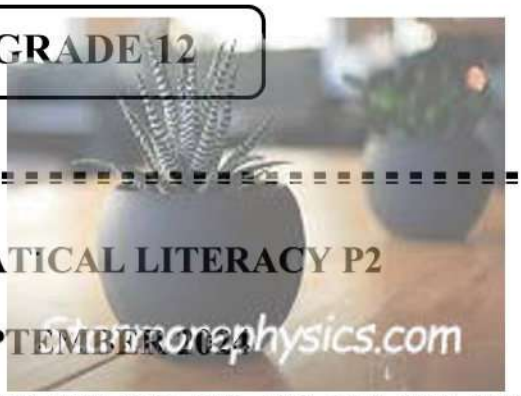
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NATIONAL SENIOR CERTIFICATE

GRADE 12



MATHEMATICAL LITERACY P2

SEPTEMBER 2024

MARKS: 150

TIME: 3 hours

This question paper consists of 13 pages and an addendum with 3 annexures.

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INSTRUCTIONS AND INFORMATION

1. This paper consists of FIVE questions. Answer ALL the questions.
2. Use the ANNEXURES in the ADDENDUM to answer the following questions:

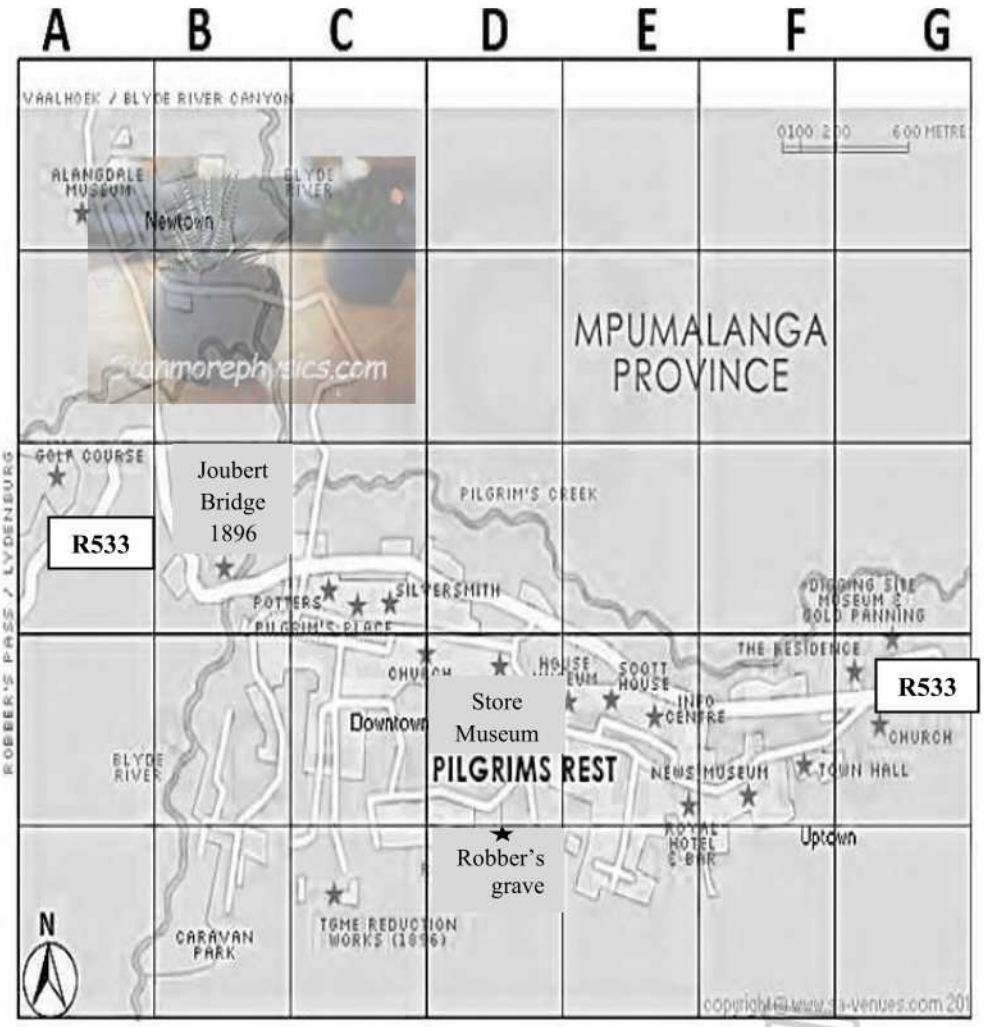
   ANNEXURE A for QUESTION 2.1
   ANNEXURE B for QUESTION 2.2
   ANNEXURE C for QUESTION 4.3

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

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QUESTION 1

1.1 Pilgrim's Rest is a small museum town in the Mpumalanga province of South Africa. This town is protected as a provincial heritage site due to its historic value.
Below is the map showing places of interest (represented by a star) in this town.



[Adapted from www.sa-venues.com]

Use the information above to answer the questions that follow.

1.1.1 Name the provincial road shown on the map. (2)

1.1.2 State the grid reference of Joubert Bridge. (2)

1.1.3 Complete: The scale used in the map is called a … scale. (2)

1.1.4 Name the tourist attraction, in D4, that lies North of Robber's Grave. (2)

1.1.5 Mpumalanga province covers an area of 76 495 km^2. The area of the whole of South Africa is 1 220 813 km^2.

Calculate, rounded off to ONE decimal place, the percentage that Mpumalanga province make out of the whole of South Africa. (3)

1.2 ABC Company won a tender to supply road signposts of TYPE 1 and TYPE 2 as shown in the pictures below.

TYPE 1	**TYPE 2**
	
Each side of the triangle in the TYPE 1 road sign is equal to 500 mm.	Radius (r) = 25 cm

[Source: bing.com /images]

Use the information above to answer the questions that follow.

1.2.1 Choose, from the list below, the CORRECT formula to calculate the perimeter of a TYPE 1 road sign.

A $P = 2(l + w)$

B $P = \frac{1}{2}(b \times h)$

C $P = \text{side} \times \text{side} \times \text{side}$

D $P = \text{side} + \text{side} + \text{side}$ (2)

1.2.2 Convert the length of each side of TYPE 1 road sign to metres. (2)

1.2.3 Determine the diameter of a TYPE 2 road sign. (2)

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1.3 Below are the items that Ivy bought at the wholesaler.

ITEMS THAT IVY BOUGHT AND THEIR MASS

 2 kg Sugar	 12,5 kg Flour	 3 packets of Macaroni Total mass 9 000 g	 10 kg Mealie Meal
 3 Pilchards tins Total mass 1 200 g	 Wheat Bix 1,35 kg	 2 kg washing powder	 12 bars of 100 g soap

[Adapted from www.makro.co.za]

Use the information above to answer the questions that follow.

1.3.1 Determine the mass of ONE tin of Pilchards. (2)

1.3.2 Ivy carried a bag that could hold items with a total mass of 10 kg.
Name the item that could NOT be placed in this bag. (2)

1.3.3 The macaroni in the three packets is repacked into four equally sized containers.

Determine, in kg, the mass of the macaroni in EACH container. (3)

Stanmorephysics.com

1.4 TABLE 1 below shows a list of concepts and explanations or definitions thereof, used in Mathematical Literacy.

TABLE 1 : CONCEPTS AND EXPLANATIONS

`COLUMN A		COLUMN B	
1.4.1	Map Scale	A	The boundary of a circle/perimeter of a circle
1.4.2	Circumference	B	Two or more events happening at once
1.4.3	Compound events	C	Straight line passing through the centre of a circle, touching the circle at opposite ends
		D	The distance from the centre of the circle to any point on the circumference of the circle
		E	Ratio of the distance in real life compared to the same distance on a map
		F	All possible outcomes of an experiment

Use TABLE 1 above to choose the explanation or definition from COLUMN B that matches a concept in COLUMN A. Write only the letter (A – F) next to the question numbers (1.4.1 to 1.4.3), e.g. 1.4.4 H. (6)

[30]

QUESTION 2

2.1 Dr Brooks decided to take his family to the George Ignatieff Theatre for a musical concert. ANNEXURE A shows the seating plan of the George Ignatieff Theatre in Toronto.

Use ANNEXURE A to answer the questions that follow.

2.1.1 Write down the total number of seats in the theatre. (2)

2.1.2 Seats H1 to H13 are reserved for wheelchair users. Write in simplest form the ratio of the number of seats for people in wheelchairs to the number of seats for people NOT in wheelchairs. (4)

2.1.3 State the compass direction from seat G30 towards the stage. (2)

2.1.4 Dr Brooks is seated in the middle block, third row from the back. His seat is exactly in the middle of the row.

Name the row and seat number where he is seated. (2)

2.1.5 Dr Brook's wife is seated in seat F15. She is invited to join her favourite artist on stage.

Describe the route from her seat to the stage. (3)

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2.1.6 Determine the probability of randomly choosing a spectator to join the artist on stage if 62,5% of the seats in the theatre are occupied. (3)

2.2 Dr Brooke and his family stay in a townhouse. ANNEXURE B shows the floorplan of their townhouse.

Use ANNEXURE B to answer the questions that follow.

2.2.1 Define the concept *floor plan*. (2)

2.2.2 Determine the total number of doors on the floorplan. (2)

2.2.3 Which ONE of the following statements regarding the porch is CORRECT?

A The porch is on the West elevation.
B The porch is on the East elevation.
C The porch is on the North elevation. (2)

2.2.4 The dimensions of BEDROOM 1 on the plan are as follows:

Length = 40 mm and width = 32 mm

The area of the window must be at least 12,5% of the floor area of the bedroom.
The actual window is 256 cm high.

Stanmorephysics.com

Calculate the actual width of the window.

You may use the following formula:

Area of a rectangle = length × width (9)

[31]

QUESTION 3

3.1 Abel wants to build a backyard patio using bricks. The patio will be fenced and paved. Abel will also add a round 12-inch-high fire pit, built with bricks in one of the corners of the patio. The diameter of the fire pit is 91,44 cm.



Use the information given above to answer the questions that follow.

3.1.1 Calculate the total length of the fencing required for the patio. (3)

3.1.2 The height of the fire pit is 30,48 cm.

Calculate, in cm^2, the lateral surface area of the fire pit.

You may use the following formula:

Lateral surface area = $2 \times 3,142 \times$ radius $\times$ height (4)

3.1.3 Show, using ALL calculations, that the surface area of the patio is approximately 20 m^2.

You may use the following formulae:

Area of rectangle = length $\times$ width

Area of a circle = $3,142 \times$ radius^2

Area of a triangle = $\frac{1}{2} \times$ base $\times$ height

(9)

3.2 The bricks that will be used to pave the patio (area 20 m^2) have the dimensions:

length = 0,215 m, width = 0,1025 m and height = 6,5 cm

The mass of one brick is 3,276 kg.



Use the information above to answer the questions that follow.

3.2.1 Determine the number of bricks needed to pave the patio excluding the fire pit.

You may use the following formula:

Area = length × width (5)

3.2.2 Convert the mass of all the bricks needed to tons.

NOTE: 1 kg = 0,001 ton (4)

3.3 TABLE 2 below shows the relationship between the number of workers Abel employs and the time taken to build the patio.

TABLE 2: RELATIONSHIP BETWEEN THE NUMBER OF WORKERS AND THE TIME TAKEN

Number of workers	1	2	3	**B**	5
Time in days	60	**A**	20	15	12

Use the information above to answer the questions that follow.

3.3.1 Determine the missing values **A** and **B.** (3)

3.3.2 State the type of proportion represented by the relationship between the number of workers employed and time taken to build the patio. (2)

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3.4 Ruth is a mother to twins Nick and Nicolene. She is very health conscious and regularly monitors their Body Mass Index (BMI). On a particular day, she recorded the twins' mass and height as follows:

TWIN	MASS	HEIGHT
NICK	56 kg	1,65 m
NICOLENE	45 kg	60 inches

NOTE: 1 cm = 0,3937 inches

Use the information above to answer the questions that follow.

3.4.1 Convert, rounded off to TWO decimal places, Nicolene's height to metres. (3)

3.4.2 Ruth states that, the difference between the twins' BMI is less than 1 kg/m^2.

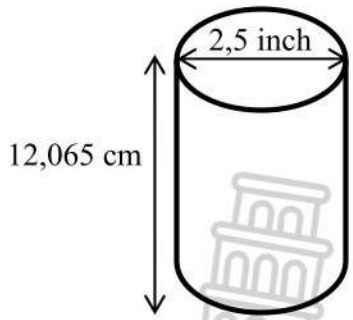
Verify, showing ALL calculations, whether her statement is CORRECT.

You may use the following formula: $\textbf{BMI} = \frac{\textbf{Mass in kg}}{(\textbf{Height in m})^2}$ (6)

[39]

QUESTION 4

4.1 The picture and diagram below represent an American cooldrink can.

PICTURE OF A COOLDRINK CAN	DIAGRAM OF A COOLDRINK CAN
	

NOTE: 1 inch = 2,54 cm

Use the information above to answer the questions that follow.

4.1.1 Show with calculations that the volume of the cooldrink can is 382 cm^3.

You may use the following formula:

Volume = 3,142 × radius^2 × height (6)

4.1.2 The can is only filled to 95% of its volume.

Calculate, rounded off to the nearest mℓ, the volume of the can.

NOTE: (1 cm^3 = 1 mℓ) (4)

4.2 Lesego would like to build a modern kitchen. She approached a company that builds three-dimensional (3D) model of buildings. This must represent a scaled model of an actual kitchen that Lesego requires.

3D VIEW OF ACTUAL KITCHEN	**TABLE USED FOR SCALED MODEL**
	

The actual dimensions of the kitchen are length = 4,8 m; width = 4,2 m and height = 3 m. The 3D scale model of the kitchen must fit on a rectangular table top with dimensions: length = 1,75 m and width = 1 m.

Only 50% of the table top area may be used for the scaled model.

Verify, showing ALL calculations, whether a scale of 1 **:** 10 will be suitable for the scale model. (5)

4.3 Mr Modise stays in Horizon View. He works in Rosebank and travels by bus to and from work daily. ANNEXURE C shows different bus timetables. It is only valid during the week.

Use the bus timetable on ANNEXURE C to answer the questions that follow.

4.3.1 Calculate the time taken to travel with BUS 1 from Horizon View to Rosebank. (3)

4.3.2 Mr Modise gets off the bus at 07:17 and walks for 15 minutes to his workplace. He rests for 10 minutes before he starts to work. He works 9 hours and 45 minutes including breaks per day.

Verify, showing ALL calculations, whether Mr Modise will knock off at 17:00. (4)

[22]

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QUESTION 5

5.1 Phumeza's mother stays in Malelane. She wants to come and visit her daughter, who stays in Johannesburg.

5.1.1 The map distance between Malelane and Johannesburg is measured as 10,8 cm. The scale of the map is 25 mm : 100 km.

Determine the actual distance between the two towns. (3)

5.1.2 Phumeza's mother left Malelane at 08:00 a.m. She drove at an average speed of 120 km/h.

Verify, showing ALL calculations, whether she will arrive in Johannesburg before or after midday/12:00.

You may use the following formula: $\textbf{Time} = \frac{\textbf{Distance}}{\textbf{speed}}$ (6)

5.2 Phumeza's mother bought her a flower bouquet with roses only. The flower bouquet consists of 12 red roses, 15 pink roses and other roses with different colours.



Use the information above to answer the questions that follow.

5.2.1 Determine the number of roses in the bouquet if the roses with different colours are 10% of the total number of roses? (3)

5.2.2 Phumeza stated that the probability of randomly selecting a rose with a different colour is 0,1.

Verify, showing ALL calculations, whether her statement is VALID. (4)

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5.3 Sipho is a vendor at the local flea market. She sells different types of jams. She put the jam in jars/bottles shown below.



Use the information above to answer the questions that follow.

5.3.1 The jars must be sterilized at the temperature of 275 °F before use. Convert this temperature to °C.

You may use the following formula:

$$°F - \mathbf{32}^{\circ} = \frac{\mathbf{9}}{\mathbf{5}} \times °C$$ (4)

5.3.2 The jam jars will be packed in a cardboard box as follows:
Six rows of three jars, and two jars high. A tiny space of 0,8 cm around each jar is allowed.

(a) Determine the dimensions of the cardboard box, where in the jam jars will be packed. (5)

(b) Determine, in m^3, the volume of the cardboard box in QUESTION 5.3.2 (a).

You may use the following formula:

Volume of the box = length × width × height (3)

[28]

TOTAL: 150

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MATHEMATICAL LITERACY P2
ADDENDUM
SEPTEMBER 2024

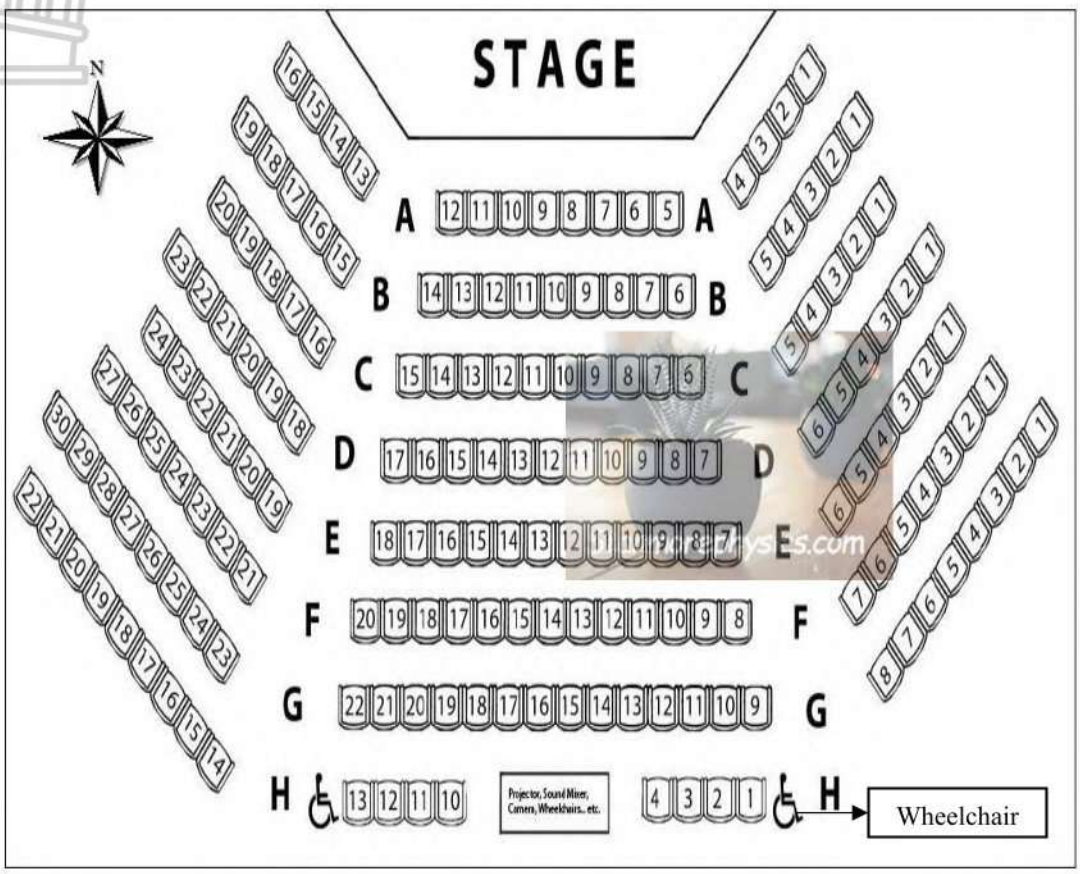
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ANNEXURE A

QUESTION 2.1

SEATING PLAN OF GEORGE IGNATIEFF THEATRE IN TORONTO

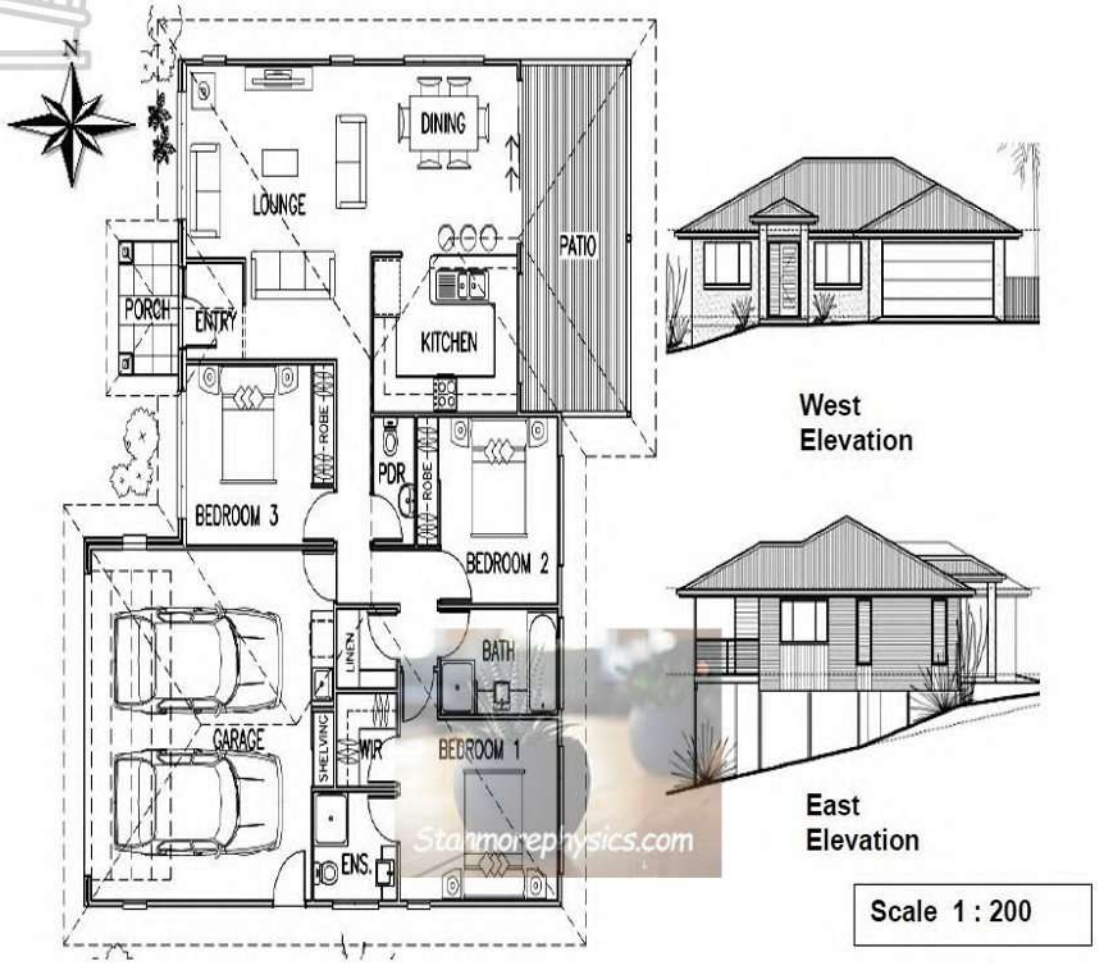


[Source: www.http//Levin & Associates Architects]

ANNEXURE B

QUESTION 2.2

FLOOR PLAN OF DR. BROOKE'S TOWN HOUSE



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KEY:	
Window	Door
Sliding Door	Garage Door

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ANNEXURE C

QUESTION 4.3

BUS TIMETABLE FROM WESTGATE CENTRE



430 Westgate Centre

Sandton Square via ROSEBANK

	BUS 1	BUS 2	BUS 3
FROM WESTGATE CENTRE	6:00	6:15	6:30
Horison View	6:02	6:17	6:32
Horison	6:05	6:20	6:35
Roodepoort-North	6:10	6:25	6:40
Discovery	6:20	6:35	6:50
Florida	6:30	6:45	7:00
Maraisburg	6:40	6:55	7:10
Delarey	6:50	7:05	7:20
Newlands	6:55	7:10	7:25
Sophiatown	6:57	7:12	7:27
Greymont	6:59	7:14	7:29
Montgomery Park	7:04	7:19	7:34
Parktown-North	7:12	7:27	7:42
Rosebank	7:17	7:32	7:47
Illovo	7:20	7:35	7:50
Sandton Square	7:30	7:45	8:00
Rivonia	…….	…….	8:10
Sunninghill	…….	…….	8:25

[Source: https://www.gapbs.co.za]

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