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EASTERN CAPE EDUCATION DEPARTMENT
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GRADE 11 EXAMINATIONS
GRAAD 11-EKSAMEN

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MATHEMATICAL LITERACY – FIRST PAPER

IXESHA: 2½ iiyure	TIME: 2½ hours	TYD: 2½ uur
AMANQAKU: 100	MARKS: 100	PUNTE: 100

Write on the cover of your answer book, after the word "Subject" –
MATHEMATICAL LITERACY – FIRST PAPER

This question paper consists of 9 pages and an annexure.

INSTRUCTIONS AND INFORMATION

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

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

3.   The graph paper for QUESTION 2.3.5 can be found on ANNEXURE A at the end of this paper.

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

5.   ALL the calculations and steps must be shown clearly.

6.   ALL the final answers must be rounded off to TWO decimal places, unless stated otherwise. Do NOT round off until you get to the answer.

7.   Start EACH question on a NEW page.

8.   Write neatly and legibly.

QUESTION 1

Mrs Pelser and the mothers of St. Peter's High School decided to bake cookies and sell it at local shops and from school to raise funds. They employ two assistants who are paid hourly for their services. They bake 8 batches of sugar cookies per day.

1.1   Mrs. Pelser and her assistants bake the sugar cookies. She uses utensils that work with metric units.

The recipe used, as well as a conversion table, is shown below:

Sugar cookie recipe ingredients:

$\frac{2}{3}$ cup margarine

$\frac{1}{3}$ cup sugar

1 teaspoon baking powder
1 egg
1 teaspoon vanilla essence
2 cups flour

- Baking time 8 minutes per batch
- Recipe makes approximately 24 square(6 cm) cookies

Approximate Volume/Mass Conversion chart		Approximate mass in grams per 250 ml (1 cup) of ingredients	
250 ml	1 cup	Cake Flour	120 g
190 ml	¾ cup	Butter	230 g
125 ml	½ cup	Margarine	215 g
60 ml	¼ cup	Sugar	200 g
15 ml	1 tablespoon		
5 ml	1 teaspoon		

*(*Source*: Mathematical Literacy Teacher's Guide,* Department of Education*)*

1.1.1   The sugar cookies need ⅔ of a cup of margarine. Use the above table to convert the quantity of margarine to the nearest gram.   (3)

1.1.2   The local supermarket sells a 1 kg block of margarine for R21,95. How much are they paying for one gram of margarine? (1 kg = 1 000 g)   (2)

1.1.3   Mrs Pelser has two measuring spoons; a 5 ml one and a 10 ml one. Which one would she use to measure the baking powder, when mixing one batch of ingredients?   (1)

1.1.4   To bake these cookies one batch uses 3,75 units of electricity. How many units will they use to bake eight batches of sugar cookies?   (2)

1.1.5   The cost of electricity in her municipal area is 59,85c per unit. How much will the electricity cost to bake eight batches of cookies? Give your answer in rand.   (2)

1.1.6   How many cookies will they bake in total in one day?

(2)

1.1.7   Every day the cookies are packed in small boxes. Each box takes 15 cookies. How many full boxes do they pack each day?

(3)

1.1.8   The cookies must be baked in an oven at 356º F. Use the formula below to work out the temperature that Mrs. Pelser's oven must be set to, if it is calibrated in ºC.

$$ºC = \frac{5}{9} (ºF - 32)$$

(2)

1.1.9   The school is situated in an urban area. Mrs. Pelser received the following information from the Department of Labour to help her work out her assistants' wages :

	Per hour
Urban area	R7,50

The two assistants work for 7 hours per day. They baked cookies three days a week and are paid an hourly wage. How much will ONE assistant earn per week?   (3)

[20]

QUESTION 2

Jason and his sister Chanté live 6 km from school. Jason leaves home at 06:00 and walks to school at an average speed of 4 km/h. Chanté rides her bicycle to school and rides at an average speed of 8 km/h. She leaves at 06:30.

| Jason walks 6 km to school. Leaves: 06:00 Average speed: 4 km/h | Chanté rides her bicycle 6 km to school. Leaves: 06:30 Average speed: 8 km/h |

2.1   How far does Jason walk in one hour?   (1)

2.2   To determine the distance we use the following formula:

Distance = Speed x time

Table for Jason

Actual time	06:00	06:15	06:30	t	07:00	07:15
Time in hours	0	0,25	0,5	0,75	1	**B**
Distance covered in km	0	1	**A**	3	4	5

2.2.1   Use the formula given above or any other method to calculate the missing values **A** and **B** in the table above, showing Jason's distance from home and the time it took him to walk that distance. Show ALL your calculations.   (4)

2.2.2   How far is Jason from school 15 minutes after he left home?   (2)

2.2.3   What is the time **(t)** when Jason is 3 km away from home?   (1)

2.3   **Table for Chanté**

Actual time	06:30	06:45	07:00	07:15	07:30
Time in hours	0	0,25	0,5	**D**	1
Distance covered in km	0	**C**	4	6	8

2.3.1   Use the same formula given in QUESTION 2.2 to find the missing values **C** and **D** in the table showing Chanté's distance from home and the time it took her to ride these distances. Show ALL your calculations.   (4)

2.3.2   Use the tables in QUESTION 2.2 and QUESTION 2.3 to determine at which times Chanté and Jason were 2 km from home.   (2)

2.3.3   Who is the furthest away from home at 06:45?   (1)

2.3.4   At what time did Chanté catch up with Jason?   (1)

2.3.5   Use the table in QUESTION 2.2.1 and QUESTION 2.3.1 to
          draw graphs of Chanté and Jason's trip to school. Use the same
          system of axis. Clearly label each graph to show which is Chanté
          and which is Jason's trip.(The graph paper to draw it on is on
          Annexure A attached to the back of this paper)   (6)

2.3.6   Use the graph to read off the time at which Jason arrived at school.
          You must clearly mark your reading on the graph by drawing in a
          broken line and writing his name below the time.   (2)

2.3.7   Use the graph to read off the time at which Chanté arrived at school.
          You must clearly mark your reading on the graph by drawing in a
          broken line and writing her name below the time.   (2)

2.3.8   If Chanté cycled past the school and carried on in a straight line,
          how far would she be from school 15 minutes later, if she maintained
          her speed?   (2)

                                                                                      [28]

QUESTION 3

Cricket is a popular sport in South Africa. There are 11 players in a team. Two team members bat at a given time. The last batsman of each team did not bat, because both teams were bowled out.

The following represents the scores of the 10 batsman from each team:

Team A	43; 0; 10; 30; 9; 10; 18; 21; 51; 10
Team B	8; 50; 4; 29; 6; 23; 31; 12; 51; 6

3.1	Determine the median score for Team A.	(4)
3.2	Determine the median score for Team B.	(4)
3.3	Determine the mode for Team A and Team B respectively.	(2)
3.4	Determine the mean score per batsmen for Team A.	(3)
3.5	Which team had the better batting average? Show ALL your calculations.	(4)
3.6	Determine the range of score for Team A.	(2)
3.7	Determine the range of score for Team B.	(2)
3.8	How many batsmen from both teams scored a half-century?	(1)

[22]

QUESTION 4

The plan given below is the camps in which a farmer keeps his goats. It consists of 2 identical rectangular grazing fields and a semi-circular pond attached to one end of the rectangular field. The rectangular fields are next to each other.
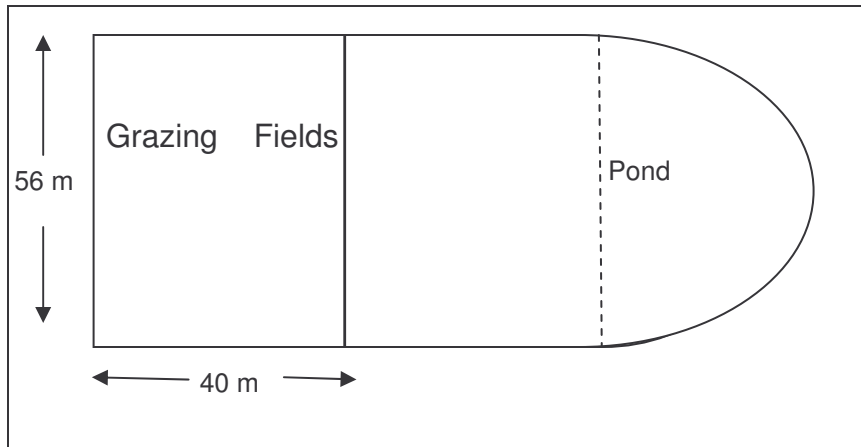
4.1   Calculate the area of the grazing fields without the pond.   (3)

4.2   Use the following formula and calculate the area of the pond.

   (Area of a semi-circle is $\dfrac{\pi\, r^2}{2}$; use $\pi = \dfrac{22}{7}$ OR $\pi = 3{,}14$)   (3)

4.3   If the grazing field can hold 8 960 goats, calculate the number of goats per square metre.   (2)

4.4   The farmer wishes to put up a new fence around the camps, including the pond. Calculate the length of the fence.

   Use the following formula:

   (Circumference of semi-circle = $\pi\, r$; use $\pi = \dfrac{22}{7}$ OR $\pi = 3{,}14$)   (3)

4.5   The cost of fence per metre is R45,00. How much would it cost him for the fence only?   (2)

4.6   Two men work for 5 days to complete the fencing. If the daily wage for a worker is R120,00, what would the labour cost for fencing the enclosure be?   (3)
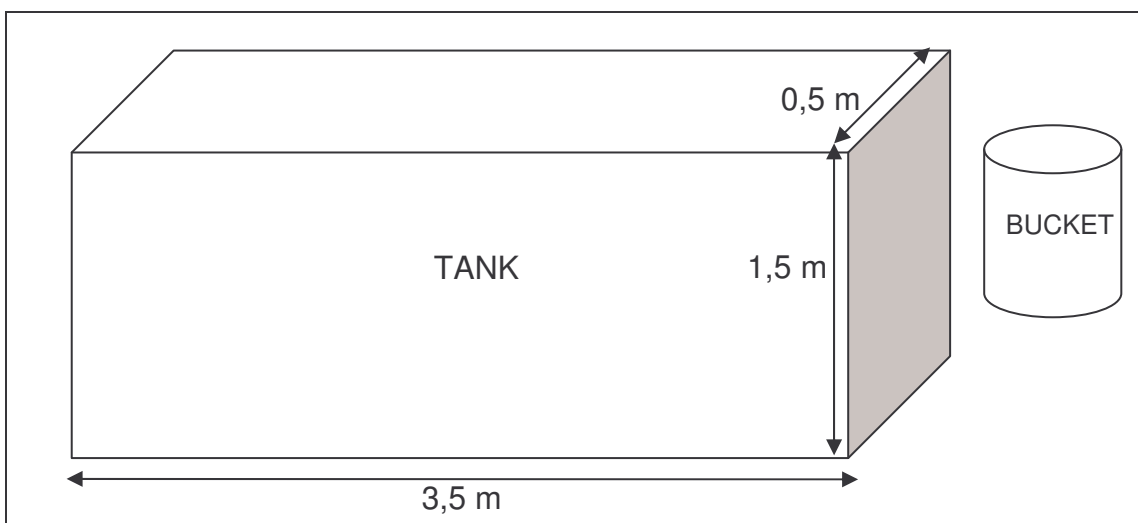
4.7   Determine the total cost to fence the enclosure.   (2)

                                                                                                   [18]

QUESTION 5

In a dairy farm, milk is collected in a cylindrical bucket from cows and poured it into a rectangular based tank.

5.1   Use the dimensions given on the tank to calculate the volume of the tank.

Use the following formula:
(Volume = length x breadth x height)   (2)

5.2   Convert the volume of the tank to litres.

Note: (1 m = 100 cm; 1 litre = 1 000 cm^3)   (4)

5.3   The diameter of the bucket is 28 cm and the height is 0,40 m.

Calculate the volume of the bucket in litres.

(Volume = $\pi r^2 h$; π = $\dfrac{22}{7}$ OR π = 3,14 OR π on calculator)
                                                                           (4)

5.4   How many buckets of milk will fill the tank?   (2)

[12]

TOTAL : 100

NAME/ EXAMINATION NUMBER: ……………………………………………………………

ANNEXURE A

QUESTION 2.3.5

DISTANCE TRAVELLED FROM HOME BY JASON AND CHANTÉ

TIME