



Province of the
EASTERN CAPE
EDUCATION

**NATIONAL
SENIOR CERTIFICATE**

GRADE 12

SEPTEMBER 2014

MATHEMATICAL LITERACY P1

MARKS: 150

TIME: 3 hours



This question paper consists of 17 pages including 2 annexures.

INSTRUCTIONS AND INFORMATION

1. This question paper consists of FIVE questions.
2. Answer ALL the questions.
3. Answer QUESTION 1.3.4 on ANNEXURE A and QUESTION 5.2.3 on ANNEXURE B. Write your centre number and examination number in the spaces provided on the ANNEXURES and hand in the ANNEXURES with your ANSWER BOOK.
4. Number the questions correctly according to the numbering system used in this question paper.
5. Diagrams are not necessarily drawn to scale.
6. Round off ALL the final answers to TWO decimal places, unless stated otherwise.
7. Indicate units of measurement, where applicable.
8. Start EACH question on a NEW page.
9. Show ALL calculations clearly.
10. Write neatly and legibly.

QUESTION 1

- 1.1 John started a permanent job at Balloon Petrol Station on the second day of December 2013. He works 8 hours a day and cannot exceed 40 hours a week, excluding overtime and public holidays. Workers are paid R35 per hour when they work on a public holiday and overtime. December calendar is available at the ANNEXURES.

Balloon Petrol Station Box 3, Amaway, 4300 Employee code: 4356 Job title: Attendant		Employee Name: John Mate Period end date: 31/12/2013 Date engaged: 01/12/2013	ID number: 7803152566083 Tax no: 0144263983
Rate /hour: R17,50		Overtime/Public holiday rate: R35 /hour (3 days)	
Income	Amount		
Basic salary	R2 660,00	Weekly deductions:	
Overtime (3 days)	R-----	(i) Unemployment Insurance Fund(UIF)	R7,00
		(ii) Pay As You Earn (PAYE)	R0,00
		(iii) Pension Fund	R57,00
		(iv) Motor industry	R2,50
Total Income	QUESTION 1.1.2	Total	R66,50

- 1.1.1 How old was John when he started his permanent job? (2)
- 1.1.2 How much will he earn as a gross salary at the end of the month including the public holidays? (3)
- 1.1.3 He decided to save 5% of his basic salary starting at the end of December 2013 until December 2014 (assuming his basic salary remains constant). How much will he save as an initial payment in December 2013? (2)

- 1.2 Blue Ribbon furniture shop owner, Barry buys queen-size beds for R2 500,00 and sells them for R5 000,00 with a mattress.

1.2.1 How much is the mark up amount on each queen-size bed? (2)

1.2.2 Miriam bought 6 queen-size beds for her bed-and-breakfast establishment. Barry charge customers R1 000,00 for delivery. How much money will she spend on buying all these queen-size beds, including transport? (2)

- 1.3 The fixed monthly rental cost for this shop is R10 000. Study the table below and answer the questions that follow.

Barry's income and expenses for running his shop.

No. of beds(n)	0	1	2	3	4	5	6
Expenses (R)	10 000	12 500	15 000	17 500	20 000	22 500	B
Income	0	5 000	A	15 000	20 000	25 000	30 000

- 1.3.1 Write down the formula for his total costs using **C** (cost) and **n** (amount of beds):

Cost = ... (2)

- 1.3.2 Calculate the values of **A** and **B** in the above tables. (4)

- 1.3.3 Use the table and determine the break-even point. (2)

- 1.3.4 Draw the graphs of the Income and Expenses for Barry's shop on the same grid in ANNEXURE A. Label the graphs clearly as Income and Expenses. (4)

- 1.4 The table below shows the actual impact of projected tariff increases on the Dowel family's small household. Municipal monthly account for this small household is shown in the table below: The formula given below may be used:

$$\% \text{ increase} = \frac{\text{new value} - \text{original value}}{\text{original value}} \times 100\%$$

Rates and services charged	Current year	Budget year	% increase
Refuse removal	R140,00	A	12%
Sanitation	R231,99	R262,61	13,2%
Water consumption	R170,86	R188,80	B
Electricity consumption (non-prepaid)	R630,50	R699,86	11%
Property rates	R380,98	R438,13	15%
Subtotal excluding VAT	C	R1 746,20	
VAT on services	R217,61	R244,47	
Total	R1 771,94	R1 990,67	

Use the information in the table to calculate the values of **A**, **B** and **C**.

(2 + 3 + 2) (7)

- 1.5 Luna borrowed R5 000,00 to pay for his municipality rates from his mother at 7,5% simple interest per annum. They had an agreement that he will pay back the whole sum plus the interest in equal amounts over a period of three years.

1.5.1 How much interest will he pay for one year? (2)

1.5.2 Calculate the total amount that he pays back. (2)

1.5.3 How much was his monthly instalment? (2)

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QUESTION 2

- 2.1 Apple District Municipality supplied the hundred and eight households of Quko community with six water tanks for the collection of clean drinking water as they have no access to clean drinking water. The Quko community held a special meeting, where it was decided that the six tanks would be shared amongst all the households. The municipality filled the tanks with clean water and has undertaken to supply them with continuous drinking water should the need arise.

The diameter of each tank is
260 cm and the height is
418 cm.



- 2.1.1 How many households share one tank? (2)
- 2.1.2 One tank costs R4 950,00 including delivery. How much did the municipality pay for the tanks? (2)
- 2.1.3 What will be the area of the base of one tank in cm^2 , if the diameter is 260 cm?
Use the formula:
- Area of the base of the tank = πr^2 , where $\pi = 3,142$** (2)
- 2.1.4 Determine the volume of one tank in m^3 .
Use the formula: Volume = $\pi r^2 h$, where $\pi = 3,142$ (3)
- 2.1.5 If $1 \text{ m}^3 = 1\,000 \text{ l}$, how many litres of water will this tank hold? (2)
- 2.1.6 One household is restricted to use 2,1 kilolitres a week. How long will one tank last the households? **Give your answer to the nearest day.** (3)

- 2.2 Layla likes baking chocolate muffins at home. She wants to bake 24 muffins in one tray at 180 °C for 25 minutes.



Ingredients
 (24 muffins)
 1 kg snowflake
 chocolate
 muffin mix

 4 extra-large
 eggs

 310 ml ($1\frac{1}{4}$)
 cup cooking oil

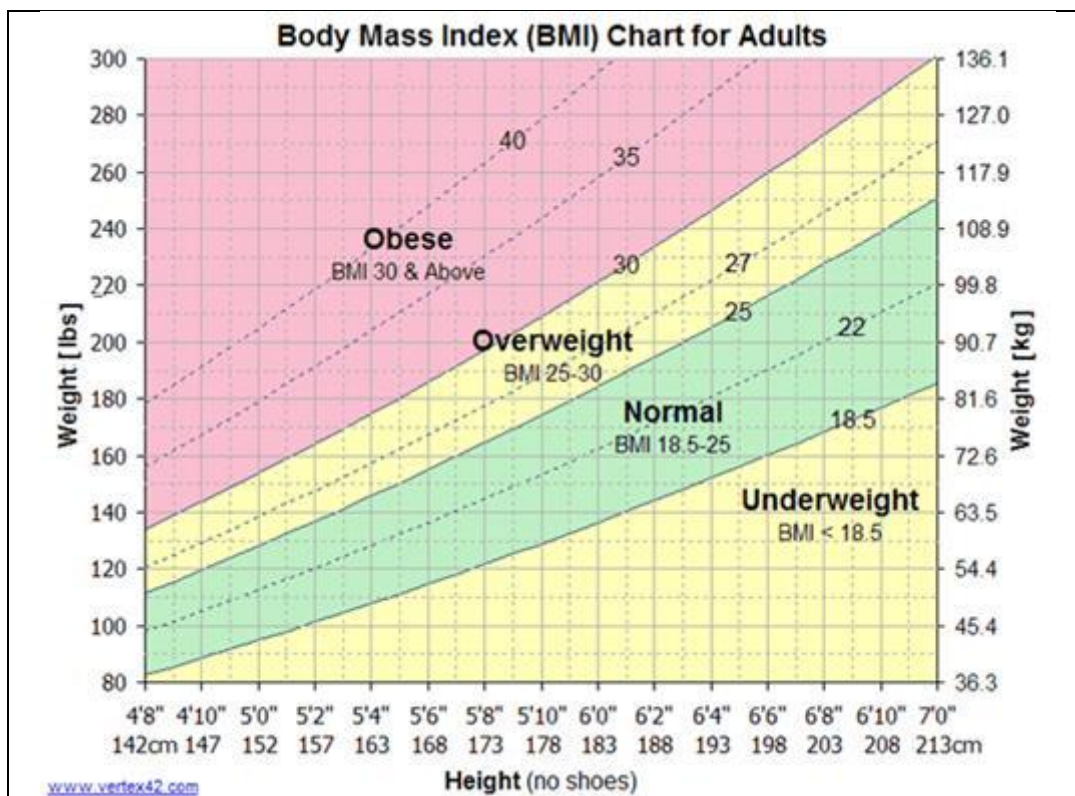
 400 ml water

[Source: fotosearch.com]

- [
- 2.2.1 How many grams of snowflake chocolate muffin mix will she need to bake 48 chocolate muffins? (2)
- 2.2.2 Convert 180 °C to °F
Use the formula: $^{\circ}\text{F} = (1,8 \times ^{\circ}\text{C}) + 32^{\circ}$ (2)
- 2.2.3 If she started baking at 05:30:56 am., what will be her finishing time? (2)
- 2.2.4 She was approached by the Pet Primary School to serve their 1 117 learners with the chocolate muffins on the school's birthday. Each learner gets one muffin. How many trays of muffins will she bake for the school? (3)

- 2.3 The Minister of Health advised people to take care of their health. Doret checked her health status using the Body Mass Index (BMI) chart below. She wants to live a normal and healthy lifestyle.

Study the chart below and answer the questions that will follow.



- 2.3.1 What is the normal weight for a person whose height is 1,83 m? (2)

- 2.3.2 Doret weighs 110 kg and she is 1,68 m tall.
Calculate her Body Mass Index (BMI) using the formula:

$$\text{BMI} = \frac{\text{mass in kilograms}}{(\text{height in meters})^2} \quad (3)$$

- 2.3.3 How would you categorise Doret's health according to the BMI? (2)

[30]

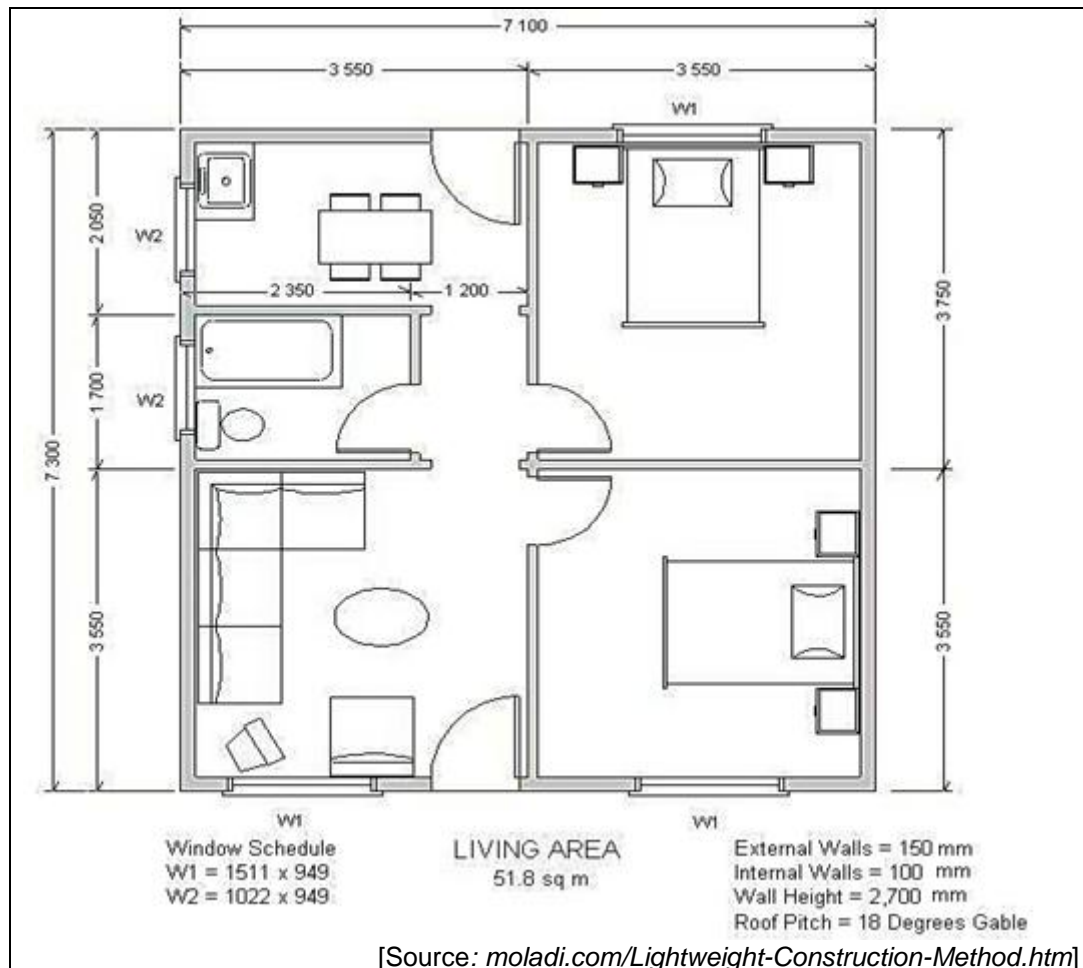
QUESTION 3

- 3.1 East London is located in the Eastern Cape on the South East coast of South Africa. It is a nice place to visit during summer holidays because of its weather, beaches and other tourists' sites. It has approximately 400 000 residents. Study the map below and answer the questions based on it.



- 3.1.1 What do we call the place marked on the map with a square that keeps fish, plants and other water creatures? (2)
- 3.1.2 Which national road will you use when travelling from Haven Hills to Mthatha? (2)
- 3.1.3 The distance between Milner Estate and Stirling is 8 cm on the map. Use the scale 1 : 50 000 to calculate the actual distance in km. (3)
- 3.1.4 Which suburb is closer to the R102 road? (2)

- 3.2 RDP houses are built with bricks to assist low income people with proper houses. They have pitch roofs with the area of 51,8 m². Study this floor plan and answer the questions below it.



- 3.2.1 How many windows are shown on the plan? (2)
- 3.2.2 How many doors are shown on the plan? (2)
- 3.2.3 Calculate the area of the bedroom opposite the lounge in m². (3)
- 3.2.4 How many boxes of tiles will you buy for the bedroom opposite the lounge, if each box covers 1,1 m²? (2)
- 3.2.5 How much will you spend in total to tile the room in QUESTION 3.2.4 if one box is R94,99 and the labour is R60 per m²? (3)
- 3.2.6 Define an elevation plan. (2)

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QUESTION 4

- 4.1 Patty High School has 22 Grade 11B learners. Learners were asked to measure their heights and weigh themselves using the bathroom scale provided by the school for their Mathematical Literacy assignment. They recorded the data as indicated in the tables below:

TABLE A: Boys

Mass (kg)	56	72	65	73	54	56	51	55	63	56	58	71
Height (m)	1,5	1,5	1,2	1,4	1,5	1,5	1,6	1,6	1,4	1,5	1,54	1,6

TABLE B: Girls

Mass (kg)	62	63	64	63	52	59	46	66	58	52
Height (m)	1,43	1,55	1,56	1,51	1,62	1,54	1,48	1,6	1,63	1,6

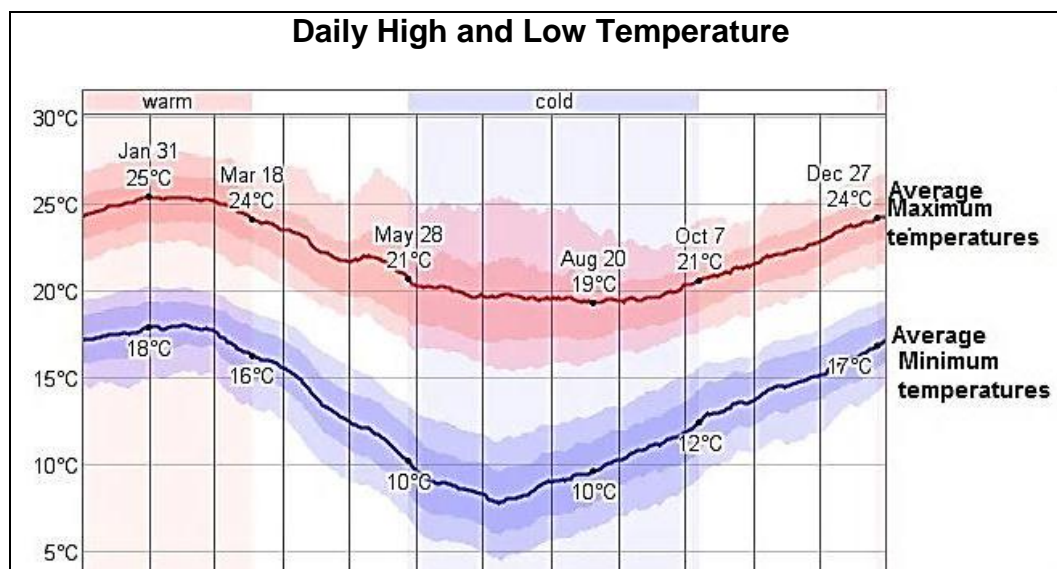
- 4.1.1 Arrange the data in TABLE A from the lowest mass value to the highest value. (2)
- 4.1.2 Calculate the mean of mass values in TABLE A. (3)
- 4.1.3 Determine the median mass of the female. (2)
- 4.1.4 Which mass value in TABLE A is at the third quartile? (2)
- 4.1.5 Express the probability of getting a boy with a mass of 56 kg as a percentage. (3)
- 4.1.6 Determine the modal weight of the whole class. (2)

- 4.2 The table below shows the percentage distribution of employed women and men aged 15–64 years by broad occupational category from 2007–2010 (if there were 13,1 million people).

YEAR	GENDER	TECHNICIAN/ MANAGER/ PROFESSIONAL	ARTISAN/ OPERATOR	CLERICAL/ SALES	ELEMENTARY
2007	FEMALE	27,7	11,5	34,9	25,9
	MALE	21,4	36,3	18,7	23,7
2008	FEMALE	29,1	9,5	36,4	25,0
	MALE	23,3	35,6	18,0	23,2
2009	FEMALE	29,4	8,3	38,2	24,1
	MALE	24,3	34,4	18,5	22,8
2010	FEMALE	30,0	7,6	38,1	24,4
	MALE	24,4	33,1	20,1	22,4

[Source: Statistics SA]

- 4.2.1 In which year was there 36,3% of male artisan/operator? (2)
- 4.2.2 What percentage was for female elementary in 2010? (2)
- 4.2.3 How many people took part in this survey? (2)
- 4.2.4 How many male professionals were there in 2009? (3)
- 4.3 The graph below shows the typical weather at the Port Elizabeth Airport (Port Elizabeth, South Africa) weather station over the course of an average year. It is based on the historical records from 1994 to 2012.



- 4.3.1 Which day of the month, experienced the highest average maximum temperature? (2)
- 4.3.2 Which month experienced the lowest average minimum temperature? (2)

- 4.4 Mandy received her R85 000,00 Provident Fund payment from Daimler Chrysler. Mandy wants to visit London and she calculated the costs for her trip as follows: Flight – R9 387,00 return ticket, Passport – R400 00 and other things that cost her R2 200, 00 including a visa application.

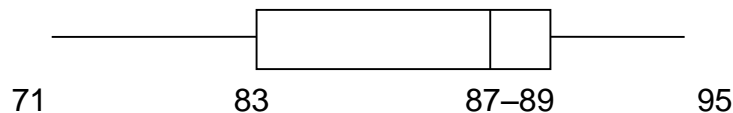
4.4.1 Calculate the total cost for her trip. (2)

4.4.2 If 1 pound (£) = R10,69 ZAR (South African Rand), how many pounds did she have for the trip? (2)

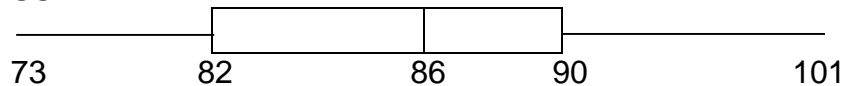
4.4.3 She received a gift of 200 Euro from one of the tourists in the United States. How much did she receive in rands if 1 Euro = R11,217? (2)

- 4.5 The box and whisker plots below represent the learner's pulse rates of two classes. The mean was the same for both classes.

CLASS B



CLASS A



Using the box and whisker plots above, determine:

4.5.1 The maximum value of class A. (2)

4.5.2 The inter-quartile range of class A. (2)

4.5.3 The class that has the higher pulse rate. (2)

[39]

QUESTION 5

- 5.1 30 members of the Student Christian Organisation of Lithembe High School took a trip to Jeffrey's Bay with Ms Paya. Learners were expected to pay for transport, accommodation and food. Their driver, Leon covered 355 km in 4,5 hours. They will be accommodated at a lodge that charges R410,00 for 5 people in one chalet for the two days they will stay there. The bus charged them R8 550 for the trip. They were asked to bring R75 for food.

5.1.1 How much does each child have to pay for the trip? (2)

5.1.2 They stopped at Grahamstown to have breakfast at the local Wimpy. Ms Paya paid R25, 00 for each child, herself and Leon. How much did she pay, including R23,00 for a tip? (3)

- 5.2 The Eastern Cape Education MEC announced the Grade12's 2013 results and said that although the province was at the bottom of the class in the country, it registered quality results. "In terms of provincial ranking the Eastern Cape ranks fifth in terms of Bachelors university entrance pass rate, fourth in terms of diplomas and third in terms of a Higher Certificate pass rate in all provinces."

[Source: *Daily Dispatch*:08/01/2014]

He compared the 2013 results with 2012 as follows:

YEAR	2012	2013
Distinctions	9 264	11 038
Bachelor passes	11 246	13 686
Diploma passes	16 148	19 179
Higher Certificates	11 998	13 950

5.2.1 Determine the difference in the number of Bachelor passes (university entrance) between 2012 and in 2013. (2)

5.2.2 What is the trend of the Eastern Cape results? (2)

5.2.3 Represent the above information in a compound bar graph in ANNEXURE B. (5)

- 5.3 Learners who had outstanding results received stationery. The total cost for the stationery was R399,00. The Education Department received 5% discount when buying these items. How much was paid by the Education Department? (2)

- 5.4 The gift pack of the stationery that the learners received had a weight of 3,2 kg. Calculate the cost of the gift pack at R7,99/kg. (2)

- 5.5 Learners were asked to bring the coins to school as one of the fundraising methods. The coins from one of the classrooms were recorded as follows:

Value of the coin	10c	20c	50c	R1,00
Number of coins	50	25	15	5

- 5.5.1 Calculate the probability as a percentage that the coin from this class is a 10 cent coin. (2)

- 5.5.2 What is the probability that the coin will not be a 20 cent coin? (2)

[22]

TOTAL: 150

CENTRE NUMBER:

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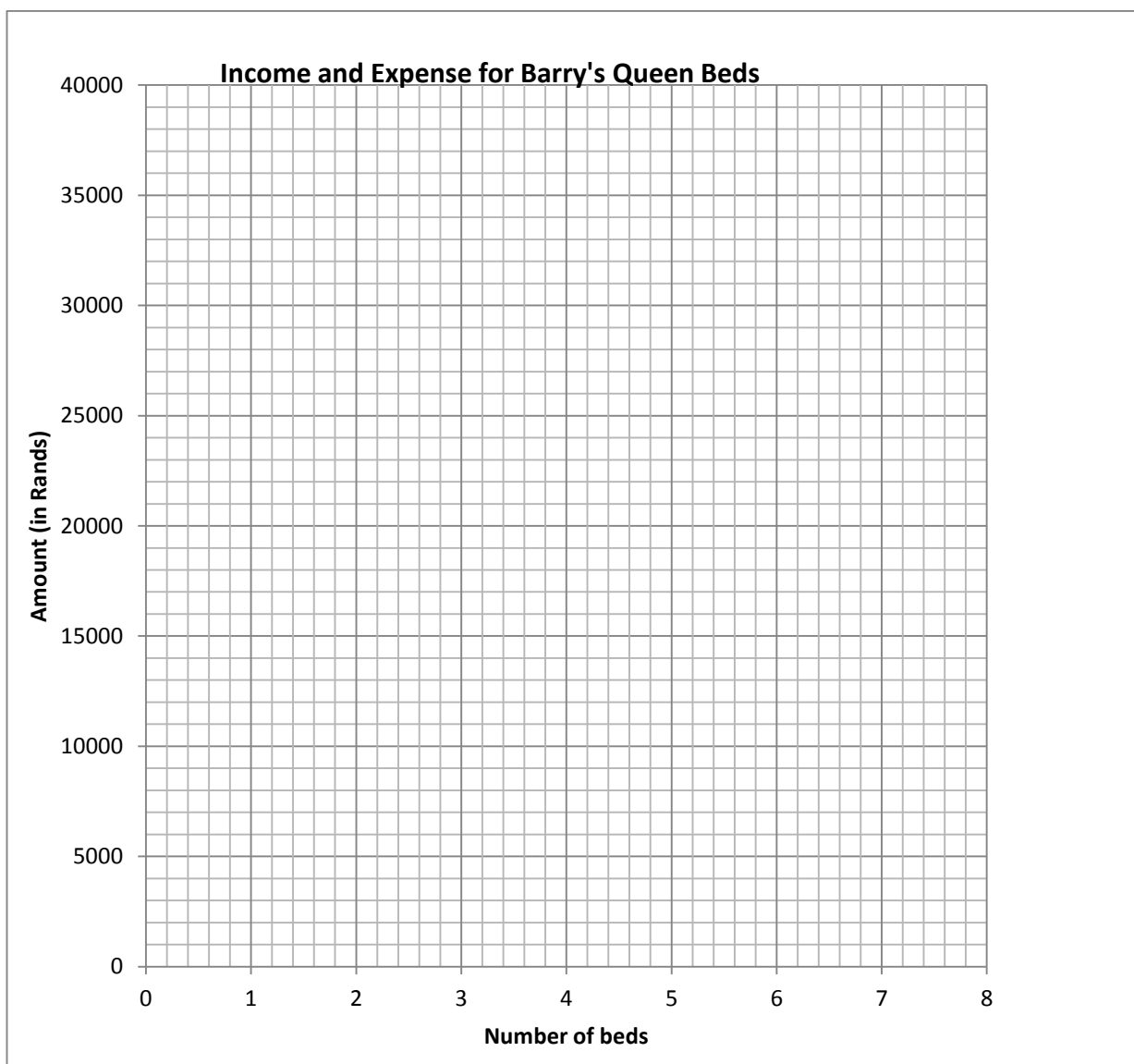
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ANNEXURE A

QUESTION 1.3.4

No. of beds (n)	0	1	2	3	4	5	6	7
Income (R)	0	5 000	A	15 000	20 000	25 000	30 000	R35 000
Expenditure (R)	10 000	12 500	15 000	17 500	20 000	6000	7 050	B

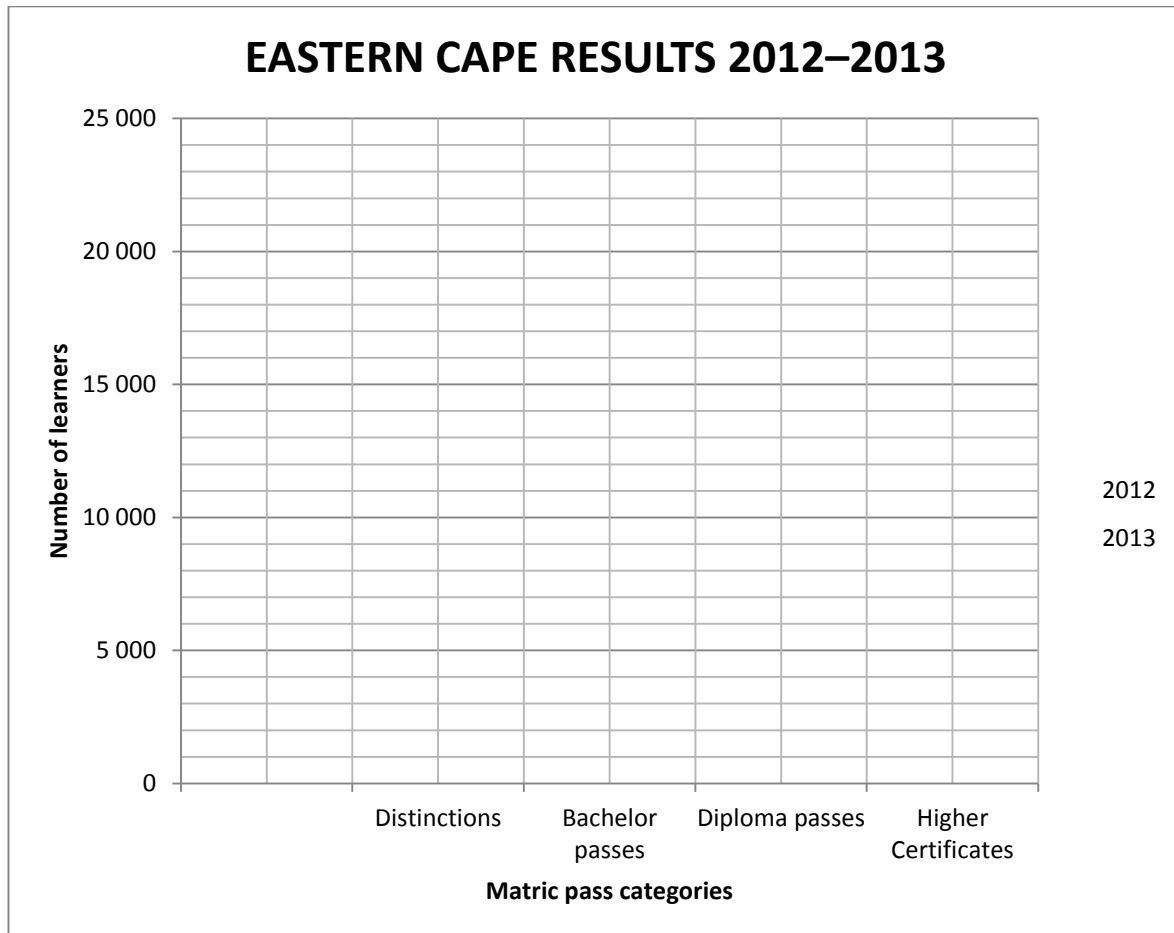


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ANNEXURE B**QUESTION 5.2.3****December 2013**

M	T	W	T	F	S	S
						1
2	3	4	5	6	7	8
9	10	11	12	13	14	15
16	17	18	19	20	21	22
23	24	25	26	27	28	29
30	31					