



basic education

Department:
Basic Education
REPUBLIC OF SOUTH AFRICA

**NATIONAL
SENIOR CERTIFICATE**

GRADE 12

MATHEMATICAL LITERACY P1

NOVEMBER 2019

MARKS: 150

TIME: 3 hours

**This question paper consists of 14 pages,
1 answer sheet and an addendum with 3 annexures.**

INSTRUCTIONS AND INFORMATION

1. This question paper consists of FIVE questions. Answer ALL the questions.
2. 2.1 Use the ANNEXURES in the ADDENDUM to answer the following questions:
 - ANNEXURE A for QUESTION 2.1
 - ANNEXURE B for QUESTION 3.2
 - ANNEXURE C for QUESTION 4.1
- 2.2 Answer QUESTION 5.2.4 on the attached ANSWER SHEET.
- 2.3 Write your centre number and examination number in the spaces on the ANSWER SHEET. Hand in the ANSWER SHEET with your ANSWER BOOK.
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 off 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 necessarily drawn to scale, unless stated otherwise.
10. Write neatly and legibly.

QUESTION 1

1.1

In 2019/20 the South African government increased the social grants as indicated in TABLE 1 below.

TABLE 1: SOCIAL GRANTS FOR 2019–2020

TYPES	MARCH 2019	MARCH 2020
Pension allowances younger than 75	R1 695	R1 780
Pension allowances older than 75	R1 715	R1 800
War veteran allowances	R1 715	R1 800
Disability allowances	R1 695	R1 780
Foster care allowances	R960	R1 000
Care dependent allowances	R1 695	R1 780
Child support allowances	R405	R425

[Adapted from www.treasury.gov.za/Rapport]

Use TABLE 1 above to answer the questions that follow.

- 1.1.1 Is the type of data in TABLE 1 numerical data or categorical data? (2)
- 1.1.2 Identify the modal allowance amount for March 2020. (2)
- 1.1.3 Arrange the social grants for March 2019 in descending order of value. (2)
- 1.1.4 Determine (in rand) the increase in the disability allowances for March 2020. (2)
- 1.1.5 Write down the type(s) of allowances which represents the highest amount in March 2020. (2)

1.2

Naomi owns a spaza shop in Gugulethu. She buys her stock from a wholesaler in Cape Town. Below is some of the stock that she buys weekly.

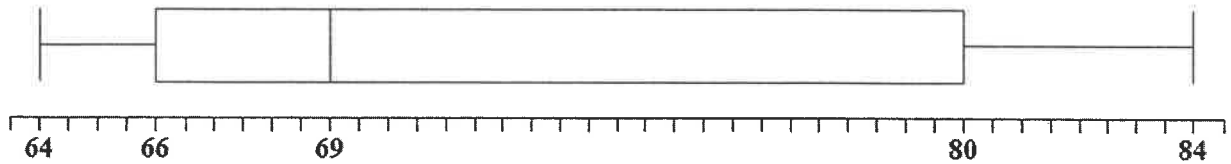
 2,5 kg Huletts white sugar Cost price: R32,99 Total selling price: R42,90	 400 g Koo Hot and Spicy Chakalaka Cost price: R10,99 Total selling price: R14,30	 2 kg Tastic long grain parboiled rice Cost price: R22,99 Total selling price: R29,20
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[Adapted from www.latestspecials.co.za]

Use the information above to answer the questions that follow.

- 1.2.1 Convert 400 g to kg. (2)
- 1.2.2 Determine the profit she will make if she sells a can of Hot and Spicy Chakalaka. (3)
- 1.2.3 She buys a 2,5 kg pack of white sugar and repacks the sugar into 250 g packets.
 Determine how many packets she will be able to get from ONE pack of 2,5 kg sugar. (3)
- 1.2.4 The 2 kg Tastic rice is divided into 8 smaller packets.
 Calculate the selling price of ONE small packet. (2)

- 1.3 Candidates sat for the National Senior Certificate examinations in November 2018. The box-and-whisker plot below shows the five-number summary of the average pass percentages for Mathematical Literacy.



[Adapted from NSC 2018 School Subject Report]

Use the box-and-whisker plot above to answer the questions that follow.

- 1.3.1 Write down the pass percentage that represents the following:
- (a) The median (2)
 - (b) Quartile 3 (2)
- 1.3.2 Determine the difference between the highest and the lowest pass percentage. (2)

- 1.4 Kimberley experienced heavy thundershowers on 11 March 2019. Celeste, a resident of Kimberley, studied the weather forecast below relating to the following day to determine whether it was necessary to take an umbrella to work.

HOURLY WEATHER FORECAST FOR KIMBERLEY – 12/03/2019

13:00	14:00	15:00	16:00	17:00
29°C	29°C	29°C	28°C	26°C
N	NNW	NNW	NNW	NW
☂ 20%	☂ 20%	☂ 20%	☂ 37%	☂ 64%

[Adapted from www.rainboo.co.za]

Use the information above to answer the questions that follow.

- 1.4.1 At what time of the day is the temperature expected to be 28 °C? (2)
- 1.4.2 Determine the probability that it will rain when Celeste leaves work at 2:30 p.m. (2)
- [30]**

QUESTION 2

- 2.1 ANNEXURE A shows an extract from Mr Daniels' monthly municipal statement including the residential water and sewer tariff tables.

Use the information in ANNEXURE A and answer the questions that follow.

- 2.1.1 Write down the market value in words. (2)
- 2.1.2 Calculate the VAT amount for the sewer monthly charge on a stand larger than 2 000 m². (2)
- 2.1.3 Write down the unit of measurement that was used for the meter readings. (2)
- 2.1.4 Determine the value of **A**. (2)
- 2.1.5 Use the stepped residential water tariff table to calculate the value of **B**, the total amount for water usage. (4)

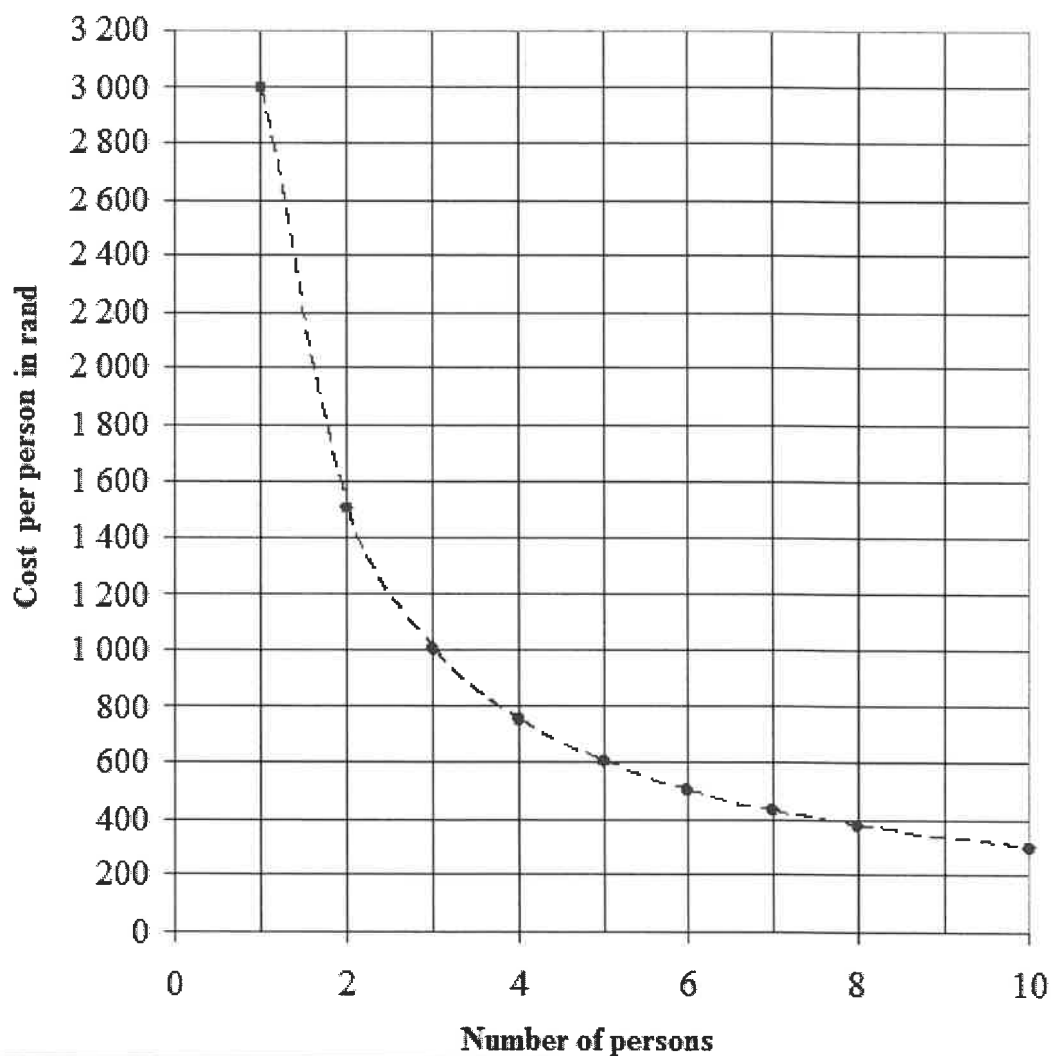
2.2

Josh owns a specially designed refuse removal truck. He hires out this truck at a daily rate of R3 000, excluding fuel. A group of friends decided to use the truck for the day to carry their refuse to the nearby dumping ground.

The graph below indicates the amount each person will pay depending on the number of friends.



COST OF HIRING THE TRUCK



Use the graph above to answer the questions that follow.

- 2.2.1 State the type of proportion represented in the graph above. (2)
- 2.2.2 Write down the number of friends in the group if each paid R500. (2)
- 2.2.3 Calculate the amount each person will pay if 7 friends hired the truck. (3)

2.2.4

Josh saved R500,00 each month since earning his first profit. He has now accumulated an amount of R17 000,00.

TABLE 2 below shows the simple interest rates that would be earned over fixed time periods for amounts ranging from R10 000,00 to R99 999,00.

TABLE 2: SIMPLE INTEREST RATES FOR FIXED TIME PERIODS

TERM (MONTHS)	R10 000–R24 999	R25 000–R99 999
	INTEREST RATE PER YEAR	INTEREST RATE PER YEAR
6	7,12%	7,23%
12	7,76%	8,08%
18	7,87%	8,41%
24	8,08%	8,57%
36	8,30%	8,84%
48	8,46%	9,00%

[Adapted from www.capitecbank.co.za]

Use TABLE 2 above to answer the questions that follow.

- Determine (in months) how long he took to save R17 000,00. (2)
- Write down the interest rate he will get if he invests his money for 3 years. (2)
- Determine (rounded to the nearest R100) the amount of interest Josh will earn if he invests his accumulated savings for 3 years. (3)
- Sifiso wants to invest R24 000,00 for 48 months instead of 12 months.
Calculate the difference in percentage points for the interest rate. (2)
- Write down the minimum number of years and months a person must invest R25 000,00 to earn an interest rate of 8,41%. (3)

2.3

The government receives income from various sources, like tax and loans. This income is then distributed to the different sectors.

TABLE 3 below shows the source of the income and the expenditure for the 2019/20 tax year.

TABLE 3: GOVERNMENT SOURCES OF INCOME AND EXPENDITURE FOR 2019/20

INCOME		EXPENDITURE	
SOURCE	AMOUNT (in billion rand)	SECTOR	AMOUNT (in billion rand)
Tax	1 370	Social Development	278,4
Loans	242,7	Basic Education	262,4
Other income	180,3	Health	222,6
Non-tax income	31,5	Peace and Safety	211,0
		Economic Development	209,2
		Community Development	208,5
		Debt Service Cost	202,2
		Further Education and Training	112,7
		Other	B
TOTAL	A		1 823,72

[Adapted from www.treasury.gov.za/Rapport]

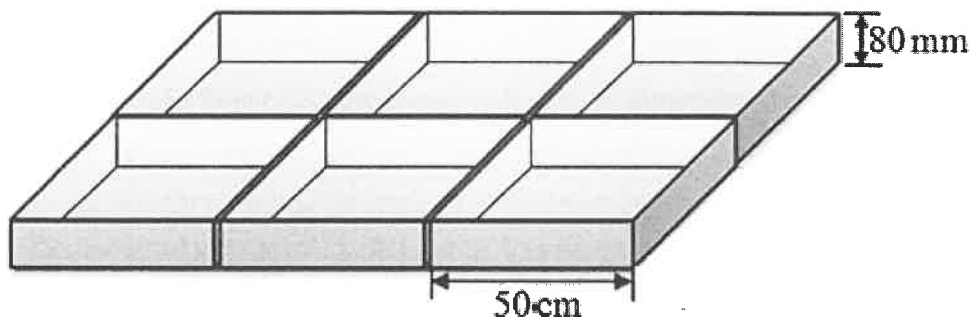
Use TABLE 3 above to answer the questions that follow.

- 2.3.1 Write the amount received from loans as a number in millions. (2)
- 2.3.2 Calculate the missing value A. (2)
- 2.3.3 Calculate the missing value B. Show ALL calculations. (4)
- 2.3.4 Determine the amount allocated for Community Development as a percentage of the total expenditure. (3)
- [42]

QUESTION 3

3.1

African Concrete Blocks is a company that manufactures square concrete blocks. The diagram below shows the six steel moulds that they use to make the square concrete blocks.



[Adapted from www.researchgate.net]

Use the diagram above to answer the questions that follow.

3.1.1 Explain the meaning of *volume*. (2)

3.1.2 Calculate (in m^3) the volume of ONE concrete block.

You may use the following formula:

$$\text{Volume} = \text{side} \times \text{side} \times \text{height} \quad (3)$$

3.2

Thabiso wants to renovate the walkway in his garden. He wants to replace the grass on the walkway with concrete blocks and pebbles.

The dimensions of the walkway, as shown in ANNEXURE B, will be 4,05 m by 1,45 m.

Use ANNEXURE B to answer the questions that follow.

3.2.1 Calculate (in m^2) the total area of the 12 concrete blocks.

You may use the following formula:

$$\text{Area} = \text{side} \times \text{side} \quad (3)$$

3.2.2 Calculate the area of the walkway that needs to be covered with pebbles.

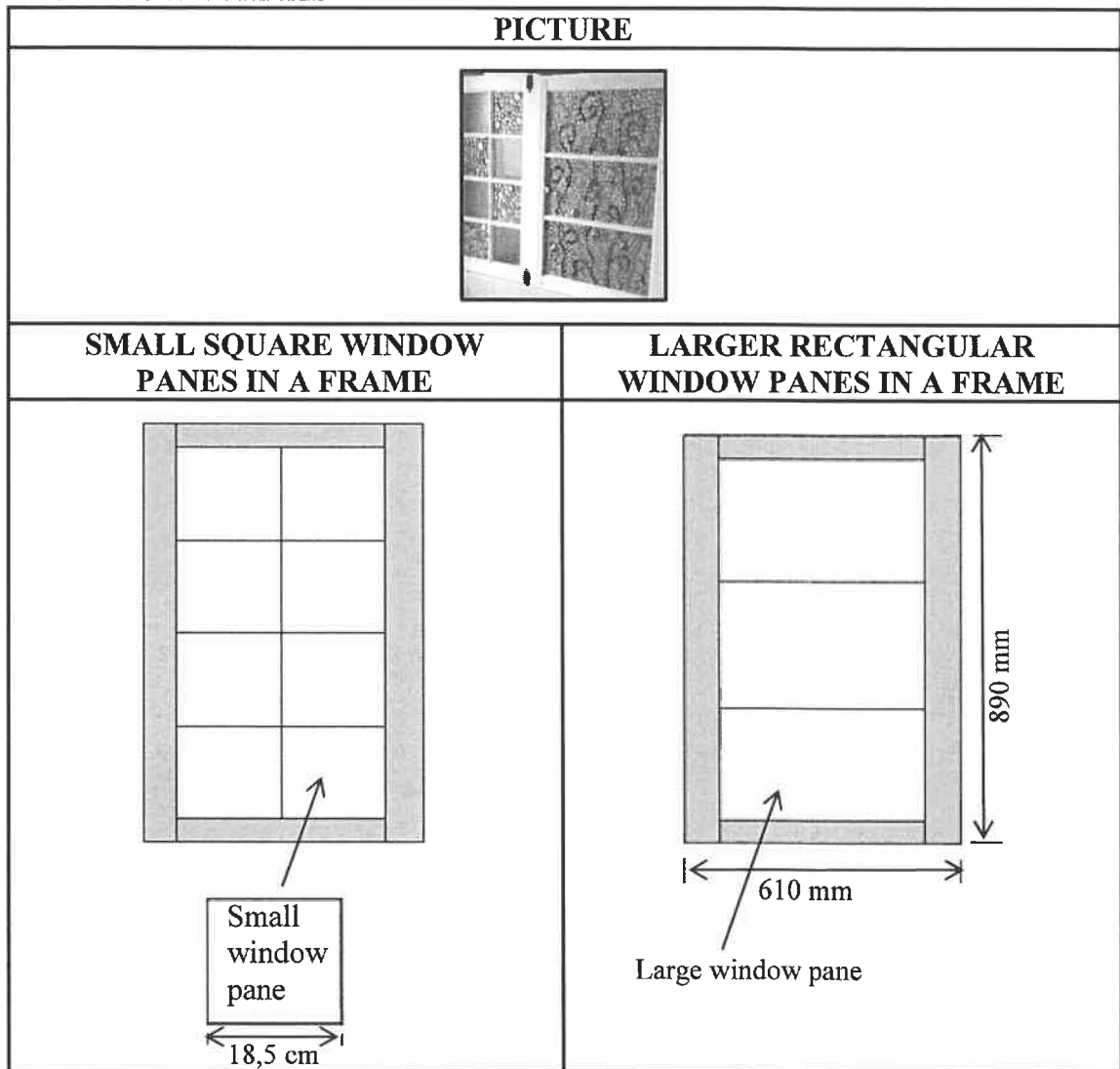
You may use the following formula:

$$\text{Area} = \text{length} \times \text{breadth} \quad (4)$$

3.2.3 Calculate the total number of bags of pebbles needed to cover an area of 5,7 m^2 . (3)

- 3.3 As part of the renovations, Thabiso will also be changing the look of two different windows near the walkway. The glass panes of the window frame will be decorated with glass beads glued onto the glass pane as indicated in the picture below.

PICTURE AND DIAGRAM OF THE SMALL AND LARGE WINDOW PANES IN WINDOW FRAMES



[Adapted from www.pinterest.com]

Use the information and diagrams above to answer the questions that follow.

- 3.3.1 Determine (in cm) the length of the frame of the large window. (2)
- 3.3.2 Calculate the perimeter of one small window pane. (2)
- 3.3.3 The radius of one glass bead is 1,85 cm.
Determine how many glass beads will fit along the length of one small window pane. (3)
- 3.3.4 The total width of 2 small window panes equals $\frac{3}{4}$ the width of one large window pane.
Calculate the width of a large window pane. (4)

[26]

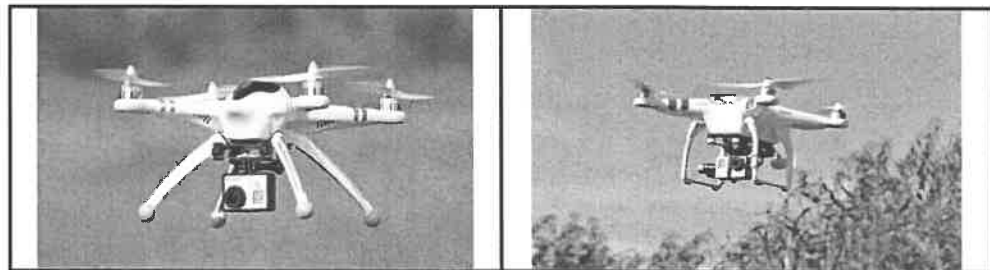
QUESTION 4

4.1 ANNEXURE C shows a map of the Mountain Zebra National Park.

Use ANNEXURE C to answer the questions that follow.

- 4.1.1 Name ALL the activities offered in the circle, **Z**. (4)
- 4.1.2 Identify the 4 x 4 route situated north-east of the Juries Dam. (2)
- 4.1.3 Determine the number of restaurants found on the map. (2)
- 4.1.4 Identify the type of scale shown on the map. (2)
- 4.1.5 The measured map distance between point **A** and point **B** is 10 cm. Use the given scale to calculate the actual distance (to the nearest km) between point **A** and point **B**. (4)
- 4.1.6 Field guides sometimes use drones (remote controlled aircrafts) to monitor the movement of animals in parks.

PICTURES OF DRONES



The drone travels at an average speed of 30 km/h. For a particular task, the drone flew a distance of 10 km from the guide and thereafter returned to the guide.

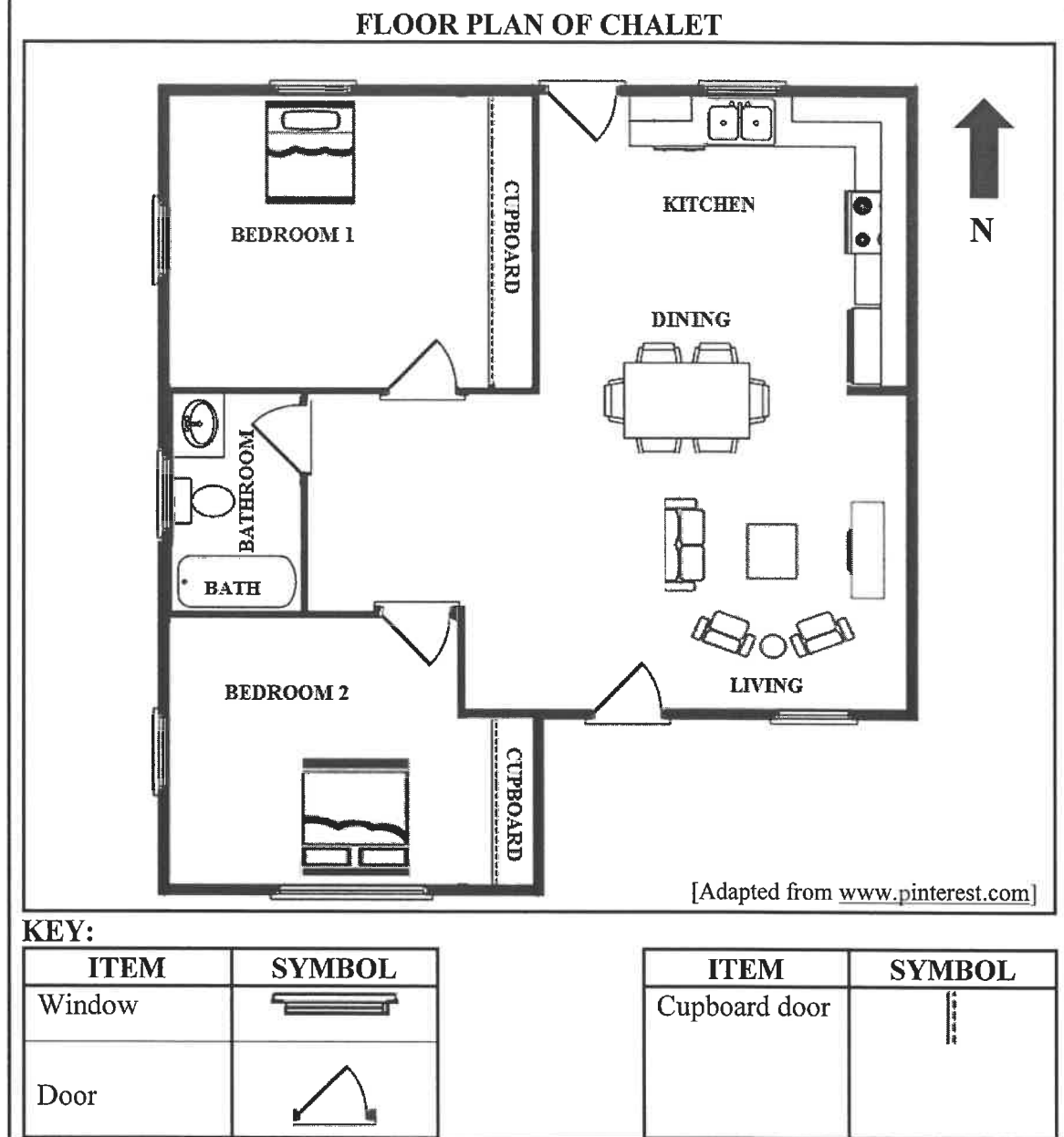
Calculate the total time (in minutes) for this particular task.

You may use the following formula:

$$\text{Time} = \frac{\text{distance}}{\text{speed}} \quad (4)$$

4.2

The floor plan of a chalet close to the Mountain Zebra National Park is shown below.



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

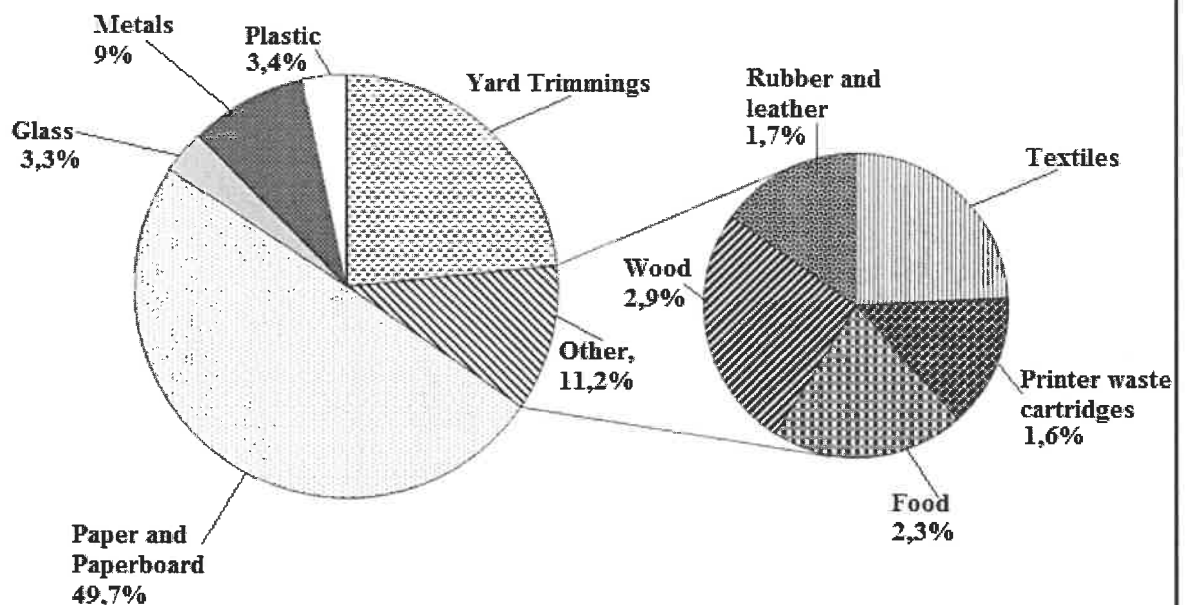
- 4.2.1 State the number of doors on the floor plan with right-hand side openings. (2)
- 4.2.2 Write down the name(s) of the rooms that will face the afternoon sun. (2)
- 4.2.3 Determine the probability of walking into a bedroom in this chalet with two separate beds in one bedroom. (2)
- [24]**

QUESTION 5

5.1

The pie chart below shows the total recycling and composting of material for 2015.

TOTAL RECYCLING AND COMPOSTING BY TYPES OF MATERIAL FOR 2015
(91,16 million tons)



Glossary: Composting is the changing of waste material into fertiliser.

Study the pie charts above and answer the questions that follow.

- 5.1.1 Write down ONE possible data collection method that was used to gather the above data. (2)
- 5.1.2 Calculate the percentage allocated for yard trimmings. (3)
- 5.1.3 Determine the percentage allocated for textiles. (2)
- 5.1.4 Calculate (in tons) the total amount of plastic recycled in 2015. (3)
- 5.1.5 Give ONE possible example of a product that could be recycled under the metals category. (2)
- 5.1.6 State another type of graph that could be used to represent the data above. (2)
- 5.1.7 Determine, as a decimal, the probability of randomly selecting a material in the 'other' category that is NOT textiles. (4)

5.2

TABLE 5 below shows the number of seats of the 26th South African Parliament that was occupied by the different political parties. Included in the table below is the number of permanent and special delegates making up the National Council of Provinces (NCOP) since the 7 May 2014 elections.

TABLE 5: NUMBER OF SEATS IN PARLIAMENT FOR THE DIFFERENT POLITICAL PARTIES PER PROVINCE

PARTY	DELEGATE TYPE	PROVINCE									TOTAL
		EC	FS	GP	KZN	LP	MP	NW	NC	WC	
ANC	Permanent	4	4	3	4	4	4	4	4	2	33
	Special	3	3	2	3	4	4	3	3	2	27
DA	Permanent	1	1	2	1	1	1	1	1	4	13
	Special	1	1	2					1	2	7
EFF	Permanent		1	1		1	1	1	1		6
	Special							1			1
IFP	Permanent				1						1
NFP	Special				1						1
UDM	Permanent	1									1
											90

[Source: www.wikipedia.org]

NOTE:

African National Congress	ANC	Inkatha Freedom Party	IFP
Democratic Alliance	DA	National Freedom Party	NFP
Economic Freedom Fighters	EFF	United Democratic Movement	UDM

Use TABLE 5 to answer the questions that follow.

5.2.1 State the number of KZN delegates in the NCOP. (2)

5.2.2 Write down (in simplified form) the ratio of the total number of permanent seats to special seats for the ANC in the NCOP. (3)

5.2.3 Identify ONE party that has NO permanent seat in the NCOP. (2)

5.2.4 An incomplete bar graph showing the different types of delegates representing each party in the NCOP, is drawn on the ANSWER SHEET.

On the same ANSWER SHEET complete the bar graph for the Democratic Alliance (DA).

(3)
[28]

TOTAL: 150

ANSWER SHEET

QUESTION 5.2.4

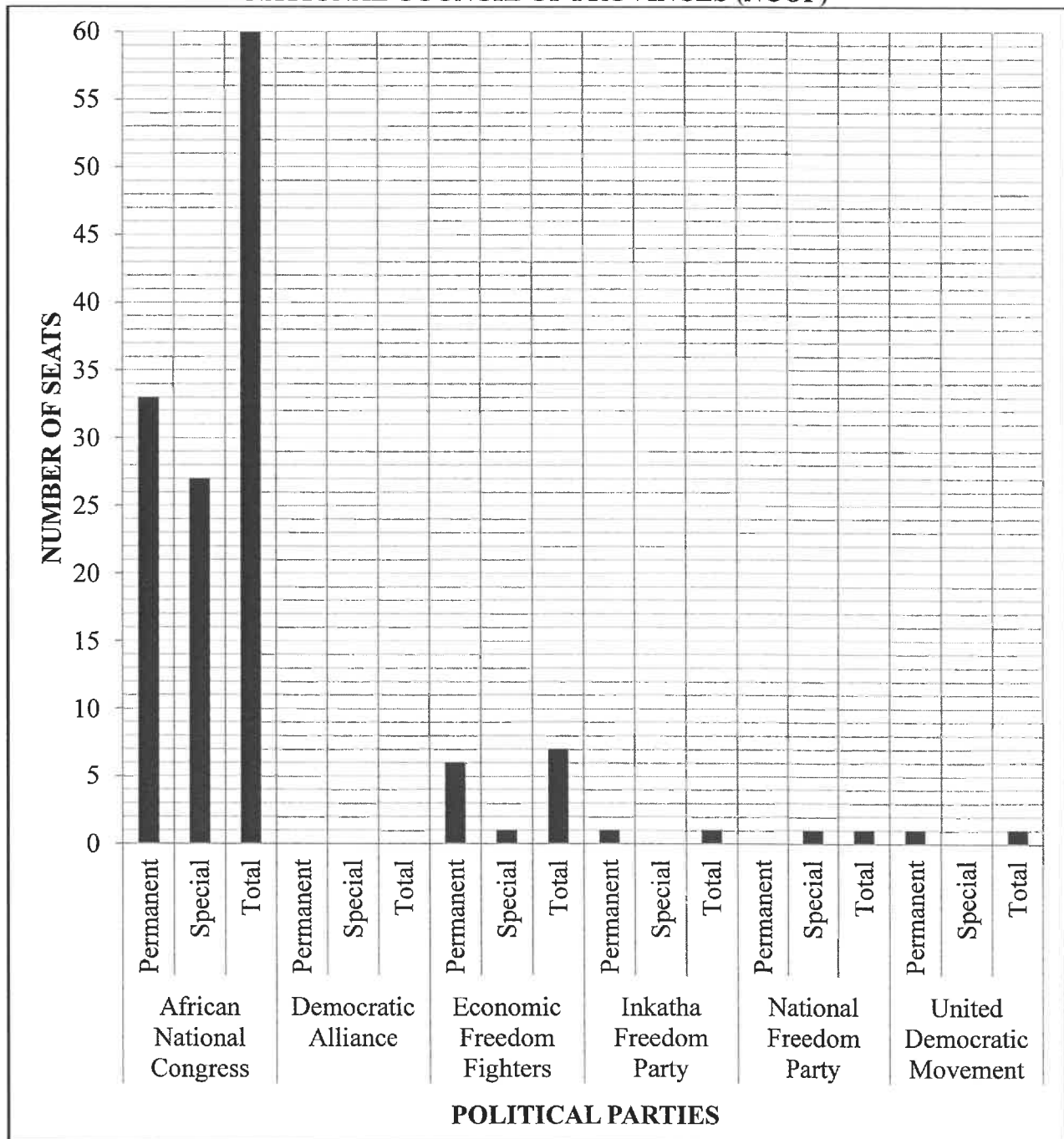
CENTRE NUMBER:

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EXAMINATION NUMBER:

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NUMBER OF SEATS FOR DIFFERENT PARTIES IN THE NATIONAL COUNCIL OF PROVINCES (NCOP)





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ADDENDUM

NOVEMBER 2019

This addendum consists of 4 pages with 3 annexures.

ANNEXURE A

QUESTION 2.1

EXTRACT FROM MR DANIELS' MONTHLY MUNICIPAL STATEMENT

Mr KJ Daniels 14 Sirkoon Street Kruger Park 2738	Date: 2019/03/12 Statement for: March 2019
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STAND SIZE	NUMBER OF DWELLINGS	DATE OF VALUATION	PORTION	MUNICIPAL VALUATION	REGION
463 m ²	1	2018/07/01	R1	Market value R944 630,00	WARD C

ACCOUNT NUMBER: 345 678 8900 60			
		SUBTOTAL (R)	TOTAL AMOUNT (R)
Water and sewer			
Reading period	2019/01/16 to 2019/02/12		
Meter reading	Start: 795 000 End: 807 000		
Water usage	12 kℓ (kilolitres)		
Daily average consumption	0,429 kℓ		
Charges for 12 kℓ are based on a sliding scale for a 28-day period			
Total water charge (excluding VAT)		B	
Water demand management levy		22,64	
Monthly sewer charge based on stand size (excluding VAT)		A	
VAT: 15%		73,75	

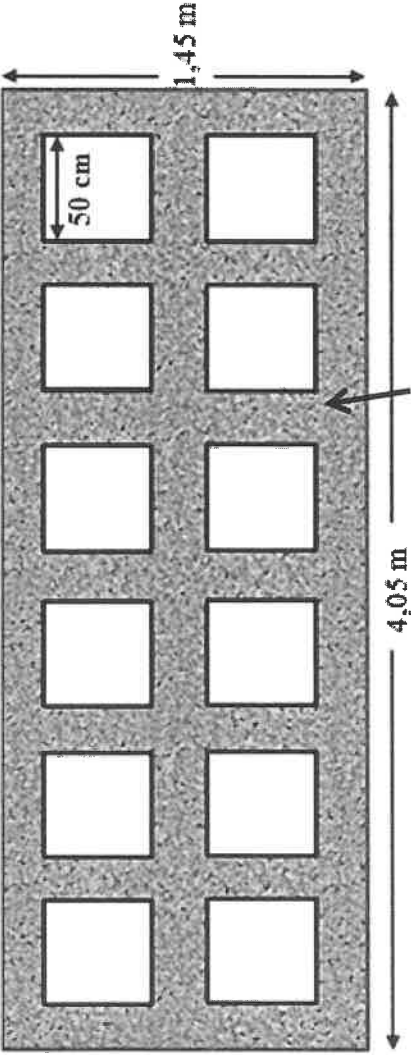
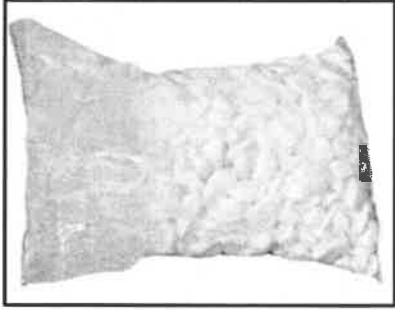

PAYMENT DUE		XXX
DUE DATE		2019/03/27

STEPPED RESIDENTIAL WATER TARIFF	
KILOLITRES PER CONNECTION PER MONTH	2018/19 TARIFF (R/kℓ) EXCLUDING 15% VAT
from 0 to 6	8,28
above 6 to 10	8,79
above 10 to 15	15,00
above 15 to 20	21,83

SEWER MONTHLY CHARGE BASED ON STAND SIZE	
STAND SIZE (m ²)	2018/19 TOTAL CHARGE (IN RAND) EXCLUDING 15% VAT
Up to and including 300 m ²	194,67
Larger than 300 m ² to 1 000 m ²	378,95
Larger than 1 000 m ² to 2 000 m ²	573,29
Larger than 2 000 m ²	836,02

[Adapted from www.joburgwater.co.za and www.jotariffs.co.za]

ANNEXURE B**QUESTION 3.2****THABISO'S LAYOUT PLAN FOR HIS WALKWAY**

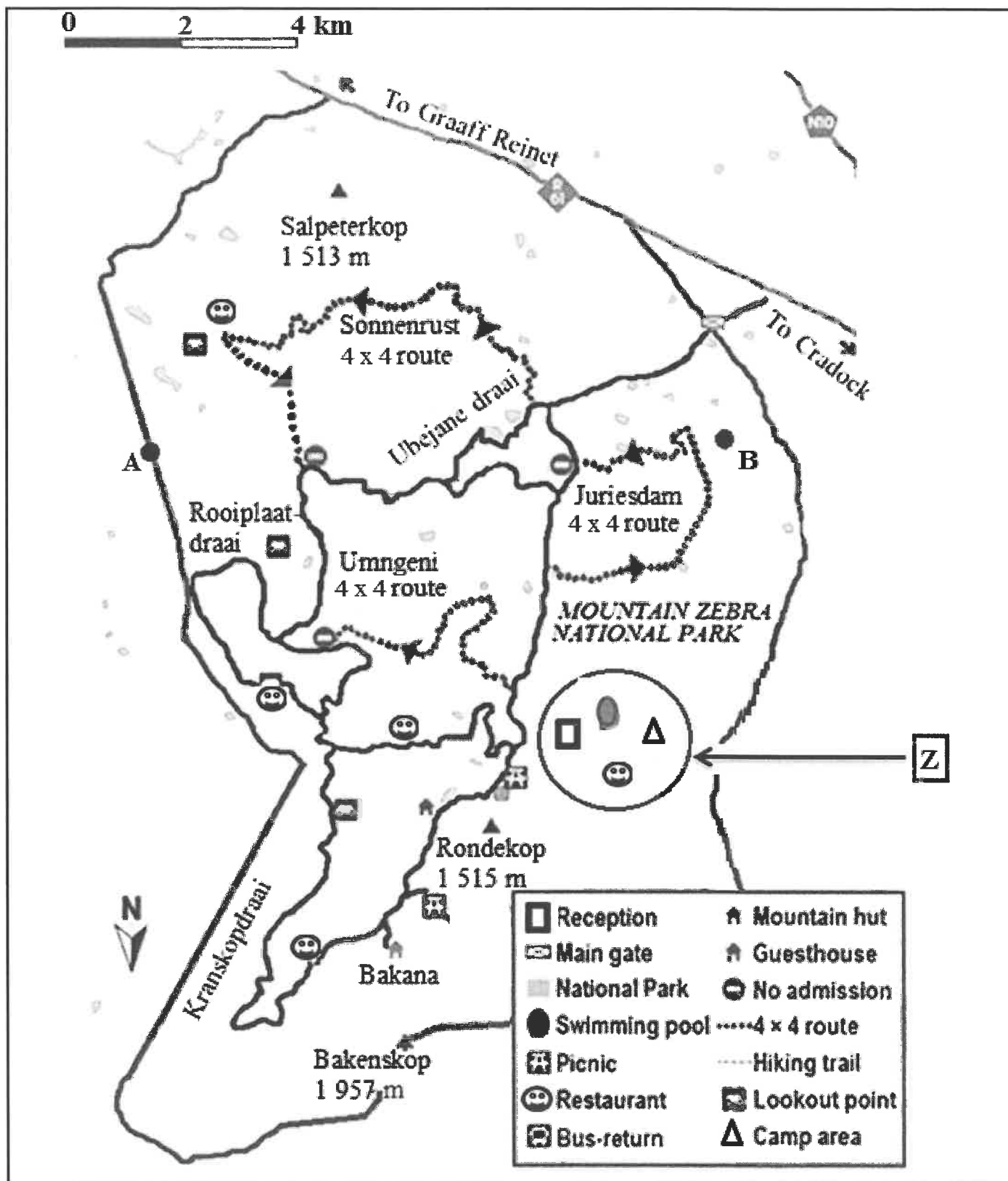
Thabiso's walkway	Bag of pebbles
	
Photo of a typical arrangement	Dimensions and information
	<ul style="list-style-type: none"> • The dimensions are 4,05 metres by 1,45 metres. • 1 concrete block = 50 cm x 50 cm. • The pebbles are sold in 20 kg bags that covers an area of approximately 0,36 m². • He will need 12 blocks, as shown in the sketch above.

[Source: www.home-dzine.co.za]

ANNEXURE C

QUESTION 4.1

MAP OF THE MOUNTAIN ZEBRA NATIONAL PARK

[Adapted from www.grafieka24.com]