KZN DEPARTMENT OF EDUCATION

GREENBURY SECONDARY SCHOOL

GRADE 10

MATHEMATICAL LITERACY - PAPER TWO
NOVEMBER EXAMINATIONS
2018

MARKS   **: 75**   **DURATION**   **: 1 ½ HOURS**

INSTRUCTIONS & INFORMATION

- This paper consists of :
  4 QUESTIONS AND 10 PRINTED PAGES (Including this cover page , Annexure A , B and a special answer sheet)
- The special answer sheet has already been attached to your answer booklet
- All calculations and steps must be shown clearly in ink.
- Number the answers correctly according to the numbering system used in this question paper.
- Round off **ALL** final answers appropriately according to the given context unless stated otherwise.
- An approved calculator (non-programmable and non-graphical) may be used,
  unless stated otherwise.
- Units of measurement must be indicated where applicable.
- ALL QUESTION PAPERS MUST BE SUBMITTED TO YOUR INVIGILATOR

Sima is a third year student at the University of KwaZulu Natal (UKZN).

She has been notified by the university that she has to pay her fees for the year before her results are released. Her fees for the year are a total of R 32 500 and the only payment she has made for the year was the registration fee of R4 500.

Her mother runs a tuck-shop but it does not generate enough funds to pay for these outstanding fees.

1.1 Sima's mother is considering the following loan offers to be repaid by her on a monthly basis over a period of two years:

OPTION 1 - TBC Bank

Simple interest at 11% per annum for two years

OPTION 2 - CRC Bank

Compound interest at 10% p.a. compounded annually for two years

1.1.1 Calculate the outstanding fees to be repaid. (2)

1.1.2 Sima's mother wanted to take a loan to the value of R 28 000.

Show by calculations the amount she will have repaid in total for each option, at the end of two years. (6)

1.1.3 Advise Sima's mother on which option is best for her. Motivate your answer. (2)

1.2 Sima's mother is trying to cut down on as many unnecessary costs as possible as she will now have less money for other expenses. She has been withdrawing cash without much consideration for bank charges and making use of other bank's ATMs.

ANNEXURE A shows the tariff structure used by her bank to calculate the bank fees. Use the annexure to answer the following questions:

1.2.1 Why do you think that the bank introduced the withdrawal at point of sale (POS) charge? (2)

2.2.3 Hence, determine the total area to be tiled (2)

2.3 If a tile has a length of 0.4m and breadth of 0.4m, what is the minimum number of tiles that Sima's mother will need in order to tile the bedroom and bathroom? (4)

2.4 Tiles come in boxes of 12. How many boxes should be bought to have enough tiles? (2)

2.5 Sima's mother is concerned about the amount of water used during the renovations. Analyse the following tariff table and answer the questions that follow:

Msunduzi Municipality: Water Tariff 2018

NOTE : this municipality charges a FIXED MONTHLY CHARGE of R 87,50 (incl)

BLOCK	Consumption (kilolitres)	Charge per kilolitre (VAT Exclusive)
1	0 to 6	R0,00
2	› 6 to 12	R6,50
3	› 12 to 15	R7,20
4	› 15 to 25	R11,80
5	› 25 to 40	R15,50
6	› 40	R21,70

2.5.1 Give one possible reason for block 1 being charged at R0,00? (2)

2.5.2 Sima's mother said that her total consumption for the month was **32** kilolitres. Calculate her expected water bill for the month (including VAT @15%). (6)

1.2.2 Sima's mother deposited R500 into her account using the ATM in June 2015. According to the table, the fee for this is reflected as R9,50. Using the formula provided, verify whether this charge was correct. (2)

1.2.3 Show how the percentage change of 3.2% in external debit order charges was calculated from 2015 to 2016. (2)
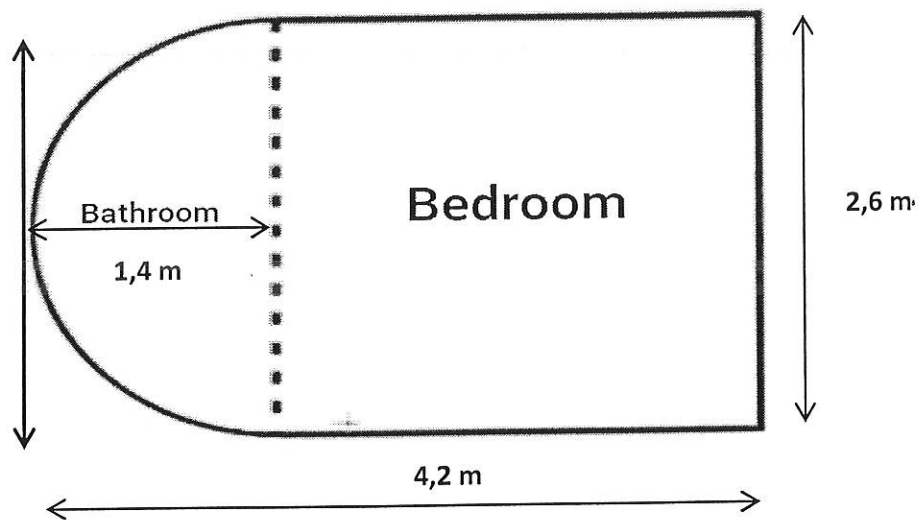
$$\% \ increase = \frac{New\ price - Old\ price}{Old\ price} \times 100$$

QUESTION TWO: (22 marks)

Sima's mother decided to renovate her room. The tiles in the bedroom and bathroom need to be replaced.

The following sketch is a two-dimensional diagram of her rectangular bedroom with a semi-circular bathroom with a radius of 1.4m:

NB : Diagram not drawn to scale

2.1 Calculate the dimensions (length and breadth) of the bedroom. (2)

2.2 Determine the **area** (in m²) of the following rooms that Sima's mother is going to tile:

2.2.1 The bedroom (2 dec.)

Area of rectangle = length × breadth (2)

2.2.2 The bathroom (2 Dec.)

Area of semi-circle = ½ × πr² where π = 3.142 (2)

QUESTION THREE: (15 marks)

Sima's best friend is going to get married. The couple has chosen a hall for their ceremony and decided on the seating plan for the reception. The seating plan is represented in **ANNEXURE B**. The reception will be held from 18:00 to 23:30.

Refer to the seating plan in **ANNEXURE B** and answer the questions below:

3.1.1 How many people do the couple intend to invite? (2)

3.1.2 Why are there no chairs arranged on the shorter sides of the tables? (2)

3.1.3 A person seated at Table 6 close to the MAIN TABLE wants to put her gift on the GIFT TABLE. Describe a possible route this person can take without walking over the DANCE FLOOR. (2)

3.1.4 One of the guests travel a distance of 120km from their home to the wedding reception. They travel at an average speed of 100km/h. Verify whether they will reach the reception on time if they leave home at 16:40 and make no stops along the journey. (3)

3.2 The bridal couple has to spend a lot of money for their entire wedding reception.

Their expenses are as follows:

Hiring of the venue: R3 500,00

Draping and décor: R4 750,00

Disc Jockey (DJ): R250 per hour or part thereof

Catering: R200 per person for the first 100 guests and R100 for every person above 100

Note:

The Disc Jockey will have a meal

The bridal couple stated it will cost R30 000 for the entire reception. Show, with the necessary calculations, whether the statement is valid or invalid. (6)
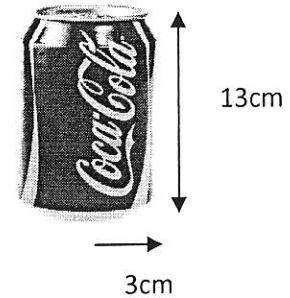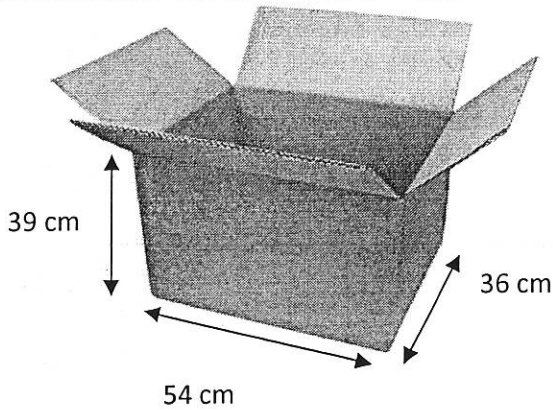
Sima's mother is expecting new stock to arrive for the tuck-shop. She receives a supply of single cans of cool drink packed in large boxes.

Each can has a radius of 3 cm and a height of 13 cm.

Each box measures 54 cm in length, 36 cm in breadth and 39 cm in height.

For the coming month, she needs 700 cans of cool drink.

4.1 The supplier delivered 4 boxes of cans of coke to the tuck-shop. Verify if she has enough stock for the month. (5)

4.2 Sima's mother sells four different flavours of cool drink to her customers: Coca Cola, Fanta, Sprite and Crème Soda and she stocked the fridge up with 20, 15, 10 and 10 cans of each flavour respectively.

4.2.1 What is the probability that a customer picks a Sprite? Write your answer as a fraction in simplest form. (2)

4.2.2 If five customers bought Coca Cola in the morning, and she does not restock the fridge what is the probability of the next customer buying Fanta? Answer as a percentage. (2)

4.3 The tuck-shop's records for the year reflect the following unit sales for two of their most commonly sold cool drinks:

MONTH	Jan.	Feb.	Mar.	Apr.	May.	Jun.	Jul.	Aug.	Sept.	Oct.	Nov.	Dec.
Coca Cola sales	95	98	100	88	59	47	52	62	74	81	90	104
Fanta sales	42	35	40	32	28	27	29	31	40	49	52	72

4.3.1 Calculate the following for the Coca Cola unit sales of the year:

4.3.1.1   Mean   (3)

4.3.1.2   Median   (2)

4.3.1.3   Which of the measures of central tendency (mean/median) best describes the
          Coca Cola sales?   (2)

4.3.2   Calculate the following for the Fanta unit sales of the year:

4.3.2.1   Mode   (2)

4.3.2.2   Range   (2)

4.3.3   At the end of the year, Sima's mother analysed the sale's report of Coca Cola
         and Fanta and found that in some months she had excess stock.
         Provide a possible reason as to why certain months reported much lower sales
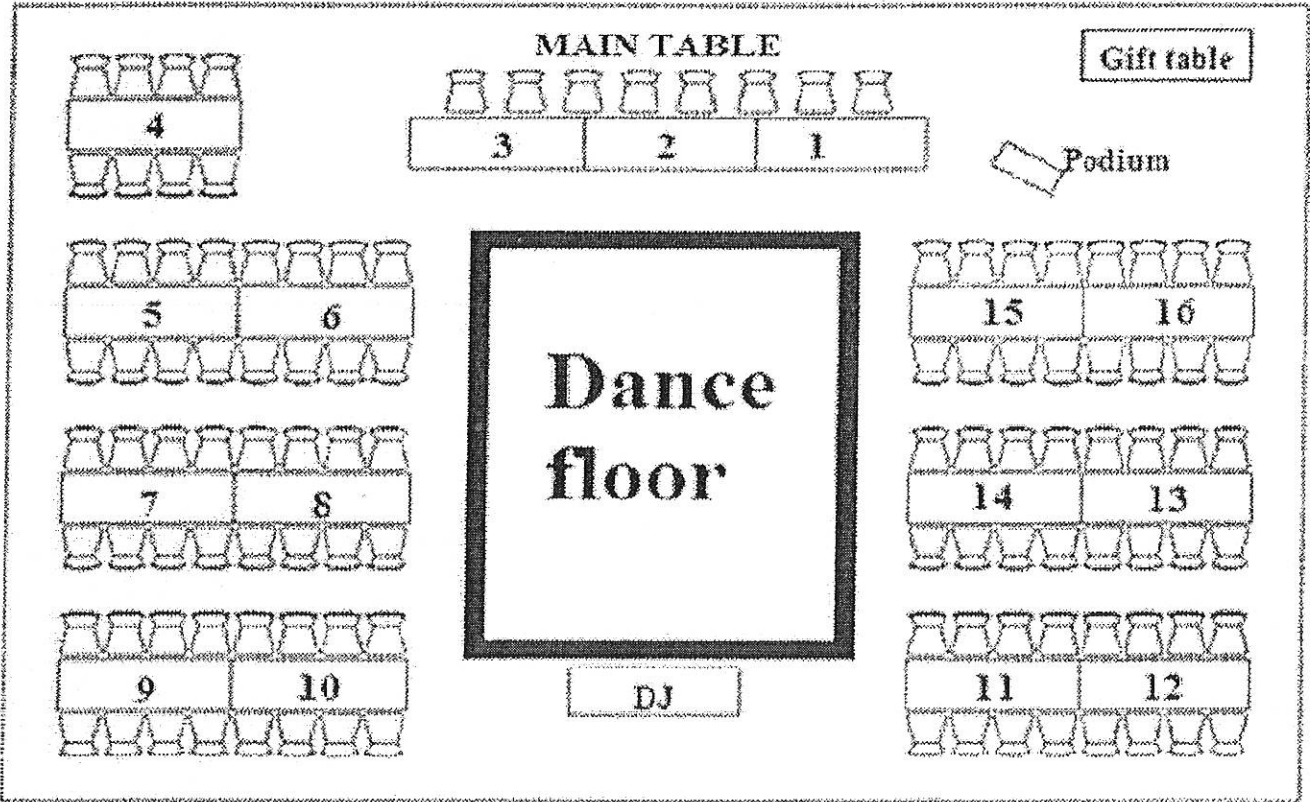   than others   (2)

TOTAL : 75 MARKS

ABSA

Absa Gold Cheque Account	**2015 Fees**	R500 transaction in 2015	**2016 Fees**	R500 transaction in 2016	% change from 2015 to 2016
Withdrawal (**own ATM**)	R3,95 + R1,30 per R100	R10,45	R3,95 + R1,30 per R100	R10,45	
Withdrawal (**other** bank's ATMs)	R9,95 + R1,30 per R100	R16,45	R9,95 + R1,30 per R100	R16,45	
Withdrawal (**POS**)			R3,95	R3,95	
Deposit (ATM)	R3 + R1,30 per R100	R9,50	R3 + R1,30 per R100	R9,50	
Debit Order (**internal**)	Free	Free	Free		
Debit order (**External**)	R15,50		R16,00		3,2%

MAIN TABLE

| 4 | | | | 3 | 2 | 1 | | Gift table |

Dance floor

| 5 | 6 | | 15 | 16 |

Podium

| 7 | 8 | | 14 | 13 |

| 9 | 10 | | 11 | 12 |

DJ

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MEMORANDUM

QUESTION ONE (16 MARKS)

QUESTION	ANSWER	EXPLANATION	MARKS
1.1.1	32 500 - 4 500 ✓ = 28 000✓	1 M 1A	2

1.1.2	**OPTION 1:**
	 R28 000 x 11% x 2✓
	= R6 160 + R28 000✓
	= **R34 160**✓
	
	OPTION 2:
	  1. 10 % x R28 000 = 2 800 + 28 000✓
	      = **R30 800**
	  2. 10 % x 30 800 = 3080 + 30 800✓
	      = **R33 880**✓
		1S
		1M
		1A
		
		1M
		
		1M
		1A
			6

1.1.3	**OPTION 2**↳ She will pay back less interest✓	2CA	2
1.2.1	Safer to withdraw at the till point. ✓✓ Accept any logical answer	2O	2
1.2.2	R3 + R1,30 x 5 ✓ = R9,50 **Yes** it is correct. ✓	1A 1CA	2
1.2.3	Percentage increase $= \dfrac{16 - 15,50}{15,50}$ x 100✓ = 3,2%✓	1M 1A	2

QUESTION TWO (22 MARKS)

QUESTION	ANSWER	EXPLANATION	MARKS
2.1	Length $=$ 4,2m $-$ 1,4m $=$ 2,8m✓ Breadth $=$ 2,6m✓	1A 1A	2
2.2.1	Area $=$ 2,8m x 2,6m✓ $=$ 7,28m^2✓	1M 1A	2
2.2.2	Area $= \frac{1}{2}$ x (3,142 x 1,4^2✓) $=$ 3,08m^2✓	1M 1A	2
2.2.3	Total Area $=$ 7,28m^2 + 3,08m^2✓ $=$ 10,36m^2✓	2CA	2
2.3	Area of 1 tile $=$ 0,4m x 0,4m $=$ 0,16m^2✓ Number of tiles $=$ 10,36m^2 $\div$ 0,16m^2✓ $=$ 64,75✓ $=$ 65 tiles✓	1A 1M 1CA 1ROUNDING UP	4
2.4	Number of boxes $\rightarrow$ 65 $\div$ 12✓ $=$ 5,4 $=$ 6 Boxes✓	1M 1A	2
2.5.1	To cater for people who are underprivileged✓✓	2O	2
2.5.2	**32 KL** 6kl - Free 6 x 6,50 $=$ R39 }✓ 3 x 7,20 $=$ R21,60 } 10 x 11,80 $=$ R118,00 }✓ 7 x 15,50 $=$ R108,50 } Total $=$ R287,10(excl) ✓ x 115% $=$ R330,17(incl) ✓ + R87,50✓ $=$ R417,67✓	1A 1A 1CA excl 1CA incl 1A adding fixed 1CA	6

QUESTION THREE (15 MARKS)

QUESTION	ANSWER	EXPLANATION	MARKS
3.1.1	110 ✓✓	2A	2
3.1.2	• To allow for extra space. OR • For movement of people/ waiters OR • For the comfort of people ✓✓	2O	2
3.1.3	Walk towards the front of the hall. Pass table 3, 2 and 1. Pass the podium until you reach the gift table. ✓✓	2O	2
3.1.4	$T = \dfrac{120km}{100km/h}$ = 1 hr 12 minutes ✓ 16:40 + 1 hr 12 mins Arrival time = 17:52 ✓ YES ✓ they will arrive on time	1A 1CA 1O	3
3.2	Special answer sheet		6

QUESTION FOUR (22 MARKS)

QUESTION	ANSWER	EXPLANATION	MARKS
4.1	Length : 54 cm ÷ 6cm = 9 Breadth : 36 cm ÷ 6cm = 6 } ✓ Height : 39cm ÷ 13 cm = 3 9 × 6 × 3 ✓ = 162 cans per box ✓ 4 boxes = 162 ×4 = 648 cans ✓ NO she received less stock ✓	1A 1MA (multiplying) 1A no of cans 1CA – cans in 4 boxes 1CA	5

4.2.1	$P(\text{sprite}) = \dfrac{10}{55}$ ✓ $= \dfrac{2}{11}$ ✓	2A	2
4.2.2	Stock left after 5 cokes removed = 50 $P(\text{fanta}) = \dfrac{15}{50}$ ✓ $\times 100$ $= 30\%$ ✓	2A	2
4.3.1.1	**Mean :** $\dfrac{95+98+100+88+59+47+52+62+74+81+90+104}{12}$ ✓ $= \dfrac{950}{12}$ ✓ $= 79,2$ ✓	1M adding values 1 M dividing 1A	3
4.3.1.2	Median $= \dfrac{81+88}{2}$ ✓ $= 84,5$ ✓	1M 1A	2
4.3.1.3	Mean ✓ All values are included and there are no outliers to distort the data ✓	2A	2
4.3.2.1	Mode $= 40$ ✓✓	2A	2
4.3.2.2	Range $= 72 - 27$ ✓ $= 45$ ✓	1M 1A	2
4.3.3	The months with lower sales were winter months. Most people prefer hot drinks during these cold months. ✓✓ Accept any logical answer	2O	2

TOTAL : 75 MARKS

LIST OF EXPENSES FOR WEDDING RECEPTION

ITEM	WORKING	COST
VENUE HIRE		R 3500 ✓A
DRAPING AND DÉCOR		R 4750 ✓A
DJ	5,5 hrs – pay for 6 hrs R 250 × 6	R 1500 ✓A
CATERING	100 ppl ×R 200 = R 20000 Include the bride , groom and DJ 13 ppl × R 100 = R 1300	R 21 300 ✓A
TOTAL		R 31 050 ✓CA

The bridal couple stated that it will cost R 30 000 for the entire wedding reception. Based on your calculations, was this statement valid or not???

NO , it costs more than R 30 000 ✓CA