HILLCREST HIGH SCHOOL

Grade 12 Mathematical Literacy Exam
Paper 2
May 2014

Name: _____

MARKS: 100 TIME: 2 hours

INSTRUCTIONS

1. This question paper consists of 4 questions. Answer ALL the questions.
2. Number the questions correctly according to the number system used in this question paper.
3. Start EACH question on a NEW page.
4. You may use an approved calculator (non-programmable and non-graphical), unless stated otherwise.
5. Show ALL calculations clearly.
6. Round off ALL final answers to TWO decimal places, unless stated otherwise.
7. Indicate units of measurement, where applicable.
8. Maps and diagrams are NOT necessarily drawn to scale, unless otherwise stated.
9. Write neatly and legibly.

QUESTION 1

Juanita has bought a new slim, flat screen TV that is only 40 mm thick. The drawing below (not drawn to scale) shows a picture of the TV.

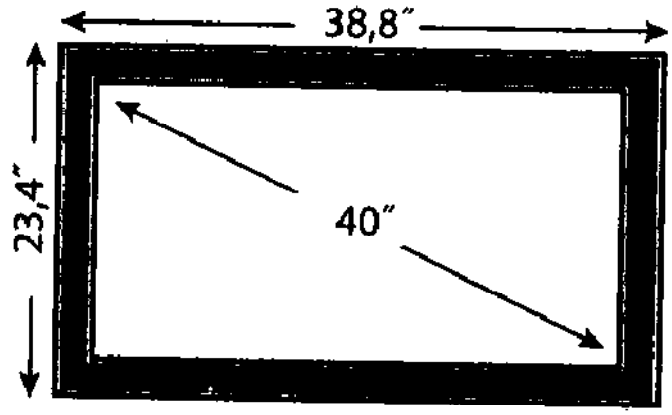

Figure 2 Front of a flat screen TV

1.1 The screen size is measured diagonally across the screen and is 40" (inches). Calculate the length in centimeters if 1" = 2,5 cm. (2)

1.2 The outside frame has a length of 38,8" and a breadth of 23,48". Convert these Measurements to centimeters. (2)

1.3 Calculate the area of the television in square centimeters. (Area = length x breadth) (3)

1.4 Juanita wants to mount the screen on a wall where she has a rectangular space of 0,8 m^2, roughly similar in shape to the shape of the TV. According to the instructions for mounting the TV, there has to be a distance of 10 cm on all sides for proper ventilation. Show all your calculations and indicate whether the space will be big enough to mount the TV. (5)

1.5 The TV is delivered in a rectangular box that allows 2 cm on all sides of the measurements of the TV. Write down the measurements of the box in which the TV is packaged in centimeters. (3)

1.6 Calculate the volume of the box the TV is packaged in. (3)

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QUESTION 2

2.1 The management of the Alive Fitness Club decide to open the swimming pool to non-members. The charge each time for use of the facility is:
Persons older than 16 pay R7,25 and senior citizens and children 16 and under pay R4,35.
In the first week of the new arrangement the number of non-members using the pool was as follows:
174 senior citizens; 822 children 16 and under; 789 people older than 16.

2.1.1 Calculate the percentage discount given to seniors and children. (3)

2.1.2 Calculate the income from non-members visiting the swimming pool in that week. (3)

2.1.3 Work out the average amount paid by a non-member who used the pool in that week. (2)

2.2 In the café at the fitness club there are 10 tables, each 80 cm in diameter, for which new tablecloths have to be made. Each cloth will overhang the table by 10 cm.
A square cloth overlay fits exactly into the circle of the table as shown in the drawing.

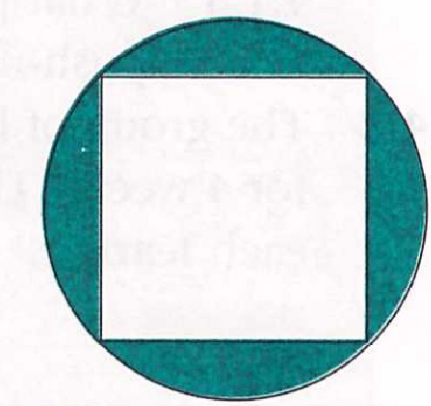

Figure 3 Round table with tablecoth

2.2.1 Write down the length of a diagonal of a cloth overlay and then calculate the area of an overlay if the area is given by the product of the diagonals. (2)

2.2.2 Write down the diameter of a tablecloth and calculate its area using the formula: area = π x radius^2, where π = 3,142. (3)

2.3 The table below gives the salaries per month of the 21 employees at the fitness club.

2.3.1 Copy and complete the table: (2)

Table 2 Employee monthly salaries

Salary (R)	Frequency	Total
7 500	2	15 000
8 100	3	
10 600	7	
13 100	5	
14 200	3	
18 000	1	
Total		

2.3.2 How much does the club pay in salaries each month? (2)

2.3.3 Find the median salary. (2)

2.3.4 What is the modal salary? (2)

2.3.5 What is the average salary? (3)

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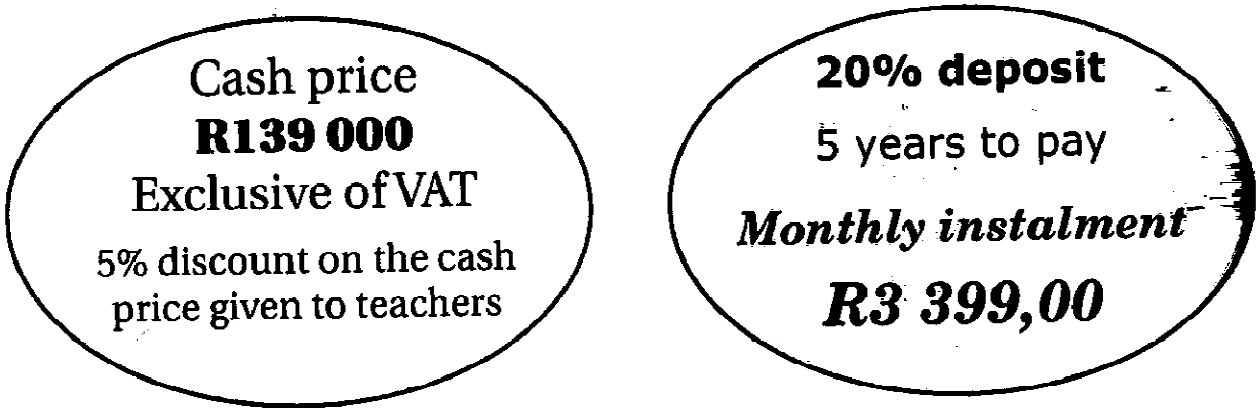
QUESTION 3

3.1 Mr Ravi, a teacher, wants to buy his first car from a local car dealer. The car was advertised as follows:



The salesperson informed Mr Ravi that he will also need to pay the following additional costs:

- 14% VAT on the cash price after the discount
- 0,75% predelivery cost calculated on the cash price, including VAT, and after discount
- R1 400 (inclusive of VAT) for the licensing, registering and for the roadworthy test of the car
- R4 950 (inclusive of VAT) for a two-year maintenance contract

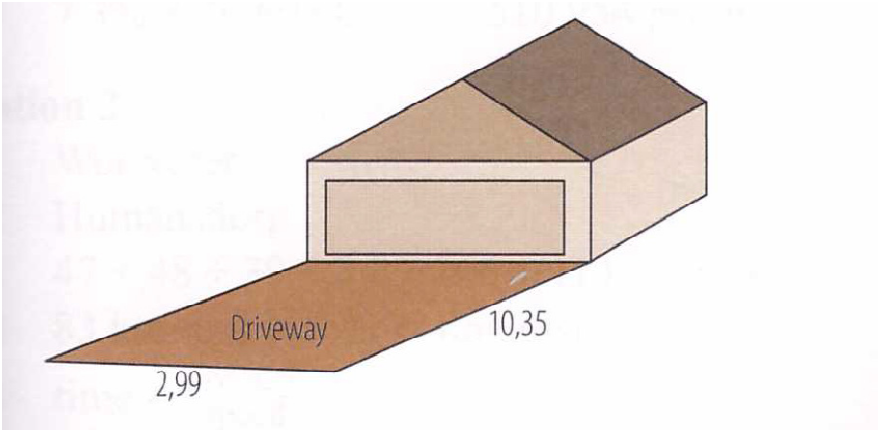
NOTE: The predelivery cost is a percentage of the selling price of a vehicle that is charged by the car dealer for administration and marketing.

3.1.1 Calculate the following :
* the discount
* the price after the discount
* the VAT
* the total cost
* the pre-delivery cost
* the full purchase price (7)

3.1.2 Mr Ravi does not have enough money to pay the final cash price of the car. He applies for financial assistance from the car dealer.

- Regulations specify that the deposit of 20% of the final cash price of the car cannot be financed and must be paid for by the buyer.
- The car dealer charges interest of 12% p.a on the amount to be financed.
- Verify (showing ALL calculations) whether or not the monthly instalment quoted in the advertisement is correct.
  The following formula may be useful:
  $A = P(1 + i^n)$, where:
  A = the amount to be repaid
  P = the amount to be financed
  i = the annual interest rate
  n = the number of years for which the loan is taken. (8)

3.2 Mr Ravi decided to pave the rectangular driveway in front of his garage. The length of the driveway is 10,35 m and the width is 2,99 m.



A rectangular paving brick has a length of 23 cm and a width of 11,5 cm.

Paving bricks sold in pallets of 354.

Calculate the minimum number of pallets that must be purchased in order to pave the driveway.
The following formula may be used:
Area of rectangle = length x breadth (8)

3.3 Mr Ravi has to hire a truck to deliver the pallets of bricks. ABC Transport charges a set fee of R95,00 plus an additional charge of R5,45 per kilometer if the distance is more than 10 km.

3.3.1 Write down the equation that ABC Transport uses to calculate the delivery charge of the bricks in the form:
Delivery charge = … (2)

3.3.2 Mr Ravi lives 35 km from the brick yard. His friend offers to deliver the pallets of bricks at a cost of R250,00.
Indicate, showing ALL the necessary calculations, whether he should use ABC Transport or take up his friend's offer. (5)

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QUESTION 4

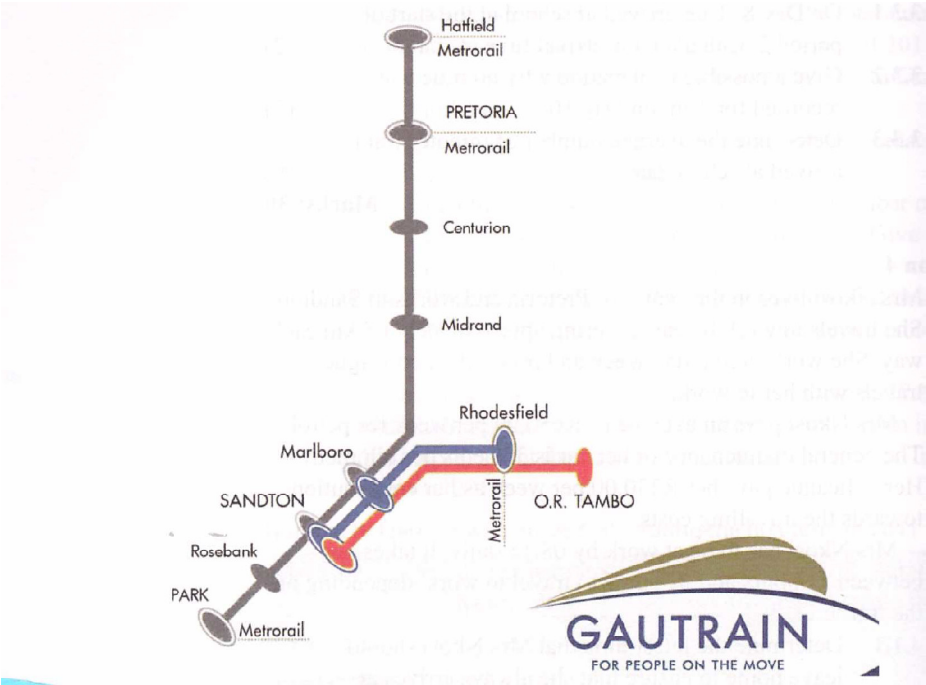
4.1 Mrs Nkosi lives in the centre of Pretoria and works in Sandton. She travels to work by car, covering approximately 65 km each way. She works a five-day week and presently a colleague travels with her to work.
Mrs Nkosi pays an average of R650,00 per week for petrol. The general maintenance of her car is 35 cents per kilometer. Her colleague pays her R350,00 per week as his contribution towards the travelling costs.
Mrs Nkosi has to be at work by 8:15 daily. It takes her between 1½ hours and 2½ hours to travel to work, depending on the traffic.

4.1.1 Determine the latest time that Mrs Nkosi should leave home to ensure that she Always arrives at work on time. (2)

4.1.2 Calculate Mrs Nkosi's total expenses to and from work for a 22-day working month. (6)

4.2 Mrs Nkosi decides to use the Gautrain to travel between Pretoria and Sandton.
(The Gautrain is a rapid rail link between Pretoria and Johannesburg.)
Passengers are able to make the trip between Pretoria station and Sandton station in 42 minutes, which includes three one-minute stops at stations along the way.
The train route and the train fares are given below.
Calculate the distance, in kilometers, travelled by the Gautrain between Pretoria station and Sandton station if it travels at an average speed of 85,8 km/ h. Use the formula:

$$Average\ Speed = \frac{distance}{time}$$ (4)



Pay-As-You-Go (If you are an occasional user. Single trip fares.)

	Hatfield	Pretoria	Centurion	Midrand	Marlboro	Sandton	Rosebank	Park	Rhodesfield
Hatfield		19,00	24,00	35,00	40,00	43,00	46,00	49,00	46,00
Pretoria	19,00		22,00	29,00	38,00	41,00	43,00	46,00	44,00
Centurion	24,00	22,00		24,00	29,00	36,00	38,00	40,00	38,00
Midrand	35,00	29,00	24,00		22,00	24,00	26,00	29,00	27,00
Marlboro	40,00	38,00	29,00	22,00		19,00	21,00	24,00	22,00
Sandton	43,00	41,00	36,00	24,00	19,00		19,00	21,00	25,00
Rosebank	46,00	43,00	38,00	26,00	21,00	19,00		19,00	27,00
Park	49,00	46,00	40,00	29,00	24,00	21,00	19,00		29,00
Rhodesfield	46,00	44,00	38,00	27,00	22,00	25,00	25,00	29,00	

35-Day Pass (Means you have 35 days to make the 22 return trips.)

	Hatfield	Pretoria	Centurion	Midrand	Marlboro	Sandton	Rosebank	Park	Rhodesfield
Hatfield		674,00	836,00	1 236,00	1 423,00	1 525,00	1 612,00	1 715,00	1 633,00
Pretoria	674,00		758,00	1 019,00	1 335,00	1 435,00	1 515,00	1 618,00	1 535,00
Centurion	836,00	758,00		857,00	1 022,00	1 253,00	1 331,00	1 425,00	1 350,00
Midrand	1 236,00	1 019,00	857,00		762,00	853,00	923,00	1 006,00	939,00
Marlboro	1 423,00	1 335,00	1 022,00	762,00		686,00	756,00	839,00	772,00
Sandton	1 525,00	1 435,00	1 253,00	853,00	686,00		665,00	749,00	863,00
Rosebank	1 612,00	1 515,00	1 331,00	923,00	756,00	665,00		679,00	933,00
Park	1 715,00	1 618,00	1 425,00	1 006,00	839,00	749,00	679,00		1 016,00
Rhodesfield	1 633,00	1 535,00	1 350,00	939,00	772,00	863,00	933,00	1 016,00	

4.3 Mrs Nkosi has the option of using the Pay-As-You-Go payment system or a 35-Day Pass.
The Gautrain fares in rand are given above.
It would cost her R150,00 per month for petrol to travel from her home to the station and back. Parking at the station would cost R10,00 per day. The Gaubus (shuttle bus service) between Sandton station and her workplace costs R6,00 per trip.

4.3.1 How much money would Mrs Nkosi save if she decided to buy a 35-Day Pass rather than use the Pay-As-You-Go system. (6)

4.3.2 Mrs Nkosi's daughter travelled from Pretoria station to another destination using the Gautrain and she paid R43,00 on the Pay-As-You-Go system for the trip. Later in the day, she used the Gautrain to travel to a second destination. The total cost of travelling to these two destinations was R70,00.
Name the two destinations. (3)

4.3.3 Determine the difference in total expenses if Mrs Nkosi used a 35-Day pass to travel to work for 22 days, rather than using her car. (3)

4.3.4 Explain, stating at least **two** financial reasons, whether Mrs Nkosi should use the Gautrain to travel to work. (4)

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