GAUTENG PROVINCE
EDUCATION
REPUBLIC OF SOUTH AFRICA

GAUTENG DEPARTMENT OF EDUCATION

PREPARATORY EXAMINATION

2015

10601

MATHEMATICAL LITERACY

FIRST PAPER

MARKS: 150
TIME: 3 hours

This paper consists of
15 pages, 1 annexure and
2 answer sheets.

MATHEMATICAL LITERACY: Paper 1
1060E
10601E

X10

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(First Paper)

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INSTRUCTIONS AND INFORMATION

1. This question paper consists of **FIVE** questions. Answer **ALL** the questions.
2. Answer **QUESTIONS 1.4.2 AND 1.4.3** on the **ANSWER SHEET.** Write your name and class in the spaces provided on the **ANSWER SHEETS A AND B**. Hand the **ANSWER SHEET** in with your **ANSWER BOOK.**
   Use **ANNEXURE A** to answer **QUESTION 3.1.3**.
3. Number the answers correctly according to the numbering system used in this question paper.
4. Start **EACH** question on a **NEW** page.
5. You may use an approved calculator (non-programmable and non-graphical), unless otherwise stated.
6. Show **ALL** calculations clearly.
7. Round off **ALL** final answers appropriately according to the given context, unless otherwise stated.
8. Indicate units of measurement, where applicable.
9. Maps and diagrams are **NOT** necessarily drawn to scale, unless otherwise stated.
10. Write neatly and legibly.

QUESTION 1

1.1 Robert and Mary are engaged and will get married on Saturday, 12 December 2015. As with any wedding they realised that there are many things to do and plan.



Robert and Mary go shopping for matching rings. They decide to purchase a set of rings that costs R6 000. They will have to apply for a loan to pay for the set of rings. They have two options:

Option 1:	**Option 2:**
BUR Bank offering:	Robert's dad offering:
10% compound interest p.a.	12% simple interest p.a.
Term of two years	Term of three years

Use the information above to answer the following:

1.1.1 (a) Calculate the total amount Robert will have to pay for the rings if he borrows the money from BUR Bank. (4)

(b) If Robert's dad wants him to pay back the loan at R230 per month, calculate the total amount Robert will have to pay back to his dad. (2)

(c) Determine the amount Robert will save if he takes the loan with BUR Bank. (1)

1.1.2 Robert earns a salary of R15 500 per month. The repayments on the BUR Bank loan amounts to R302,50 per month. Calculate the loan repayment as a percentage of Robert's monthly salary. Round your answer off to the nearest whole number. (3)

1.1.3 The jewellery shop selling the set of rings to Robert, bought it at a cost price of R3 495.

(a) Calculate the profit the jewellery shop will make on the sale of the set of rings. (2)

(b) Calculate the percentage profit the jewellery shop will make. (3)

1.2

PAYSLIP

Payslip number 312 Robert E Wills	**LEAP Environmental Strategies** 	
Date employed: 01/06/2010	Run number 443	
Occupation: Environmental Impact Manager	Salary period: 01/06/2015 – 30/06/2015	
Employee number: LES 113	Identity number: 8203025013089	
Description	Earnings	Deductions
Basic Salary	15 500,00	
Travel allowance	3 400,00	
Medical Aid		1 230,00
Pension fund		**A**
Staff loan		500,00
UIF employee contr.		**B**
Tax – regular earnings		1 439,60
Tax – allowances		510,00
Totals	18 900,00	**C**
Net Pay	**D**	

Use the information above to answer the following:

1.2.1 Calculate the missing value **A,** if Robert contributes 7,5% of his monthly salary to the pension fund. (3)

1.2.2 (a) Calculate Robert's UIF contribution at **B**. (3)

(b) Determine the total amount LEAP Environmental Strategies will pay over towards UIF for this employee. (2)

1.2.3 Calculate the missing values at **C** and **D**. (4)

1.2.4 Determine what percentage Robert is being taxed on for his travel allowance. (3)

1.3 Robert and Mary decided to stay over at the Da Vinci Hotel for one night after the wedding before they will depart on their honeymoon.



The Da Vinci Hotel is a renowned international hotel and offers the bride and groom the Honeymoon Suite at a cost of $950 per night, inclusive of 14% VAT calculated on the South African currency equivalent. An extra 1% city tax is chargeable.

Use the information above to answer the following:

1.3.1 Convert the cost for one night's stay at the Da Vinci Hotel to South African currency if the exchange rate is **R 11,38 : $ 1**. (2)

1.3.2 Determine the amount of VAT (in rand) included in the cost for one night's stay in the honeymoon suite. (3)

1.3.3 Calculate the total amount payable (in rand) for the bridal suite including city tax. (3)

1.4 Robert and Mary are planning a wedding reception. They visited two venues and compared the quotations of The Da Vinci Hotel and Tre-Jole Lodge and Conference Centre. The quotations from the two venues are as follow:

The Da Vinci Hotel
Basic fee of R8 000
R200 per person

Tre-Jole Lodge and Conference
No basic fee
R275 per person



Use the information above to answer the following:

1.4.1 Write down an equation to enable Robert and Mary to calculate the cost for the hiring of the Da Vinci Hotel. (2)

1.4.2 Complete **Table 1** below on the **ANSWER SHEET A**.

Table 1: Cost for hiring of venue

Number of guests	**0**	**20**	**40**	**60**	**80**	**100**	**120**	**140**	**160**	**180**	**200**
Cost Da Vinci Hotel (Cost in R)	**8 000**	**12 000**	**16 000**	**20 000**	**24 000**	**...**	**...**	**...**	**...**	**...**	**...**
Cost Tre-Jole Lodge (Cost in R)	**0**	**5 500**	**11 000**	**16 500**	**22 000**	**27 500**	**33 000**	**38 500**	**44 000**	**49 500**	**55 000**

(3)

1.4.3 Use **Table 1** and the grid on **ANSWER SHEET A** to represent the cost for the Da Vinci Hotel. (5)

1.4.4 Use the graph on **ANSWER SHEET B** to answer the following:

(a) Write down the number of guests that represent the break-even point when comparing the two venues. (1)

(b) Write down the number of guests that Robert and Mary can invite if their budget allows them to spend R43 000 and they want to hire The Da Vinci Hotel. (2)

[51]

QUESTION 2

2.1 Mary wants to travel to the wedding in a horse-drawn carriage. The horse trots at a speed of 15 km/h and Mary is getting dressed at a venue 5 km away.



Calculate the time, in minutes, Mary will have to allow for, to get to the wedding venue on time.

Use the formula: $\text{Time} = \frac{\text{Distance}}{\text{Speed}}$ (3)

2.2 Robert and Mary have decided to use round tables for the reception. They need to decide how many guests should sit at each table and how many tables will be needed.



Diameter of table = 150 cm
Each place setting along the edge of the table = 40 cm
Space between each setting needed to avoid congestion of guests = 15 cm

Use the information above to answer the following:

2.2.1 Calculate the circumference of the table.

Use the formula: **Circumference of table = $2\times\pi\times r$; where $\pi = 3.142$** (3)

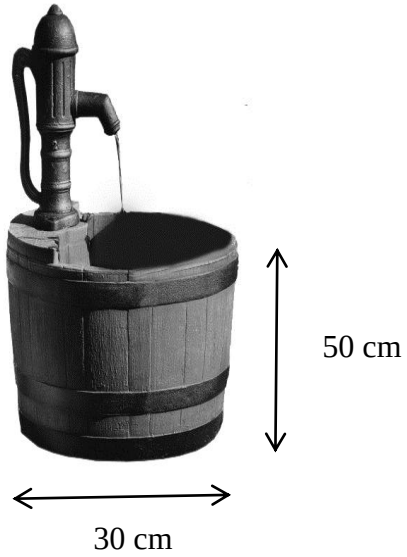
2.2.2 Use the circumference to determine how many guests can be seated at each table. (3)

2.2.3 Determine how many tables will be needed to seat 120 guests. (2)

2.2.4 If the round tablecloths must hang over the edge of the tables by 15 cm, calculate the area of each tablecloth in $\mathbf{m^2}$.

Use the formula: **Area of tablecloth = $\pi \times r^2$; where $\pi = 3.142$** (4)

2.3 The welcome drinks will be served as 'on tap', meaning each guest fill up their own glasses from a cylindrical container as shown below:



2.3.1 (a) Calculate the volume of the cylindrical container in litres **(ℓ)** if **1 cm^3 = 1 mℓ**.

Use the formula:**Volume of container = $\pi \times r^2 \times h$; where $\pi = 3.142$** (4)

(b) If each glass has a capacity of 40 mℓ, determine how many glasses can be filled from one container. Round your answer off to the nearest whole number. (3)

2.4 Robert and Mary decide to make provision for juice for the children who will be present at the wedding. Each child can have four glasses containing 330 mℓ each, which makes it 1 320 mℓ per child. The fruit juice concentrate is to be diluted in the ratio 1 : 5, where 1 part is fruit juice concentrate and 5 parts are water.

(a) If all the fruit juice gets prepared at the same time, calculate the amount of concentrate and the amount of water to be mixed per child. (3)

(b) If they decide to pour concentrate into each glass and fill it up with water, determine the amount of concentrate needed for each glass. (2)

[27]

QUESTION 3

3.1 Robert's father decided to pay for the wedding couple's honeymoon and booked a cruise on a cruise ship from Durban to the Portuguese Islands in Mozambique. For this trip the couple will have to fly from Johannesburg to Durban, board the cruise ship in Durban and will be on the ship for **five days and four nights**. The departure day for the cruise ship is **Monday, 14 December 2015**. The time to go onto the ship is **10:00**.



When on anchor in the Durban harbour, the front of the ship lies in port facing north.

Use the information above to answer the questions that follow.

3.1.1 If the ship leaves Durban on Monday, write down the day and date that the ship will be back in Durban's harbour. (2)

3.1.2 If the flight from Johannesburg arrives at 08:15 at King Shaka Airport in Durban, calculate the time, in hours and minutes, that Robert and Mary have to get to the Durban harbour to board the ship on time. (3)

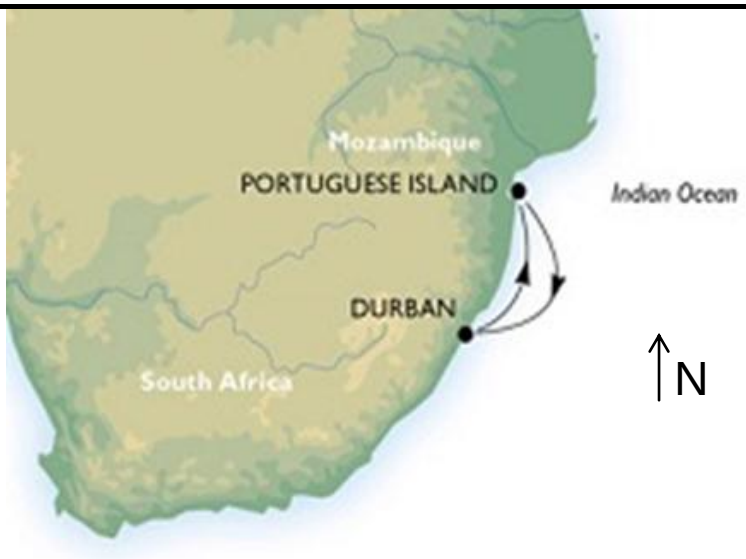
3.1.3 Use the deck plan (different levels or floors on the ship) on **ANNEXURE A** and the information in the scenario above to answer the following:

(a) Write down which entertainment area will be found at the front of the ship on the Rigoletto deck. (2)

(b) Write down the number of full decks consisting of cabins only. (2)

(c) Write down what entertainment can be found on Deck 13. (2)

3.2



The map above indicates the route the ship will follow from the port of Durban to the Portuguese Islands in Mozambique, a distance of 2 150 km. On the return trip the ship sails in curve further into the sea and then covers a distance that measures 3,7 cm on the map.
The scale on the map is 1:100 000.

Use the information above to answer the following:

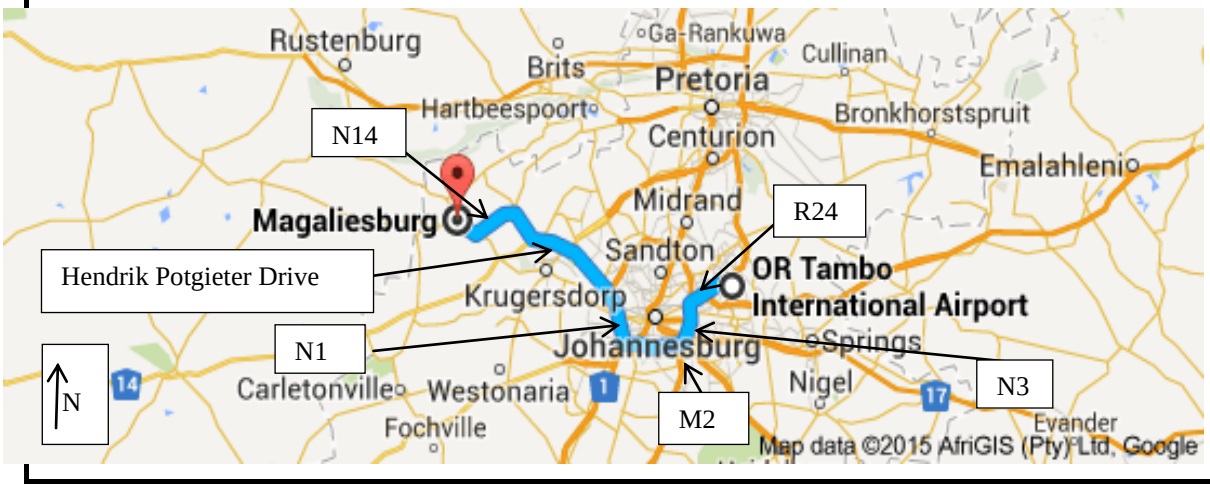
3.2.1 Explain what the scale of 1:100 000 means. (2)

3.2.2 Convert the given distance from Durban to the Portuguese Islands to cm. (3)

3.2.3 Calculate the actual distance the ship will sail on the return trip to Durban. (3)

3.2.4 Write down the general direction from the Portuguese Islands to Durban. (2)

3.3



Use the map to describe the route Robert and Mary will follow from Magaliesburg to the O.R. Tambo International Airport. (6)
[27]

QUESTION 4

4.1 The deck plan of the cruise ship on **ANNEXURE A** shows the layout of the cabins on each deck. The ship has 867 cabins which can accommodate 2 199 guests. There is one double-bed in each cabin; some cabins make provision for additional beds. The data for the additional and type of additional bed(s) per cabin are as follow:

Deck 12:	Sofa bed	28
Deck 10:	Disability	1
	Third bed (bunk bed)	0
	Third and fourth bed (bunk bed)	17
	Connecting cabins (four bunk beds)	38
Deck 9:	Disability	2
	Third bed (bunk bed)	8
	Third and fourth bed (bunk bed)	38
	Connecting cabins	0
Deck 8:	Disability	1
	Third bed (bunk bed)	76
	Third and fourth bed (bunk bed)	100
	Connecting cabins	0
Deck 7:	Disability	0
	Third bed (bunk bed)	2
	Third and fourth bed (bunk bed)	16

Use the information above to answer the following:

4.1.1 Determine the number of cabins on the cruise ship that can accommodate four guests. (2)

4.1.2 Calculate the number of cabins on the cruise ship with only a double bed. (4)

4.1.3 If 1 921 of the 2 199 guests on board the cruise ship are adults, calculate what percentage of the total number of guests will be children. Round your answer off correctly to the nearest whole number. (4)

4.2

Robert and Mary gathered some statistics on the number of foreign travellers and the number of South African residents who departed from Durban over the past seven years. The statistics they gathered are represented in **Table 2** below.

Table 2: Number of foreign travellers and South African residents who departed from Durban, 2008 – 2014

Year	Foreign Travellers	South African Residents	Total
2008	5 955	3 164	10 119
2009	6 093	4 190	10 283
2010	2 192	6 728	8 470
2011	**A**	4 338	11 839
2012	8 023	4 433	12 456
2013	4 429	8 474	**B**
2014	8 680	4 423	13 103

Use the information above to answer the following:

4.2.1 Determine the missing values **A** and **B.** (4)

4.2.2 Determine the median number of foreign travellers who departed from Durban over the past seven years. (3)

4.2.3 Calculate the mean number of South African residents who departed from Durban over the past seven years. (3)

4.2.4 By means of calculations show that 7 123 more foreign travellers departed from Durban than South African residents over the past seven years. (3)

[24]

QUESTION 5

5.1

Mary works as a statistical analyst for Statistics South Africa. She thought it will be interesting to know how many of their wedding guests are under the age of fifty years and how many are over the age of fifty years. She set up the information in **Table 3** below.

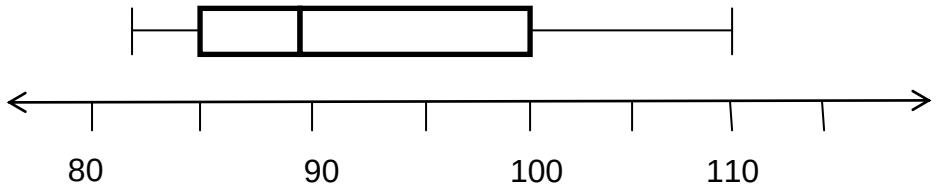
	Male	**Female**
50 and under	45	29
Over 50	23	23

Use the information above to answer the following:

5.1.1 Determine the probability that, if randomly chosen, a guest will be female. (2)

5.1.2 Determine the probability that, if randomly chosen, a guest will be male and under fifty. Give your answer as a percentage. (4)

5.2 The box-and -whisker graph below shows the speed of ten jet skis (a water vessel that looks like a motorbike and operates like one) available for guests when visiting the Portuguese Islands.





Use the information above to answer the following:

5.2.1 Write down the speed of the jet ski that was travelling the fastest. (1)

5.2.2 If the speed limit allowed on the water is 100 km/h, determine how much faster than the speed limit the fastest jet ski was travelling. (2)

5.2.3 Write down the median speed of the jet ski's recorded. (2)

5.2.4 Write down the value of the lower quartile and upper quartile of this set of data. (2)

5.3 Robert and Mary are allowed to take one suitcase each aboard the cruise ship and the travel agent gave them specific instructions on the size of the suitcase they may take with. The measurements are as follow:

Length = 1,2 m Breadth = 60 cm Height = 30 cm

Surface area = 2(length × breadth + breadth × height + length × height)
Volume = length × breadth × height



Use the information above to answer the following:

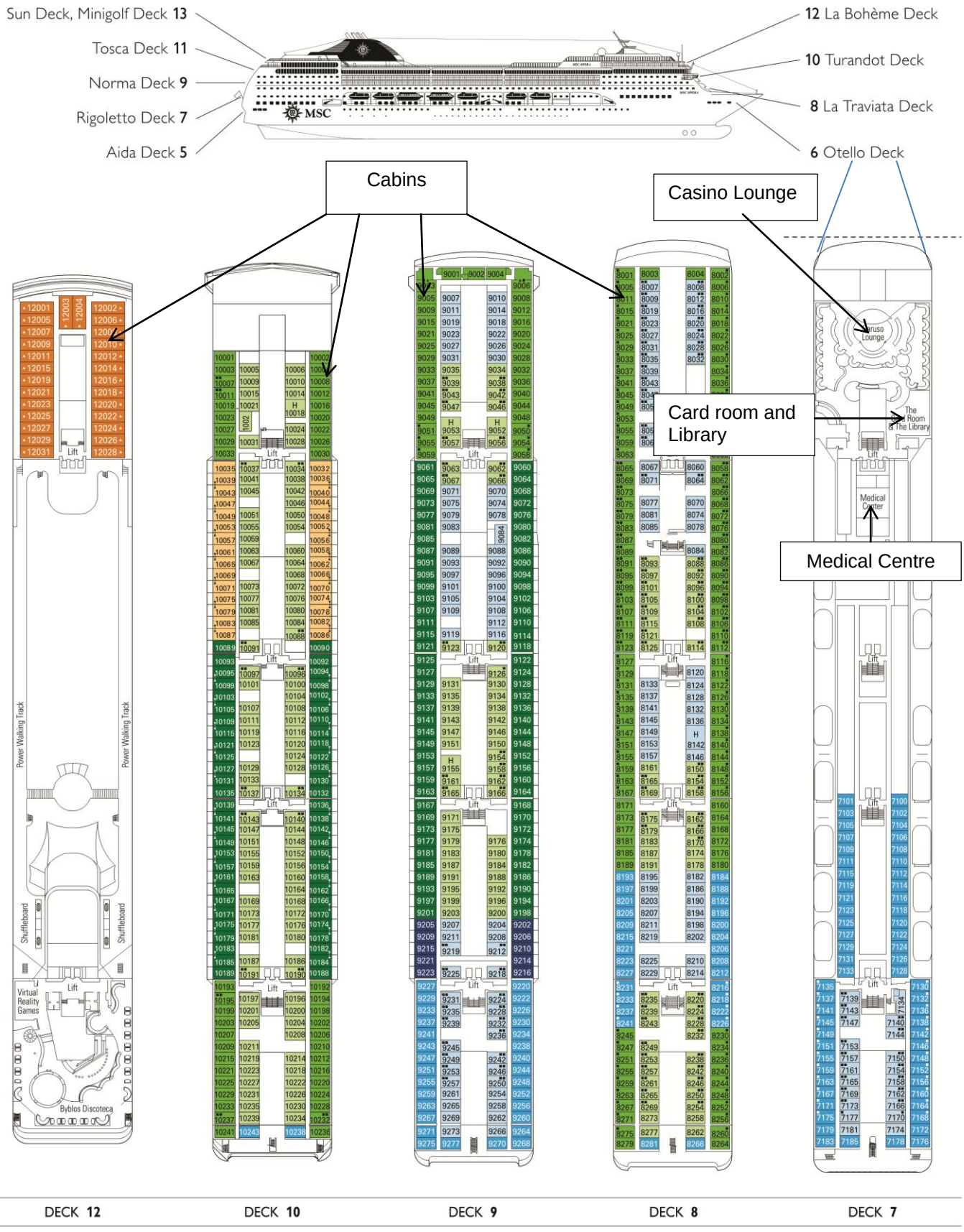
5.3.1 Calculate the surface area of the suitcase in **cm^2**. (5)

5.3.2 Calculate the capacity of the suitcase. (3)
[21]

TOTAL: 150

END

ANNEXURE A **QUESTION 3.1.3**



NAME:_____ **CLASS:**_____

ANSWER SHEET A

QUESTION 1.4.2

Table 1: Cost for hiring of venue

Number of guests	**0**	**20**	**40**	**60**	**80**	**100**	**120**	**140**	**160**	**180**	**200**
Cost Da Vinci Hotel (Cost in R)	**8 000**	**12 000**	**16 000**	**20 000**	**24 000**						
Cost Tre-Jole Lodge (Cost in R)	**0**	**5 500**	**11 000**	**16 500**	**22 000**	**27 500**	**33 000**	**38 500**	**44 000**	**49 500**	**55 000**

NAME:_____ **CLASS:**_____

ANSWER SHEET B

QUESTION 1.4.3

