. You may use an approved calculator (non-programmable and non-graphical), unless stated otherwise.
4. Show ALL calculations clearly.
5. Round off ALL final answers appropriately according to the given context, unless stated otherwise.
6. Indicate units of measurement, where applicable.
7. Diagrams are NOT necessarily drawn to scale, unless stated otherwise.
8. Write neatly and legibly.

QUESTION 1

1.1 TABLE 1 below shows a list of Mathematical Literacy terms or concepts in COLUMN A with descriptions in COLUMN B.

Choose a description from COLUMN B that matches the term or concept in COLUMN A. Write only the letter (A–I) next to the question numbers (1.1.1 to 1.1.4) in the ANSWER BOOK, e.g. 1.1.5 J.

TABLE 1: MATHEMATICAL LITERACY TERMS OR CONCEPTS WITH DESCRIPTIONS

COLUMN A		COLUMN B	
1.1.1	Ratio scale	A	1 000
1.1.2	Grams in one ton	B	1 000 000
1.1.3	Surface area of a cylinder	C	1 000 000 000
1.1.4	Floor plan	D	plan that shows how items are arranged in a certain space
		E	bar scale
		F	$2 \times \pi \times \text{radius}^2 \times \text{height}$
		G	plan that shows the layout of a building, as seen from above
		H	$2 \times \pi \times \text{radius}^2 + 2 \times \pi \times \text{radius} \times \text{height}$
		I	number scale

(4 x 2) (8)

1.2 In each of the statements below, choose the correct word(s) from those given in brackets to make the statement TRUE. Write only the word(s) next to the question numbers (1.2.1 to 1.2.4) in the ANSWER BOOK.

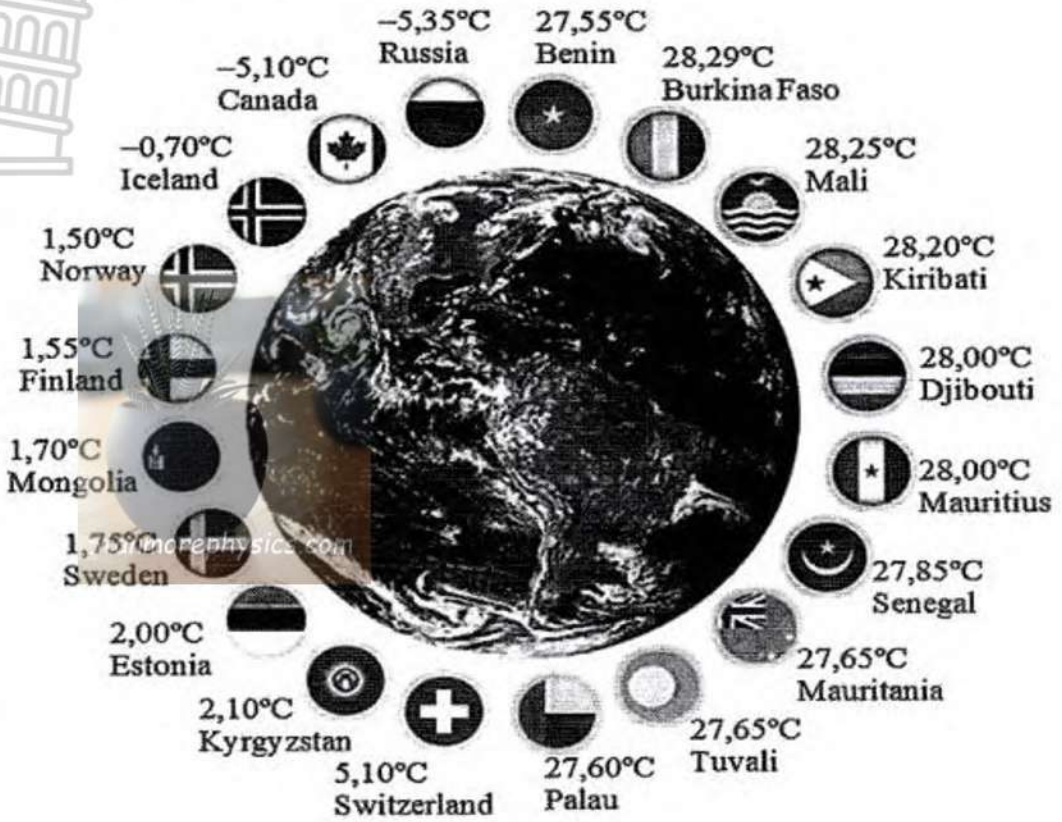
1.2.1 A probability is always (less than/greater than) or equal to one. (2)

1.2.2 When calculating the amount of medicine to administer to a toddler, we round (up/down) the decimal answer, in millilitres. (2)

1.2.3 A flow rate of 12,5 litres/hour is equal to 25 litres in (two/three) hours. (2)

1.2.4 An elevation plan of a building is a (2D/3D) representation of the building. (2)

1.3 The picture below shows the 10 hottest and the 10 coldest countries in the world, based on their average temperature over time.



[Source: www.reddit.com]

Use the information above to answer the questions that follow.

1.3.1 Write down the average temperature in Sweden. (2)

1.3.2 Name the third hottest country. (2)

1.3.3 Round off Russia's average temperature to the nearest °C. (2)

1.3.4 Calculate the difference between the average temperatures of Senegal and Iceland. (3)

1.3.5 Write down the names of ALL the countries that have the exact same temperatures. (3)
[28]

QUESTION 2

2.1 ANNEXURE A in the ANSWER BOOK shows the layout plan of a supermarket with various labelled sections to assist customers. Clive went to this supermarket to do some shopping.

Use ANNEXURE A to answer the questions that follow.

2.1.1 Clive followed the directions below to buy an item from this supermarket.

- Enter the supermarket and immediately turn right.
- Walk past the magazine section and then turn left.
- Continue straight ahead until you come to the end of the aisle.
- The item will be in the section on your right.

Name the type of product Clive bought. (2)

2.1.2 Describe the location of the pet care section. (2)

2.1.3 Name the section where you will find milk and yoghurt. (2)

2.1.4 Choose the correct word from those given in brackets to make the following statement TRUE:

The customer flow of the supermarket, as displayed in the layout plan, is (clockwise/anti-clockwise). (2)

2.1.5 Give ONE positive impact that a properly labelled section and an attractive set-up in a supermarket will have on a customer. (2)

2.1.6 Give ONE possible reason why the cool drinks, butchery, dairy and cheese sections are located against the back wall of the supermarket. (2)

2.1.7 Give a possible name for the symbol  in the layout plan. (2)

2.2 For his Mathematical Literacy project, Clive needed to record the gender of customers, and the most popular colour of outfits customers wore as they entered the supermarket. He recorded the gender of the customers and the colours of the outfits in TABLE 2 below. **(NOTE:** Some values have been omitted.)

TABLE 2: GENDER OF CUSTOMERS AND COLOUR OF OUTFIT

	BLACK	RED	BLUE	GREEN	BROWN	YELLOW	TOTAL
Female	**a**	31	10	16	9	4	**c**
Male	25	7	**b**	13	9	2	68
TOTAL	43	38	22	29	18	6	**d**

Use TABLE 2 above to answer the questions that follow.

2.2.1 Calculate the missing values **a**, **b**, **c** and **d**. (4)

2.2.2 Determine the probability of randomly selecting a female from the people wearing green outfits. (2)

2.2.3 Clive wrote down the following probability as a possible outcome:

$$\text{P(outcome)} = \frac{25}{68}$$

Give the gender and the colour of the outfit represented by this probability. (3)
[23]

QUESTION 3

3.1 A garden landscaper is helping Mrs Mbele to plan a garden behind her house. There will be paving bricks laid between the house and the garden. The front of the garden will have the house as one of its boundaries, while the rest of the outer boundaries of the garden will have wire fencing.

ANNEXURE B in the ANSWER BOOK shows the plan for the proposed garden and its features.

Use ANNEXURE B and the information above to answer the questions that follow.

3.1.1 Calculate the total length of the wire fencing needed to fence the outer boundaries of the garden, including the paved area. (3)

3.1.2 The circular fishpond **(A)** has a diameter of 120 cm and a depth of 0,5 m.

(a) Calculate, in cm^3, the volume of the fishpond.

Use the formula:

Volume of the cylinder = 3,142 × radius² × depth (4)

(b) Surrounding the circumference of the fishpond is a row of paving bricks. Each paving brick is 20 cm long.

Determine the circumference of the paved outer edging of the fishpond.

Use the formula:

Circumference of a circle = 3,142 × diameter (3)

3.1.3 The rectangular paved area (**C** on the plan) between the garden and the house is 36,16 m^2.

(a) Calculate the width of the paved area between the garden and the house.

Use the formula:

Area of a rectangle = length × width (4)

(b) 118 wheelbarrows of gravel are needed for 10 m^3 of gravel.

Thabang stated that more than 65 wheelbarrows of gravel are needed to place a 150 mm layer of gravel under the paved area.

Verify, with calculations, whether his statement is VALID.

Use the formula:

Volume of rectangular prism = Area of rectangle × depth (6)

3.2

The paved seating area (**B** on the plan), alongside, is located at the eastern side of the garden. This area has a circular paving brick in the middle, surrounded by custom-made pavers (irregularly shaped paving bricks) to form the circular paved seating area.

The custom-made pavers are sold in packs of 13, which covers exactly a quarter of the full circular seating area, excluding the middle paver.

The cost of the pavers, excluding 15% VAT, are shown in TABLE 3 below.

Picture of the layout of the circular paved area (B on the plan)

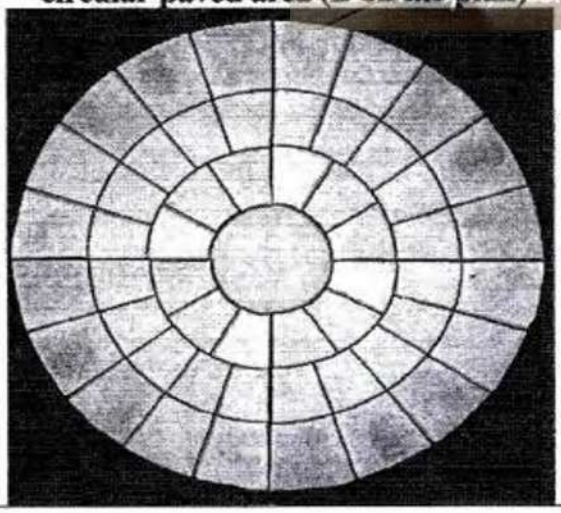


TABLE 3: COST OF PAVERS, EXCLUDING 15% VAT

MATERIALS	COST
Middle paver	R125,80
Pack of 13 custom-made pavers	R657,40
Other materials	R1 250,00

Use the information above to answer the questions that follow.

3.2.1 Determine the total number of paving bricks in the first row, closest to the middle circular paver. (2)

3.2.2 Calculate the total cost, including VAT, of the materials required to pave the entire seating area **B**. (5)
[27]

QUESTION 4

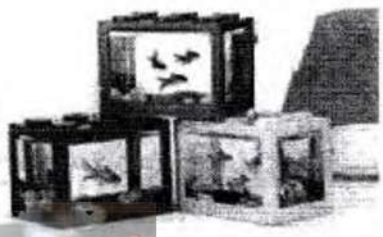
4.1 Nikita wants to open her own pet shop.
The operating hours of the pet shop are given in TABLE 4 below.

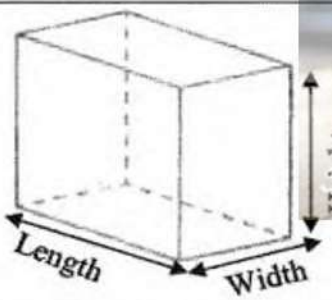
TABLE 4: OPERATING HOURS OF THE PET SHOP

DAYS OF THE WEEK	OPERATING HOURS
Monday to Friday	07:30 to 17:00
Saturday	08:00 to 13:00
Sunday	Closed

Nikita will sell fish tanks in the shape of mini aquarium blocks, as shown in the pictures and diagram below.

DIAGRAM AND PICTURES OF THE MINI AQUARIUM BLOCK TANKS





Inner length = 11,6 cm
Inner width = 7,6 cm
Inner height = 10,5 cm
NOTE: 1 cm³ = 1 mℓ

[Adapted from www.aliexpress.com]

Use the information above to answer the questions that follow.

4.1.1 Determine (in simplified form) the ratio of the length to the width of the mini aquarium block tank. (3)

4.1.2 Calculate the total number of hours the pet shop will be open in one operating week. (5)

4.1.3 Each mini aquarium tank will contain 75% of its capacity in water.

Determine the amount of water left over in a jug (1 000 mℓ), after filling one mini aquarium tank with water.

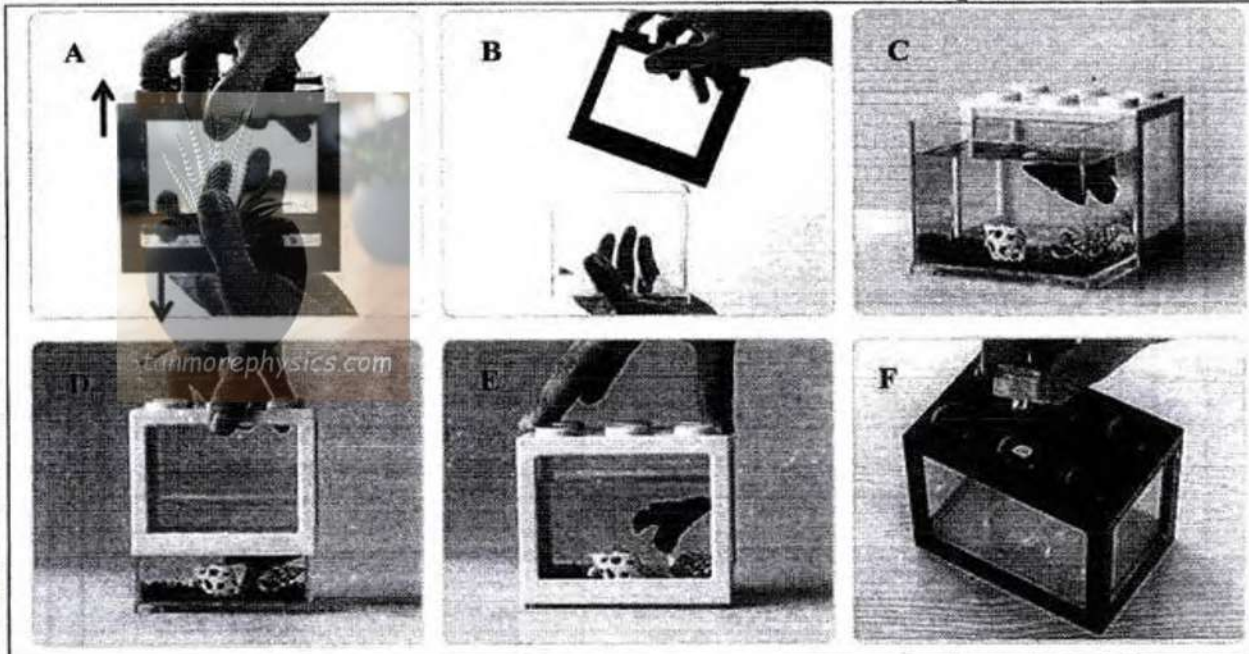
Use the formula: **Volume = length × width × height** (7)

4.2 Nikita received the different pieces for assembling the mini aquarium tank.

The pictures below show the different steps required to assemble one mini aquarium.

You may assume that the colours of the frames of the tank are the same in all the pictures below.

PICTURES SHOWING THE ASSEMBLY OF A MINI AQUARIUM



[Adapted from www.aliexpress.com]

Choose a picture above that will match a written instruction below. Write down only the letter (A, B, C, D, E or F) of the picture next to the question number, e.g. 4.2.7 H.

4.2.1 Place the outer frame over the transparent inner to cover it.

4.2.2 Pull in opposite directions to open the mini aquarium.

4.2.3 The hole is for feeding or to put in a light.

4.2.4 One hand will hold the transparent inner tank while the other hand will hold the outer frame.

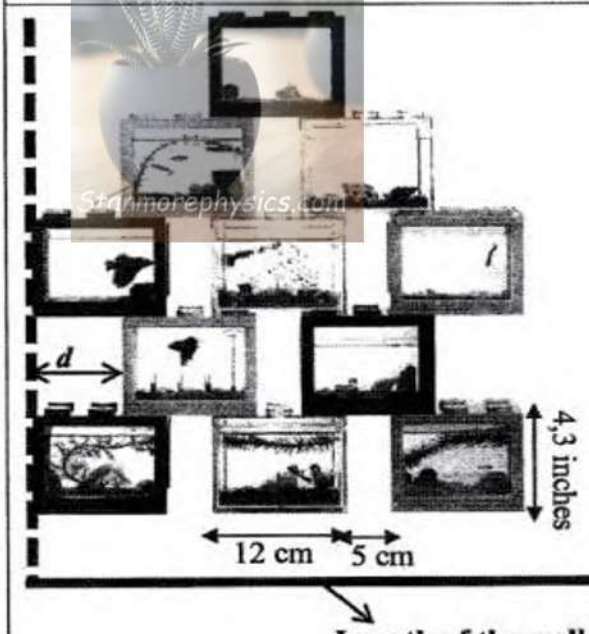
4.2.5 Add water and decorating items as you like.

4.2.6 Close tightly by pressing down on the outer frame. (6 ×1) (6)

4.3 Nikita decided to assemble a few of the mini aquariums and mount them against the wall at the front desk.

There is a 5 cm space between each mini aquarium tank along the length of the wall.

In every odd row, the mini aquarium tanks start and end against the wall. In the even rows, the mini aquarium tanks start at space ***d*** from the wall, on either side of the row. (See the pattern in the picture below.)

PICTURE OF PART OF THE MINI AQUARIUM TANK ARRANGEMENT AGAINST THE WALL	DIMENSIONS OF THE ASSEMBLED MINI AQUARIUM TANK
	Mini aquarium tank: Outer length = 12 cm Outer width = 8 cm Outer height = 4,3 inches
	DIMENSIONS OF THE WALL AT THE FRONT DESK
	Length = 199 cm Height = 100 cm

[Adapted from www.aliexpress.com]

NOTE: 1 mm = 0,0394 inches

Use the information above to answer the questions that follow.

4.3.1 Determine, in cm, the height of one mini aquarium tank. (4)

4.3.2 Calculate the total number of mini aquarium tanks Nikita will be able to place in the bottom row to maximise the space along the length of the wall. (7)

4.3.3 Nikita stated that length ***d*** is 8,5 cm.

Verify, showing ALL calculations, if her statement is VALID. (4)
[36]

QUESTION 5

5.1 The Las Vegas Grand Prix is a 50-lap car race. It takes place at the Las Vegas Strip track in Nevada, USA, annually.

ANNEXURE C in the ANSWER BOOK shows the layout of the Las Vegas track with the intended route. The temporary track is to be built within the streets of Las Vegas and it includes popular landmarks, labelled curves and corners.

TABLE 5 below summarises the details of the race.

TABLE 5: SUMMARY OF THE DETAILS OF THE RACE

TRACK INFORMATION			
• Number of laps:	50	• Lap length:	6,201 km
• Number of curves and corners:	17	• Race distance:	310,05 km
• Number of straights:	3	• Top speed:	212 mph

[Adapted from https://www.f1lasvegasgp.com/track-layout/]

Use ANNEXURE C and TABLE 5 above to answer the questions that follow.

5.1.1 Identify the shop that a driver will find on his right-hand side at the 13th curve. (2)

5.1.2 State the general direction of the Fountains of Bellagio from the Wynn Golf Club. (2)

5.1.3 Show, by means of calculations, how the race distance of 310,05 km was determined. (2)

5.1.4 Name the road that will be crossed after taking the 4th curve. (2)

5.1.5 The scale of the track layout is 1 : 13 500.

One of the race car drivers maintained a constant speed of 204 km/h between points A and B, as indicated on the track layout.

Calculate, in minutes, the time it took this driver to cover the distance.

Use the formula:

Distance = speed × time (7)

5.1.6 A race car driver decides to practise on the track late in the afternoon. He complained that the rays of the sun were affecting his vision after the 9th corner.

State, giving a reason, why you would agree or disagree with this race car driver. (3)

5.2 The fastest laps of the top five race car drivers are shown in TABLE 6 below.

TABLE 6: LAS VEGAS GRAND PRIX: FASTEST LAPS

	DRIVER	LAP	EXACT TIME OF DAY	LAP-TIME	AVERAGE SPEED (km/h)
1	Oscar Piastri	47	23:28:54	1:35,490	233,779
2	Max Verstappen	44	23:23:34	1:35,614	233,476
3	Charles Leclerc	50	23:33:15	1:35,669	233,342
4	Lewis Hamilton	48	23:30:22	1:35,716	233,227
5	Sergio Perez	40	23:17:12	1:35,939	232,685

[Source: www.formula1.com/en/results.html]

NOTE:
Lap time 1:35,490 = 1 minute 35,490 seconds

Study the information above to answer the questions that follow.

5.2.1 The exact time of day shows the time the driver finished his fastest lap.

Calculate, to TWO decimal places, at what time Oscar Piastri started lap 47. (3)

5.2.2 Max Verstappen won the race with a time of 1 hour 29 minutes and 8,289 seconds.

One of the spectators said Max Verstappen took 5 348,289 seconds, with an average lap-time of 106 seconds, to complete the race.

Verify, showing ALL calculations, whether his statement is VALID. (6)

5.3 Thabiso is a Grand Prix fanatic and he wants to buy a framed poster of the Grand Prix world champions. The frame is made up of four pieces of wood joined together with overlaps, as seen in the picture and diagram below.

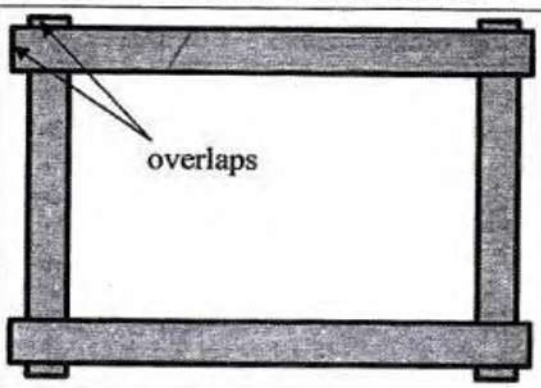
Dimensions of the frame:

- Long piece is 630 mm by 45 mm
- Short piece is 420 mm by 45 mm
- Overlap is 2,5 cm throughout

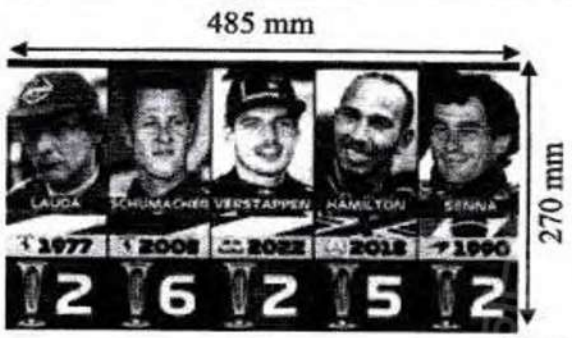
PICTURE OF THE FRAME

[Source: istockphoto.com]

DIAGRAM OF THE FRAME



POSTER OF GRAND PRIX WORLD CHAMPIONS



[Source: www.youtube.com]

Use the information above to answer the questions that follow.

5.3.1 The frame has two horizontal pieces of wood mounted across two vertical pieces of wood with overlaps. See the picture and diagram above.

Calculate, in mm, the inner length and the inner width of the frame. (6)

5.3.2 The person responsible for placing the poster of the Grand Prix world champions inside the frame, stated that the poster will not fit exactly within the frame.

Verify, with calculations, whether his statement is VALID. (3)

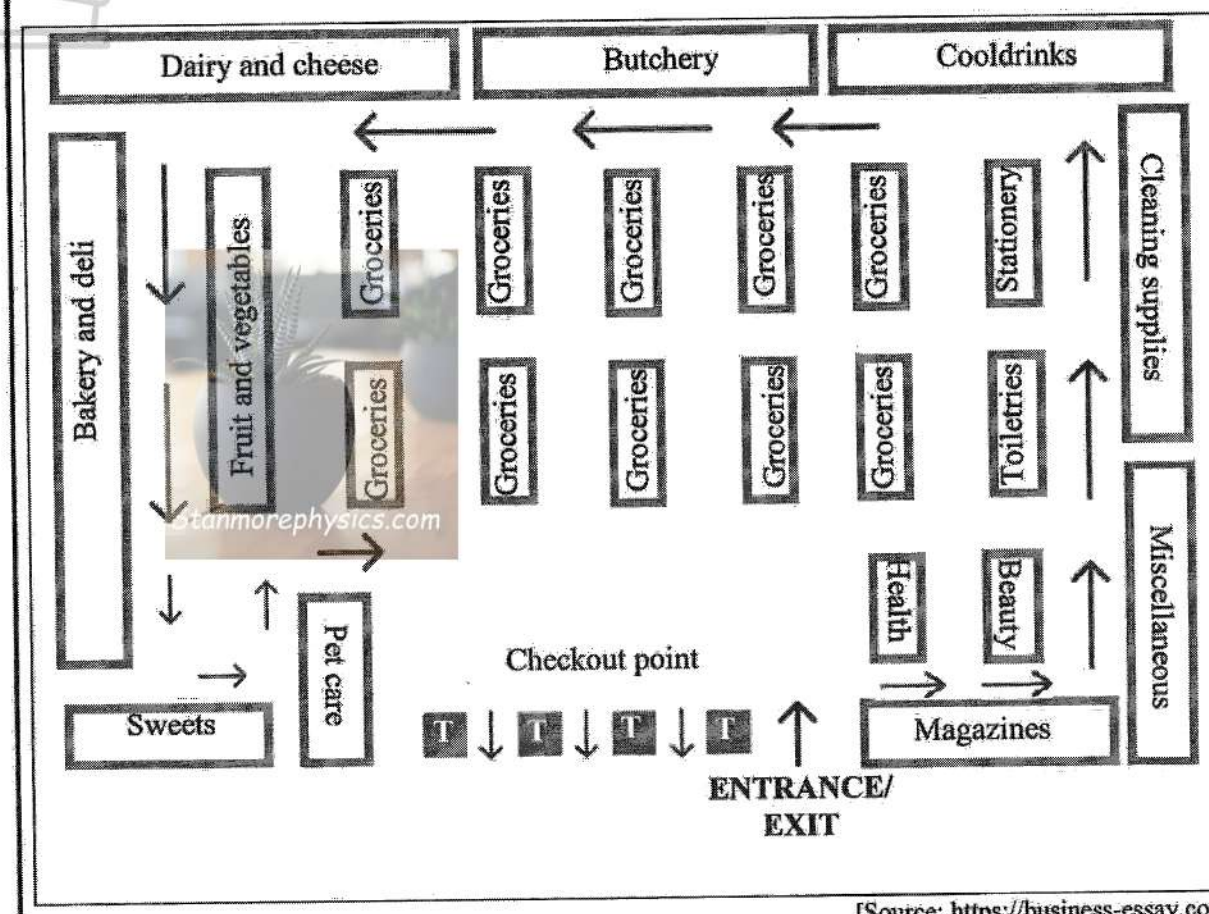
[36]

TOTAL: 150

QUESTION 2

2.1 ANNEXURE A

SUPERMARKET LAYOUT PLAN WITH LABELLED SECTIONS



[Source: https://business-essay.com]

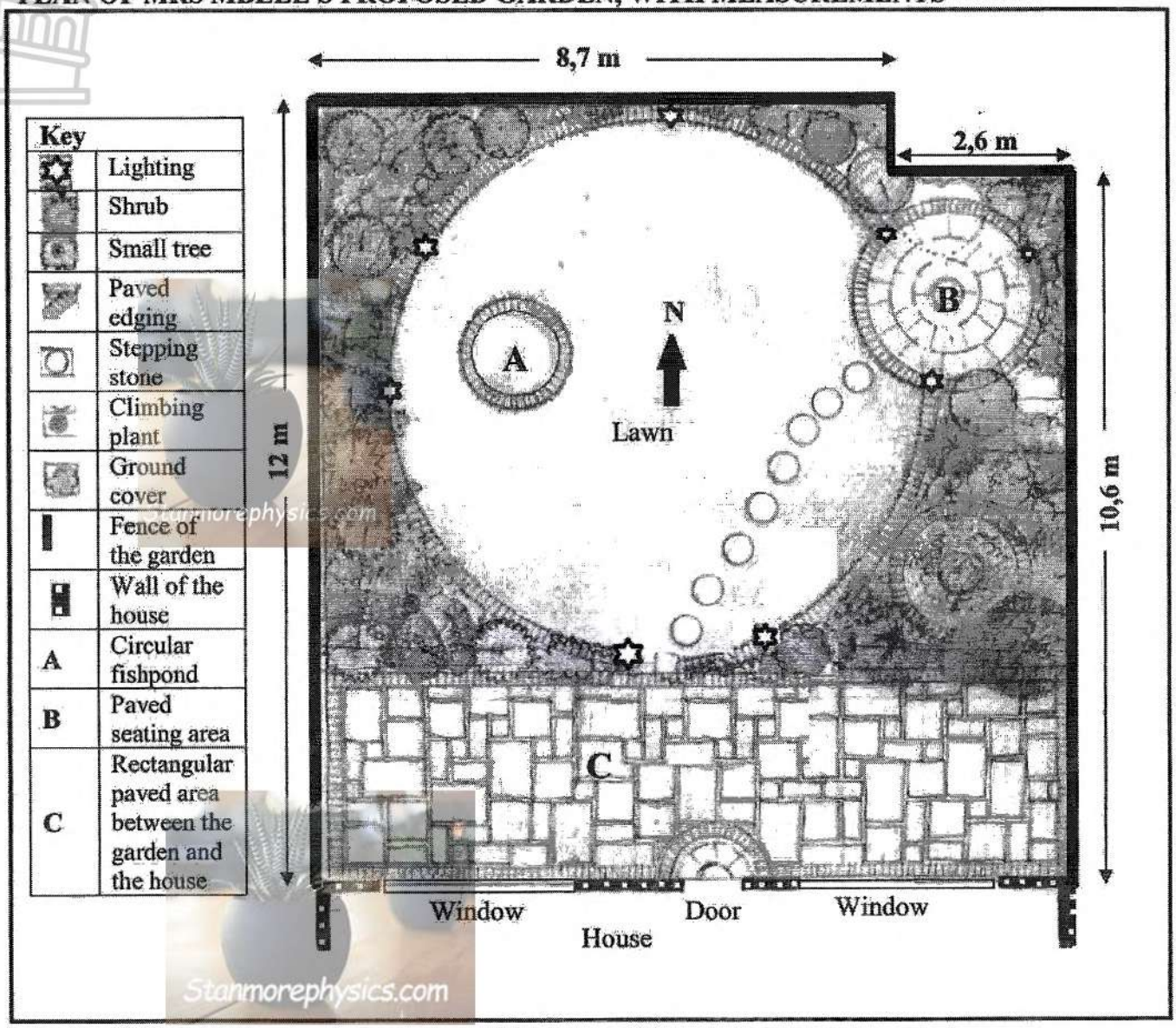
KEY

→	Customer flow
▭	Section

QUESTION 3

3.1 ANNEXURE B

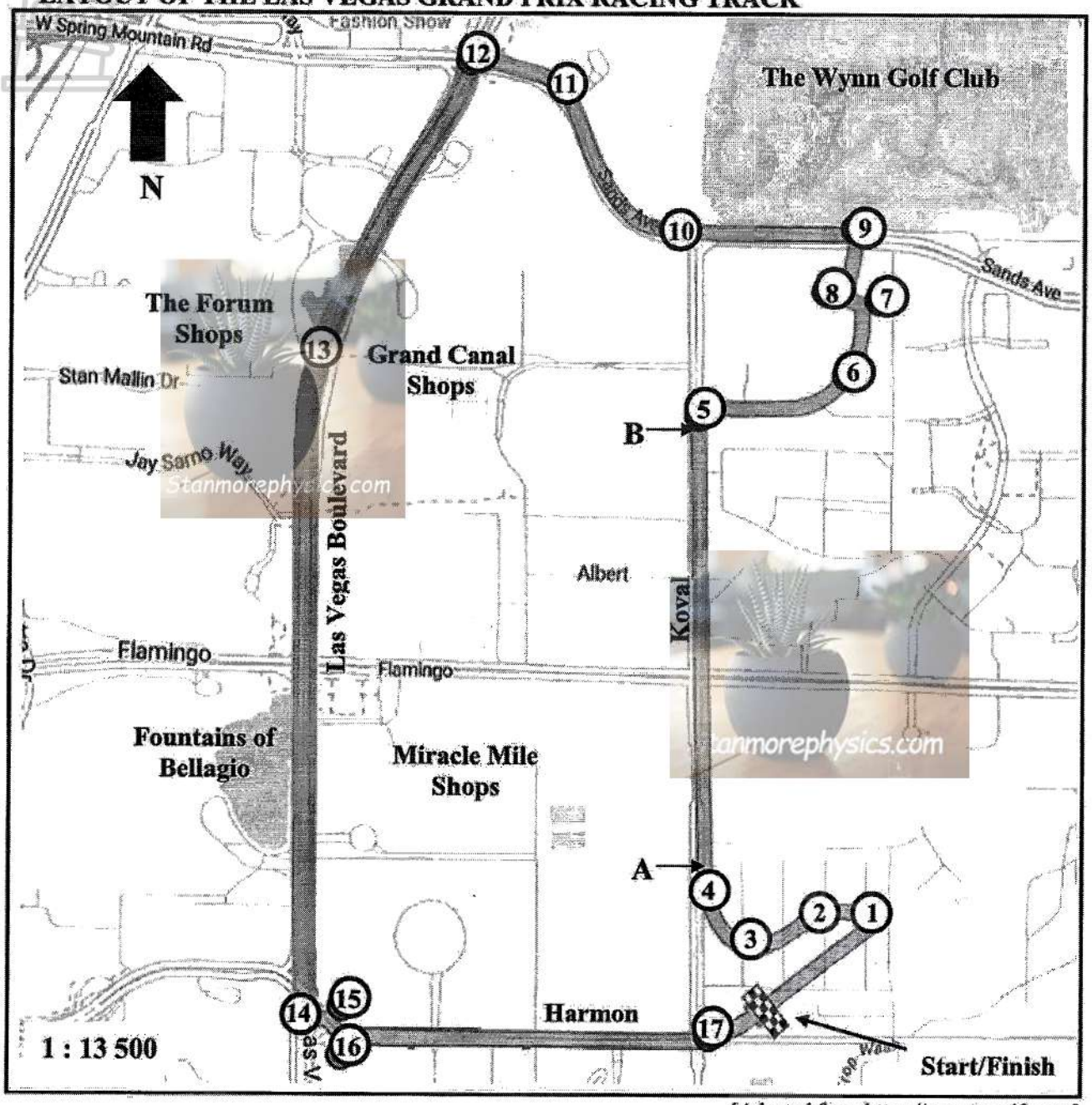
PLAN OF MRS MBELE'S PROPOSED GARDEN, WITH MEASUREMENTS



QUESTION 5

5.1 ANNEXURE C

LAYOUT OF THE LAS VEGAS GRAND PRIX RACING TRACK



[Adapted from https://oversteer48.com]