Education and Sport Development

Department of Education and Sport Development
Departement van Onderwys en Sport Ontwikkeling
Lefapha la Thuto le Tlhabololo ya Metshameko
NORTH WEST PROVINCE

NATIONAL
SENIOR CERTIFICATE

GRADE 11

MATHEMATICAL LITERACY P2

JUNE 2018

MARKS: 75

TIME: 1,5 hour

This question paper consists of 10 pages including 2 annexures and 1 answer sheet.

INSTRUCTIONS AND INFORMATION

1. This question paper consists of FOUR questions. Answer ALL the questions.

2. 2.1 Use the ANNEXURES in the QUESTION PAPER to answer the following questions:

   - ANNEXURE A for QUESTION 2.3
   - ANNEXURE B for QUESTION 3

   2.2 Answer QUESTION 1.2 on the ANSWER SHEET attached.

3. Number the answers correctly according to the numbering system used in the question paper.

4. An approved calculator (non- programmable and non- graphical) may be used, unless stated otherwise.

5. ALL the calculations must be clearly shown.

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

7. Units of measurement MUST be indicated, where applicable.

8. Diagrams are NOT necessarily drawn to scale, unless stated otherwise.

9. Write neatly and legibly.

QUESTION 1

Jabulani, who lives in Pretoria, wants to hire a car for a trip to Klerksdorp and back. The distance from Pretoria to Klerksdorp is 250 km.

He contacts the company for a quotation and is given two options below.

Option 1: The company charges R450 per day plus 50 cents for every kilometre travelled.

Table 1: Cost of hiring a car using Option 1

Distance (km)	0	50	100	150	200	250	300	350
Cost (R)	450	475	500	525	550	**P**	600	625

Option 2: The company charges R200 per day for the first 100 km or part thereof and R2 per kilometre for every additional kilometres travelled after the first 100 km.

Table 2: Cost of hiring a car using Option 2

Distance (km)	0	50	100	150	200	250	300	350
Cost (R)	200	200	200	300	**Q**	500	600	700

Use the information above to answer the questions that follow.

1.1 Calculate the following missing values:

1.1.1 P (2)

1.1.2 Q (2)

1.2 Use the grid provided on the ANSWER SHEET to draw the line graph representing Option 2. Clearly label the two graphs. (7)

1.3 Explain the break-even point in this context. (2)

1.4 Jabulani claims that it took him 2 hours and 45 minutes to travel the distance between Pretoria and Klerksdorp at an average speed of 100 km/h.

Verify, using calculations, whether Jabulani's claim is correct.

You may use the formula:

Distance = time × average speed (5)

[18]

QUESTION 2

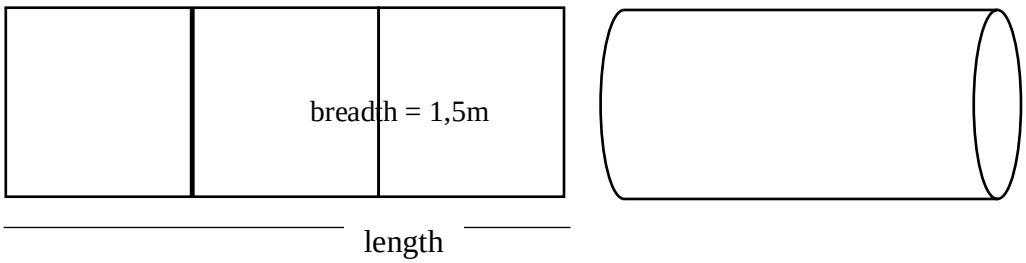
Mrs Thompson decided to install a solar geyser on the roof of her house to reduce the electricity bill.

The solar panels use sunlight to heat the water stored in the cylindrical tank. The heated water can then be used in the house.

There are six people altogether in Mrs Thompson's household.

The solar geyser consists of rectangular solar panels and a cylindrical storage tank as shown in the diagrams below.

Solar panels Geyser



You may use the following formulae:

Area of rectangle = length × breadth

Volume of cylinder = $\pi \times r^2 \times h$, where $\pi = 3,142$

$1\ell = 1\ 000\ cm^3$ and $\pi = 3,142$

Use the information above to answer the questions that follow.

2.1 Mrs Thompson was told that she needs solar panels with an area of 2 m^2 for the first two members in the household and thereafter an area of 0,7 m^2 for each additional member.

Calculate the total length of the solar panels needed by Mrs Thompson. (5)

2.2 The geyser has a volume of 150 ℓ and a height of 120 cm.
Calculate the radius, to the nearest cm, of the geyser. (5)

2.3 The electrician charges Mrs Thompson R11 590 to supply and install the geyser. Mrs Thompson is offered 15% discount if she pays full amount before installation. She then considered taking a personal loan over 36 months in order to install the geyser. She obtained the personal loan repayment table from Leballo Financial Assistance provided on ANNEXURE A

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

2.3.1 Mrs Thompson claims that a loan of R10 000 will be sufficient to pay the total cost required by the electrician.

Verify, using calculations, whether her claim is correct. (4)

2.3.2 Determine:

(a) the initiation fee as a percentage of the loan amount. (2)

(b) the total interest she will pay for her loan. (3)

2.3.3 Give ONE possible reason for paying monthly balance protection insurance fee. (2)

2.4 The electrician told Mrs Thompson that the temperature of the geyser should always be at 140˚F.

Calculate the temperature of the geyser in ˚C.

You may use the formula:

$$^{\circ}\mathbf{F} = \mathbf{1,8} \times {}^{\circ}\mathbf{C} + \mathbf{32}^{\circ}$$ (3)

[24]

QUESTION 3

Mr Thibedi and his family travelled from Durban to East London. They left Durban with a full tank of petrol. Along the way they stopped at a petrol station to refuel at the cost of R420,30.

Note:
The car has a consumption rate of 9 litres per 100 km.
The capacity of the tank is 60 litres.
The cost of fuel is R14,01 per litre.

A map of South Africa showing the national roads is given on ANNEXURE B

Use ANNEXURE B to answer the questions that follow.

3.1 Calculate the actual distance (in kilometres) between Durban and East London. (4)

3.2 Before refuelling, the fuel gauge indicated that the tank was half full.

Verify, showing calculations, whether the fuel gauge was properly working. (3)

3.3 Mr Thibedi claims that by the time they refuelled the tank, they were left with 300 km to East London.

Verify, using the answer in QUESTION 3.2, whether Mr Thibedi's claim is valid. (4)

3.4 Describe, in detail, the shortest possible route using the national roads to travel from East London to Beaufort West. (4)

3.5 Give ONE other reason why the family had to stop at the petrol station. (2)
[17]

QUESTION 4

The cable car travels up and down the mountain which is 3 559 feet above sea level every 15 minutes, ferrying up to a maximum of 65 visitors at a time. The cable car stays open from 08:30 to 18:00. It takes each cable car 30 minutes per trip.

Note: 1 feet = 12 inches

1 metre = 39,37 inches

Use the information above to answer questions that follows.

4.1 Calculate the height (to the nearest metre) of the mountain. (4)

4.2 The operator states that each cable car makes more than 15 trips in a day.

Verify, using calculations, whether the operator's statement is correct. (5)

4.3 If the ratio of adults to children per ride is 8:5, calculate number of adults per cable car carrying the maximum capacity. (3)

4.4

The rates for riding in a cable car are given as follows:

Adults: 7,6 $

Children below 14 years: 4,8 $

Note: R1 = 0,080 $

The cashier claims that each cable car carrying a maximum capacity gives a company R5 300 per trip.

Verify, using calculations, whether the cashier's claim is valid. (4)

[16]

TOTAL MARK: 75

ANNEXURE A

QUESTION 2.3

LEBALLO FINANCIAL ASSISTANCE

Personal loan repayment table

Loan amount	**MONTHLY PAYMENT FOR DIFFERENT PERIODS**				
	12 months	24 months	36 months	48 months	60 months
R4 000	R936,43	R519,28	R384,42	R315,60	R276,76
R10 000	R1 872,85	R1 038,55	R764,84	R613,21	R553,52
R20 000	R2 809, 28	R1 557,83	R1 147,27	R996,81	R830,27
R30 000	R3 745,70	R2 077,10	R1 529,69	R1 262,42	R1 107,03

The amounts shown above are approximates and will vary according to interest rate fluctuations.

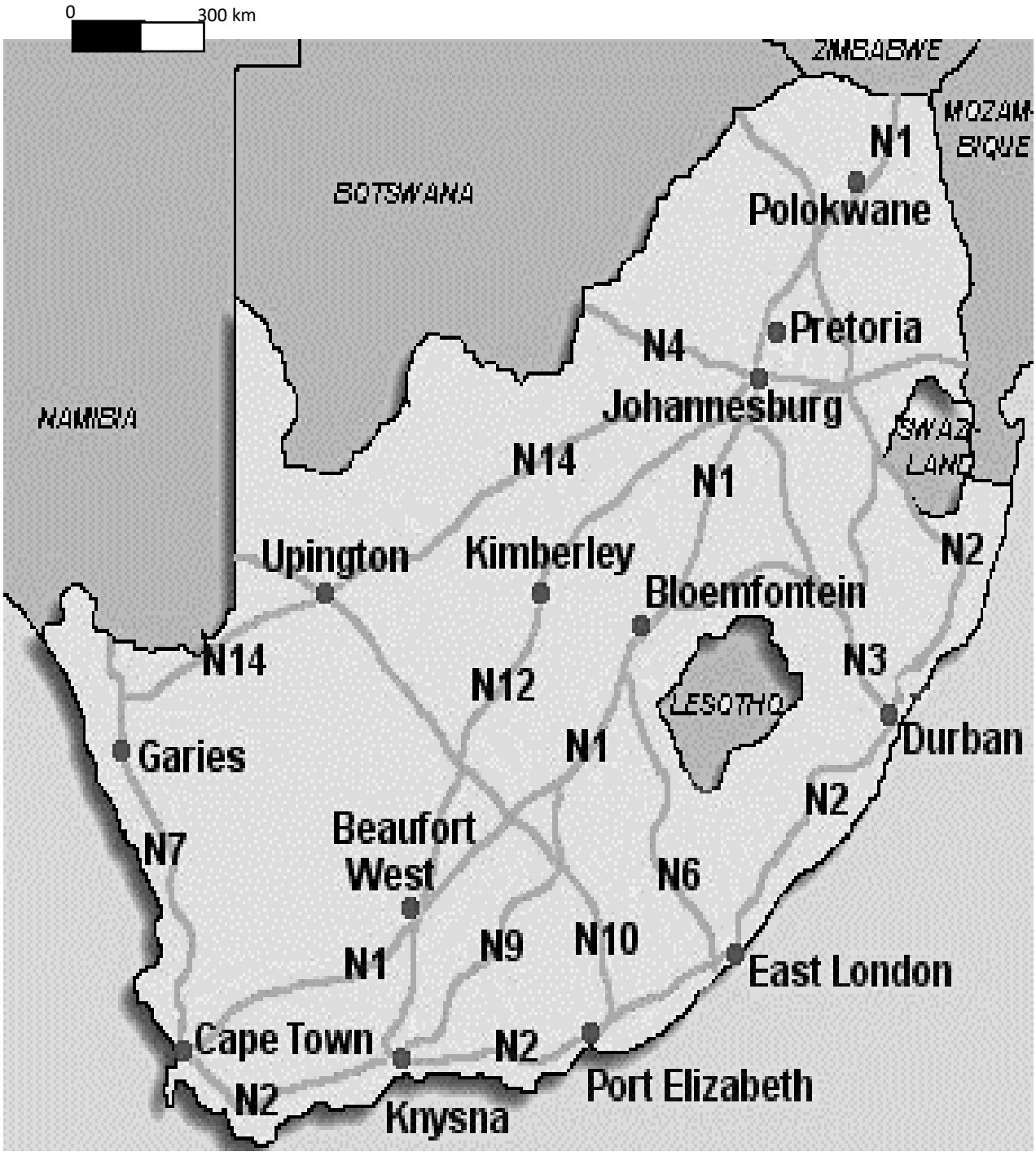
Note:

- Interest rate used to calculate amounts provided in the above table is 21% per annum
- The monthly payment excludes the monthly service fee of R75,00 and a monthly balance protection insurance fee of R20,50.
- A once-off initiation fee of R350,00 is payable for new loans.

ANNEXURE B

QUESTION 3

A MAP OF SOUTH AFRICA SHOWING THE NATIONAL ROADS



ANSWER SHEET

QUESTION 1.2

NAME OF LEARNER:_____ CLASS:_____