Province of the
EASTERN CAPE
EDUCATION

NATIONAL SENIOR CERTIFICATE

GRADE 11

NOVEMBER 2015

MATHEMATICAL LITERACY P2

MARKS: **100**

TIME: **2 hours**

IMLIT2

This question paper consists of 12 pages, including an annexure of 3 pages.

INSTRUCTIONS AND INFORMATION

Read the following instructions carefully before answering the questions.

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

2. **QUESTION 1.1** must be answered with reference to **ANNEXURE A**, **QUESTION 2.1.2** must be answered on **ANNEXURE B** and **QUESTION 4.1.7** must be answered on **ANNEXURE C**. Write your **NAME** and **CLASS GROUP** on **ANNEXURES B** and **C** and hand in with your ANSWER BOOK.

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

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

5. ALL calculations must be clearly shown.

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

7. Start EACH question on a NEW page.

8. Write neatly and legibly.

QUESTION 1

1.1 Study the floor plan of the Greenacres Shopping Centre in Port Elizabeth (ANNEXURE A) and answer the questions that follow.

1.1.1 How many entrances can you use to access the centre? (2)

1.1.2 You get a call from your friend. The two of you lost each other in the centre. Your friend is at the Automatic Teller Machine (ATM) at Shop No. 40. You are waiting for your friend at Entrance No. 2. Explain to your friend the quickest way how to get to Entrance No.2. (3)

1.2 You and your friend want to watch the movie "The Best of Me" that is screened in Cinema 15 at "The Bridge" near the Greenacres Shopping Centre. The running time of the movie is 117 minutes.

The show times of the movie are shown below for Sunday, 11 January 2015.

Sun 11 Jan

10:00	12:15	14:45	17:45	20:15	22:30

1.2.1 Write the running time of the movie in hours and minutes. (2)

1.2.2 You and your friend arrived at the centre at 11:20 and have to be at home by 17:30. It takes you two thirds of an hour from Greenacres Shopping Centre to your home. With your arrival at the centre, you and your friend spend three quarters of an hour at the Food Court. It will take you about 15 minutes to buy your tickets. Show with the necessary calculations which of the times will be most suitable for you to watch the movie. (6)

1.2.3 Give TWO reasons why the movie for the next time slot is not exactly after the end of the previous screening. (2)

1.3 The following table shows the prices of the movie tickets at The Bridge Cinemas:

Kids (younger than 18 years)
Adults (18–60 years)
Seniors (older than 60 years)

Table 1: Price of movie tickets at The Bridge

Regular Pricing	**Adults**	**Kids and Seniors**
2D	R 62,00	R43,00
3D	R 75,00	R55,00
CLICKS ClubCard **– Mon, Tue, Thurs, Fri**		
2D		R 38,00
3D		R 55,00
Wowza Wednedays		
2D		R 37,00
3D		R 45,00

1.3.1 Calculate the total price of the tickets for you and your friend. You are 18 years old and your friend 16 years; and you will be watching the movie in 3D. (3)

1.3.2 Seeing that you and your friend are dependent on allowances from your parents, why do you think you and your friend chose the wrong day to watch movies? (2)
[20]

QUESTION 2

2.1 Mr. Gardner has a landline telephone. His service provider offers him a choice of their new call packages. Below is a table showing the two different call packages that they offer.

Table 2: Two Landline call packages

Call Package A	Call Package B
• Monthly rental of R100 • First 100 minutes are free • Calls cost 80 cents per minute	• Monthly rental of R200 • First 150 minutes are free • Calls cost 60 cents per minute

2.1.1 The total cost for Call package A is given by the following formula:

Total cost (in Rand) = R100 + number of minutes more than 100 x R0,80

(a) Write down a formula which can be used to calculate the total cost in Rand for Call package B. (3)

(b) If Call package B is used, determine the total cost in Rand, if Mr. Gardner and his family made calls with a total duration of 625 minutes. (4)

2.1.2 The line graph illustrated in ANNEXURE B shows the total cost for Call package B. On the same set of axes, draw a line graph to illustrate the total cost for Call package A. (5)

2.1.3 Briefly define what is meant by concept, *break-even point*, in the given context. (2)

2.1.4 Write down the co-ordinates of the break-even point on the graph. (2)

2.1.5 Show by means of calculation that Call Package A costs 20 cents more than Call Package B for using the minimum number of minutes after the break-even point. (4)

2.1.6 Mr. Gardner wants to spend a maximum of R300 per month on one of the Call packages. Which Call package would you advise him to choose? Motivate your answer by showing all calculations. (5)

2.2 The service providers have a major task on their hands. For Landline numbers they have to use a system where they make entirely sure that a number is not duplicated (repeated).

Landline numbers consists of ten digits. The first three digits are for the area code followed by seven digits. The first three digits of the remaining seven digits for the area where Mr. Gardner lives, starts with 423 followed by the last four digits.

The last four digits are numbers that can be repeated using the numbers 0 to 9.

Show with calculations how many households in Mr. Gardner's area can be issued with a landline number starting with 041 423 _ _ _ _? (3)

[28]

QUESTION 3

3.1 As availability of water is becoming a major problem in South Africa, more people are intending to save water. Therefore some of them are investigating how they are billed and if the billing is correctly calculated.

Mrs. Treace is one of those people and stays in Cape Town. She studied the water tariffs for 2013–2014 carefully.

Below is a table showing the water tariffs for Cape Town during 2013–2014. Study the table carefully before answering the questions.

Table 3 Water Tariff for Cape Town 2013–2014

From	To	Rand per kl excluding VAT	Including VAT
> 0,0 kl	6,0 kl	R 0,00	R0,00
> 6,0 kl	10,5 kl	R7,60	R8,66
> 10,5 kl	20,0 kl	R11,61	R13,24
> 20,0 kl	35,0 kl	R17,20	**A**
> 35,0 kl	50,0 kl	R21,24	R24,22
> 50,0 kl		**B**	R31,95

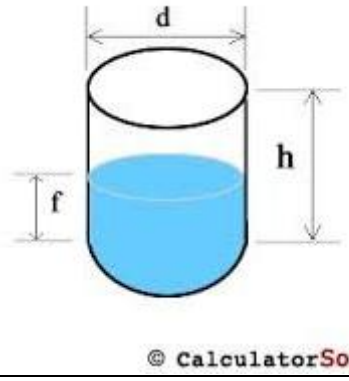
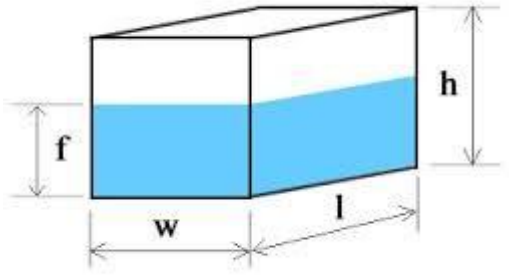
3.1.1 Calculate the missing values for A and B respectively. (4)

3.1.2 If Mrs. Treace uses on average 19,5 kl of water per month, will she be paying for the full 19,5 kl? Give a reason for your answer. (2)

3.1.3 Hence, calculate how much Mrs. Treace will pay for using 19,5 kl of water including VAT. (4)

3.2 One of the ways to save water is to install a water tank. Mrs. Treace decided to investigate the different types of water tanks that is sold in order to make the best decision.

Below are diagrams of a vertical, round water tank and a rectangular water tank. Study these diagrams and the information given and then answer the questions that follow.

Vertical Round water tank	**Rectangular water tank**
	

Vertical Round water tank	**Rectangular water tank**
***d* = diameter** ***h* = height** ***f* = recommended filled height**	***l* = length** ***w* = width** ***h* = height** ***f* = recommended filled height**

Vertical Round Water Tanks			
	Tank Volume in litres	**Diameter in mm**	**Height in mm**
1	1 000	750	2230
2	1 000	1100	1400
3	1 000	1100	1300

Rectangular Water Tanks			
Tank Volume in litres	**Depth in mm**	**Height in mm**	**Width in mm**
1000	520	1770	1260

3.2.1 Show with the necessary calculations that the volume of the vertical round water tank **numbered 1** is not exactly 1000 liters as indicated in the table.

Use the formula:
Volume of vertical round water tank = 3,142 x radius^2 x height of the water tank.
Please Note: 1 m^3 = 1000 *l*
(6)

3.2.2 With reference to your answer in QUESTION 3.2.1, why do you think that there is a difference in the volume between what you have calculated and the given volume? Also explain how this given information can be misleading to consumers. (3)

3.2.3 Briefly explain why the diagrams indicate a recommended filled height. (2)

3.2.4 In her backyard, Mrs. Treace has only one open area next to her house to install the water tank. The width of the area is 1,15 m. Which of the water tanks must she buy that will satisfy the requirement? (2)

3.3 Mrs. Treace will be using the water in her water tank for various purposes. If Mrs. Treace wants to illustrate her usage graphically, which graphical representations can Mrs. Treace use to illustrate how she is using the water? (2)

[25]

QUESTION 4

4.1 The following table illustrates the weather forecast for George from Wednesday, 14 January 2015 to Tuesday, 20 January 2015. Study the weather forecast and answer the questions that follow.

Table 4: Weather forecast for George

Wed	Thu	Fri	Sat	Sun	Mon	Tue
26 °C Partly Cloudy	29 °C Sunny	22 °C Windy	23 °C Partly Cloudy	22 °C Sunny	21 °C Mostly Cloudy	24 °C Partly Cloudy
Wed	Thu	Fri	Sat	Son	Mon	Tue
21 °C Mostly Clear	20 °C Partly Cloudy	15 °C 30% Chance Rain Shower	16 °C Mostly Clear	17 °C Partly Cloudy	17 °C Mostly Cloudy	17 °C Mostly Cloudy

[http://weather.weatherbug.com]

4.1.1 Calculate the mean day temperature for George for the forecasted period. Round your final answer to the nearest temperature in °C. (4)

4.1.2 Determine the range for the period. (2)

4.1.3 Calculate the median for the night temperatures. (2)

4.1.4 Briefly explain the trend of the night temperatures. (2)

4.1.5 On which day was the difference in temperature the smallest? Write down this difference. (2)

4.1.6 Write down the day where the day and night temperatures showed a decreasing trend. (2)

4.1.7 Use the information in the table to draw a compound bar graph in ANNEXURE C. (6)

4.2 Explain what is meant by the forecast for Friday that states “30% chance of rain shower”. (2)

4.3 4.3.1 You want to travel from George to Knysna.

The distance between George and Knysna is 64,7 km. Show with the necessary calculations how long it will take you from George to Knysna if you are driving at a speed of 90 km per hour. Give you answer to the nearest minute.

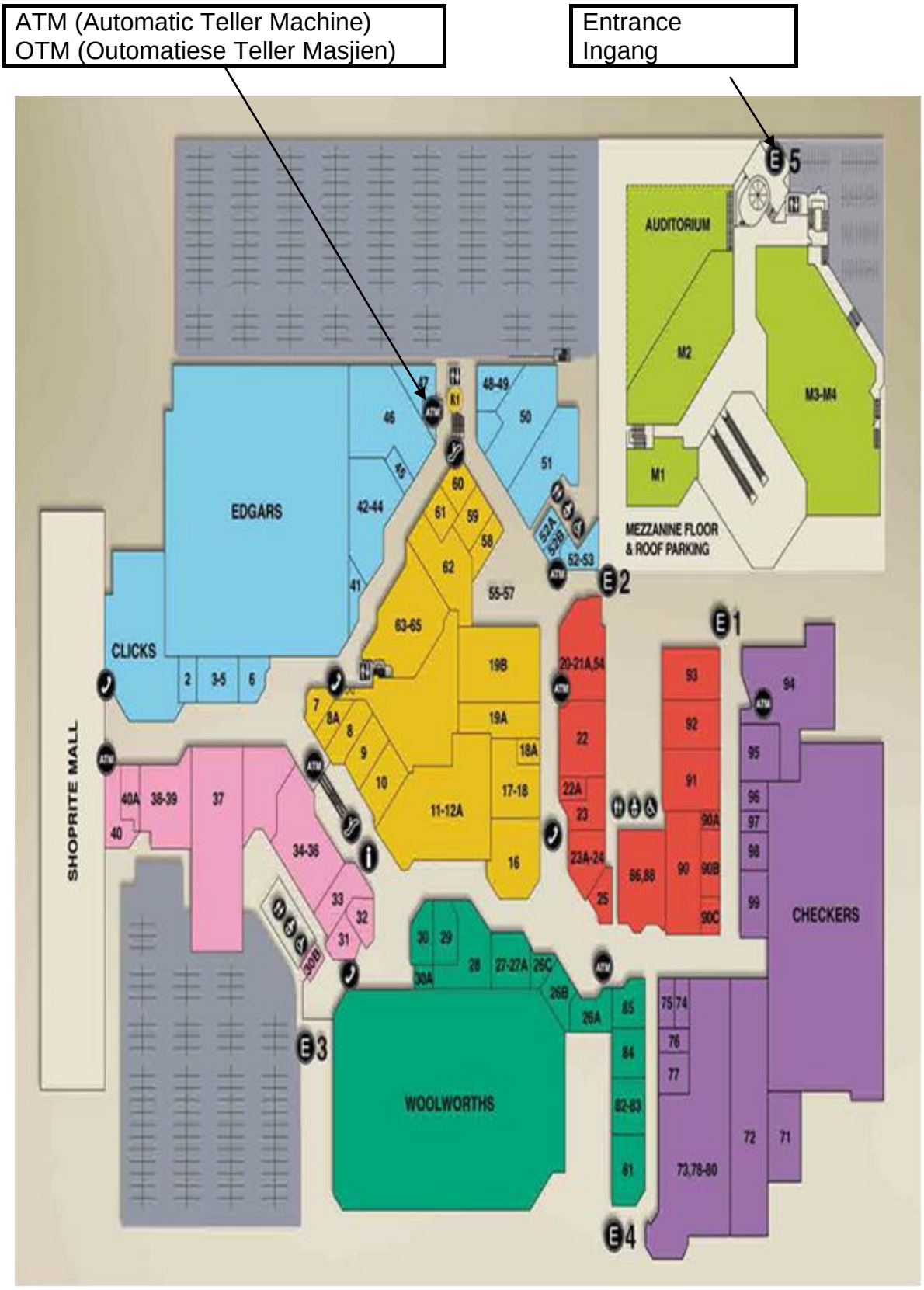
You may use the formula:
Distance = Speed x Time (3)

4.3.2 If you experience problems with your car on the route, will it be possible that you will complete the trip in the time that you have calculated in QUESTION 4.3.1. (2)

[27]

TOTAL: 100

ANNEXURE A

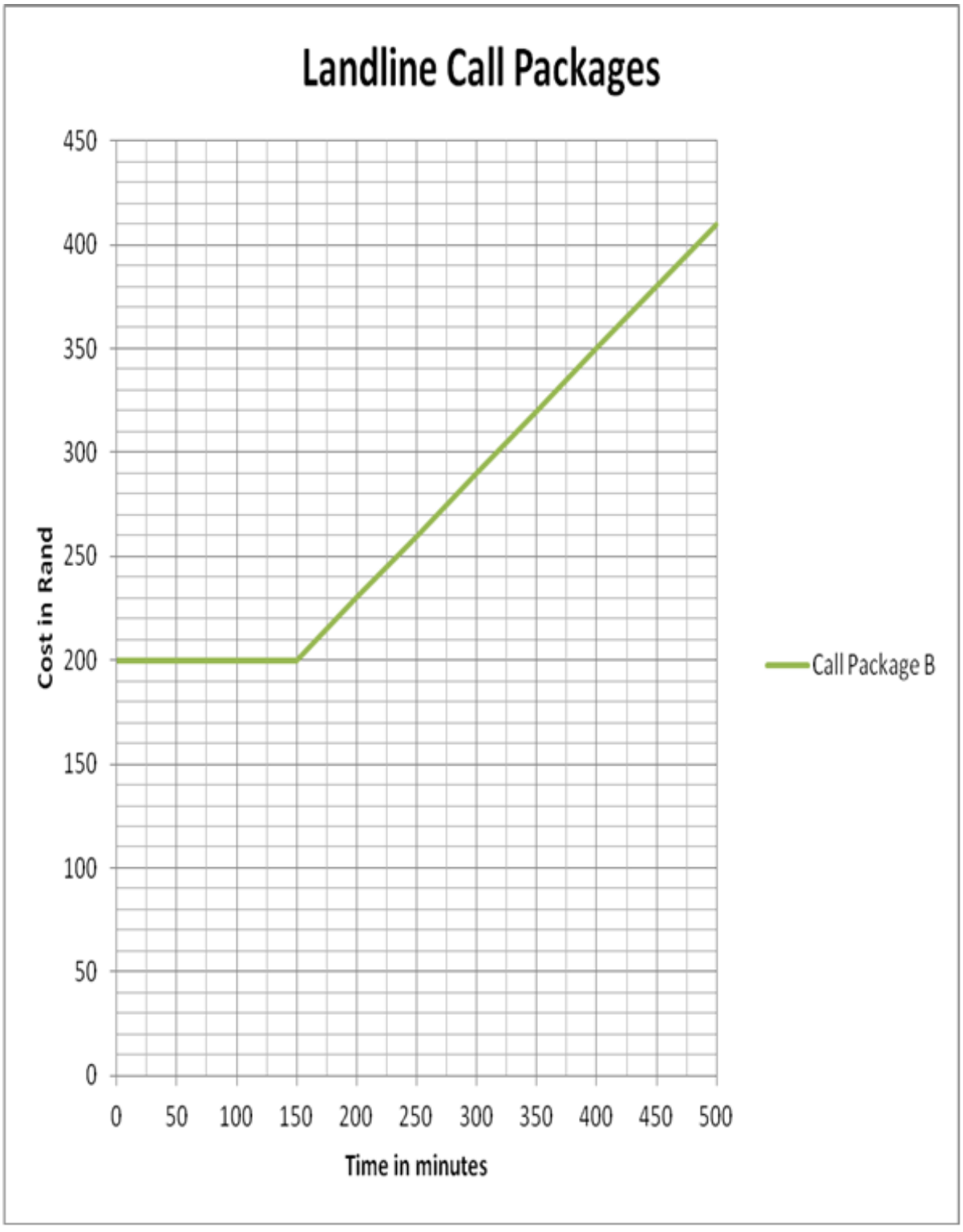

ATM (Automatic Teller Machine)
OTM (Outomatiese Teller Masjien)
Entrance
Ingang
AUDITORIUM
M2
M3-M4
M1
MEZZANINE FLOOR
& ROOF PARKING
EDGARS
CLICKS
SHOPRITE MALL
WOOLWORTHS
CHECKERS
E1
E2
E3
E4
E5

ANNEXURE B

QUESTION 2.1.2

NAME: _____

GRADE 11: _____



ANNEXURE C

QUESTION 4.1.7

NAME: _____

GRADE 11: _____