



basic education

Department:
Basic Education
REPUBLIC OF SOUTH AFRICA

**NATIONAL
SENIOR CERTIFICATE**

GRADE 12

MATHEMATICAL LITERACY P1

NOVEMBER 2015

MARKS: 150

TIME: 3 hours

This question paper consists of 11 pages, 4 annexures and 1 answer sheet.

INSTRUCTIONS AND INFORMATION

1. This question paper consists of FIVE questions. Answer ALL the questions.
2. 2.1 Use ANNEXURE A to answer QUESTION 1.2, ANNEXURE B for QUESTION 3.1, ANNEXURE C for QUESTION 3.2 and ANNEXURE D for QUESTION 4.1.
2.2 Answer QUESTION 4.1.6(b) on the attached ANSWER SHEET.
2.3 Write your centre number and examination number in the spaces on the ANSWER SHEET. Hand in the ANNEXURES and the ANSWER SHEET with your ANSWER BOOK.
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 stated otherwise.
6. Show ALL calculations clearly.
7. Round off ALL final answers appropriately according to the given context, unless stated otherwise.
8. Indicate units of measurement, where applicable.
9. Maps and diagrams are NOT necessarily drawn to scale, unless stated otherwise.
10. Write neatly and legibly.



QUESTION 1

1.1

Ulwazi and Ami are engaged and plan to get married. They are planning their wedding reception. They plan to invite 67 couples and 16 single persons as the only guests to the reception.

The table below is an extract from the budget for the wedding reception.

TABLE 1: Extract from the budget for the wedding reception

Reception costs	
Venue	R22 100
Catering	R34 200
Drinks	R7 650
Wedding cake	R2 500
Subtotal	R66 450
Other expenses	
Flowers and decorations	...
...	...
Subtotal	...
TOTAL BUDGETED AMOUNT	R125 000

[www.coinmill.com. Accessed on 3 November 2014.]

Currency: 1 rand = 0,32253 Ghanaian cedi (GHC)

Use the table above to answer the following questions.

- 1.1.1 Determine the total number of guests they plan to invite to their wedding reception. (2)
- 1.1.2 Show how the catering cost was determined if the cost per person is R225,00. (2)
- 1.1.3 Express the total reception cost as a percentage of the total budgeted amount. (2)
- 1.1.4 Calculate the cost of the flowers and decorations if it is 1,8% of the total budgeted amount. (2)
- 1.1.5 Ami's father, who lives in Ghana, offers to contribute 30 000 Ghanaian cedi towards the wedding reception costs.
Determine the amount in rand that Ulwazi and Ami will have to contribute to the reception costs to meet the overall budgeted amount. (4)
- 1.1.6 Ulwazi's father offered to pay for Ami's wedding ring, which costs R1 349, excluding 14% VAT.
Calculate the selling price (rounded off to the nearest cedi) of Ami's wedding ring, including VAT. (5)
- 1.1.7 Identify ONE expense, other than flowers and décor, that could be included in the budget and briefly explain this expense. (2)

- 1.2 Ulwazi received his employee tax certificate (IRP5) (ANNEXURE A) for the financial year ending 28 February 2013. Some of the information has been omitted.

Use ANNEXURE A to answer the following questions.

- 1.2.1 Briefly explain the difference between an *employee* and an *employer*. (2)
- 1.2.2 What does the abbreviation *UIF* stand for? (2)
- 1.2.3 Write down the taxable amount that Ulwazi received as an annual payment. (2)
- 1.2.4 Did Ulwazi receive a non-taxable reimbursive travel allowance? Give a valid reason for your answer. (2)
- 1.2.5 Calculate the average monthly medical scheme fees tax credit. (2)
- 1.2.6 Calculate the missing amount **A**. (2)
- 1.2.7 Indicate how the gross non-retirement funding income was calculated. (2)
- 1.2.8 From 1 March 2012 to 31 July 2012 Ulwazi contributed a total of R4 975,25 to his pension fund.
- Determine the average monthly contribution for the remainder of the financial year. (5)

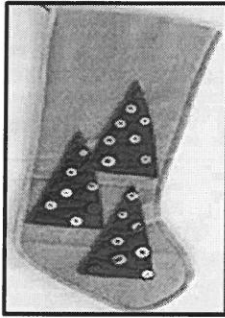
[38]

QUESTION 2

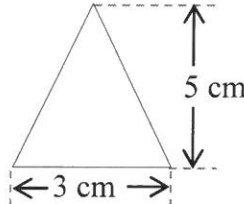
2.1

Petru makes craft products that she sells at a craft market. She makes gift stockings (gift bags shaped like a sock) decorated with triangular shapes, as shown below. She sews three triangles onto each side of the stocking.

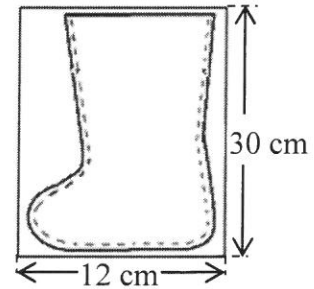
Photograph of a gift stocking



Dimensions of the triangular pieces of fabric



Dimensions of a rectangular piece of fabric required for one side of a stocking



[www.marthastewart.com]

2.1.1 The area of one side of a stocking (without the triangular pieces) is 355,25 cm².

Calculate the area of the fabric that is left over if Petru cuts ONE complete stocking from two rectangular pieces of fabric.

You may use the following formula:

$$\text{Area of rectangle} = \text{length} \times \text{width} \quad (6)$$

2.1.2 Calculate the total area of the triangular shapes needed to decorate ONE stocking.

You may use the following formula:

$$\text{Area of triangle} = \frac{1}{2} \times \text{base} \times \text{height} \quad (4)$$

2.1.3 It takes Petru 18 minutes to cut, decorate and hand-stitch one stocking.

Determine at what time she will finish making NINE stockings if she starts at 08:25.

(4)

2.2

Petru buys rectangular boxes with reels of thread for stitching the stockings. The radius of a cylindrical reel is 11,5 mm.

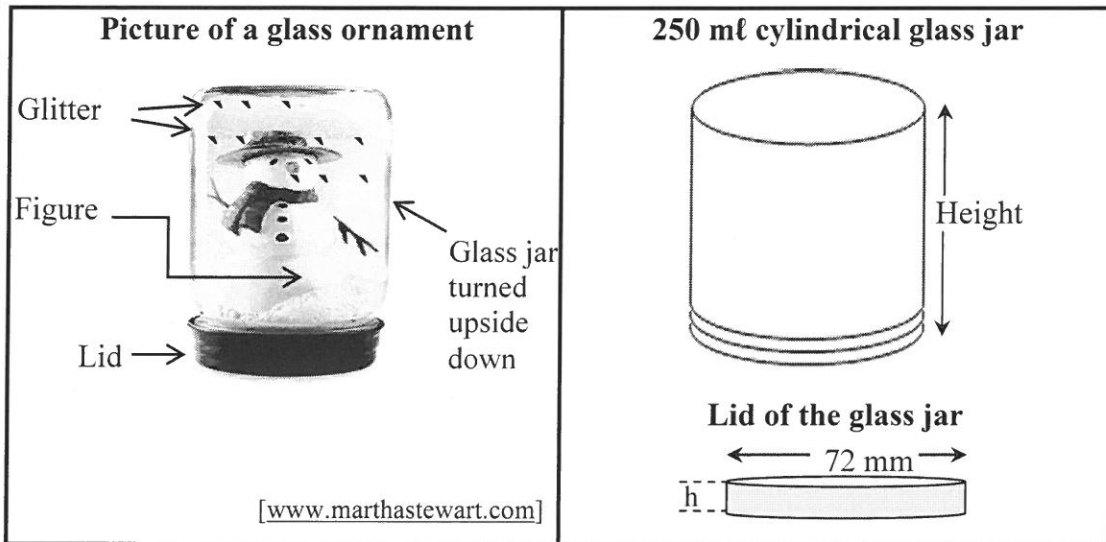
<p>Reels of thread</p>	<p>A box with reels of thread</p>	<p>Top view showing dimensions of the box</p>
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Determine the maximum number of reels of thread that will fit exactly into a rectangular box that is 120 mm wide and 195 mm long. Show ALL calculations.

(5)

2.3

Below is a photograph of a glass ornament that Petru makes using 250 ml cylindrical glass jars.



The inside radius of the glass jar is 3,25 cm.
 The outside diameter of the lid of the jar is 72 mm and the height (h) is 9 mm.
 The exterior surface of the lid is painted red.
 The jar is filled 75% with water and a pinch of glitter is added to the water. A dash of glycerine is also added to keep the glitter from sinking too quickly.
 The figure is glued to the inside of the lid before the lid is placed on the jar. The jar is then turned upside down.

2.3.1 Calculate (to the nearest cm²) the exterior surface area of the lid that needs to be painted.

You may use the following formula:

$$\text{Painted exterior surface area of lid} = \pi r (r + 2h)$$

where $\pi = 3,142$; r is the radius and h is the height of the lid. (4)

2.3.2 Determine (to the nearest cm) the height of the water in the jar before the lid is placed on the jar.

You may use the following formula:

$$\text{Height of the water in the jar} = \frac{\text{volume of the water (in cm}^3\text{)}}{\pi \times (\text{radius})^2}$$

1 cm³ = 1 ml (6)

2.3.3 Use the conversions below to answer the following questions.

1 pinch	=	$\frac{1}{16}$ teaspoon
2 pinches	=	1 dash
1 teaspoon	=	5 ml

Determine what fraction of a teaspoon equals ONE dash. (2)
 [31]

QUESTION 3

3.1 Study the layout plan of a university lecture room in ANNEXURE B.

Use the layout plan to answer the following questions.

- 3.1.1 If Zahida is seated at G5, determine which exit will be closest to her. (2)
- 3.1.2 Will Aleia have direct access to a plug point if she is seated at B105? Give a reason for your answer. (2)
- 3.1.3 Akua was seated at H113, but decided to move closer to the stage. He moved 5 rows forward and 4 seats to the right from where he was sitting originally. Give the row and number of his new seat. (2)
- 3.1.4 Determine the maximum number of people that can be seated in this lecture room if all the seats are occupied. (4)
- 3.1.5 Name the seats in row A that can be converted to be suitable for left-handed persons. (2)
- 3.1.6 Determine the probability that a person assigned to a randomly selected seat will have direct access to a power outlet. (3)

3.2 ANNEXURE C shows the route map for the Momentum 947 Cycle Challenge.

Study the map to answer the following questions.

- 3.2.1 Determine the number of times that a cyclist will have to cycle uphill during this race. (2)
- 3.2.2 The total distance of the race is 94,7 km. Calculate the distance between the THIRD LAST water point and the finish. (2)
- 3.2.3 Name the residential area that will be on the right-hand side of a cyclist standing at the starting point, ready to start the race. (2)
- 3.2.4 Name ALL the water points that are exactly 13 km from the previous water point. (3)

[24]

QUESTION 4

4.1

There is a global increase in the use of communication technology, such as the Internet, social networks and cellphones. TABLE 2 in ANNEXURE D shows data regarding the percentage of the world population living in the 12 regions as well as the percentage of people using different means of communication.





Some of the data in TABLE 2 has been omitted.

Use TABLE 2 to answer the following questions.

- 4.1.1 Explain why some data in the table is categorical. (2)
- 4.1.2 Write down the modal percentage usage for cellphone communication. (3)
- 4.1.3 Calculate the median percentage usage for Internet communication. (3)
- 4.1.4 Write down the total percentage of Internet usage in America. (2)
- 4.1.5 Determine the total percentage of the world population living in all of Asia. (3)
- 4.1.6 Two broken-line graphs representing some of the data in TABLE 2 have been drawn on the grid on the ANSWER SHEET.
- (a) Use the graphs to determine the percentage of the world population living in Africa. (2)
- (b) Draw another broken-line graph on the same grid to represent the percentage cellphone usage for all the global regions on the ANSWER SHEET. (6)
- 4.1.7 Write down the global region that shows the greatest difference between the percentage usage of Internet communication and the percentage usage of cellphone communication. (2)

- 4.2 TABLE 3 below represents a global data snapshot of cellphone usage.
(A data snapshot is another form of representing data.) Some data has been omitted.

TABLE 3: Global data snapshot

GLOBAL DATA SNAPSHOT						
7 095 476 818 Total world population		<table border="1"> <tr> <td>52%</td> <td>...</td> </tr> <tr> <td>Urban</td> <td>Rural</td> </tr> </table>	52%	...	Urban	Rural
52%	...					
Urban	Rural					
2 484 915 152 Internet users		<table border="1"> <tr> <td>35%</td> </tr> <tr> <td>Internet usage</td> </tr> </table>	35%	Internet usage		
35%						
Internet usage						
1 856 680 860 Social network users		<table border="1"> <tr> <td>...</td> </tr> <tr> <td>Social network usage</td> </tr> </table>	...	Social network usage		
...						
Social network usage						
Six billion, five hundred seventy-two million, nine hundred and fifty thousand, one hundred and twenty-four cellphone users		<table border="1"> <tr> <td>93%</td> </tr> <tr> <td>Cellphone usage</td> </tr> </table>	93%	Cellphone usage		
93%						
Cellphone usage						

[Adapted from wearesocial.net]

Use TABLE 3 to answer the following questions.

- 4.2.1 Determine the total number of people living in rural areas. (3)

- 4.2.2 Calculate the percentage of social network usage.

You may use the following formula:

$$\text{Percentage social network usage} = \frac{\text{number of active social network users}}{\text{total world population}} \times 100\% \quad (2)$$

- 4.2.3 Write the number of cellphone users in number format. (2)
[30]

QUESTION 5

5.1

South African National Parks (SANParks) released their 2013/2014 annual report. Included in the report is the remuneration of persons serving on the executive management of South African National Parks. Some amounts have been omitted.

TABLE 4: SANParks 2013/2014 Annual Report (Remuneration of executive management)

Executive member	2013/2014 remuneration			Total remuneration	
	Basic salaries	Allowances	Bonuses	2013/2014	2012/2013
	R'000	R'000	R'000	R'000	R'000
Mabunda, MD ¹	2 394	1	530	2 925	2 966
Daphne, P ²	-	-	-	-	1 716
Sibiya, VA	N	1	349	1 970	1 872
Magome, DT	N	1	342	1 963	1 861
Mavuso, L	1 302	1	265	1 568	1 508
Phillips, G	1 405	1	294	1 700	1 625
Mkutshulwa, W ³	1 490	1	326	1 817	-
Songelwa, N ³	1 311	1	30	1 342	-
Mabilane, RT	1 756	1	362	2 118	2 032
Total	12 898	8		M	13 580

[Adapted from SANParks Annual Report 2014]

Notes: 1 Contract terminated on 31 March 2014
 2 Contract terminated on 31 March 2013
 3 Appointed on 1 April 2013

Use TABLE 4 to answer the following questions.

- 5.1.1 Determine the missing value **M**. (2)
- 5.1.2 Determine the missing value **N**, if Sibiya and Magome received the same basic salary. (4)
- 5.1.3 Calculate the range for the total remuneration for 2013/2014. (2)
- 5.1.4 Write the ratio of the bonus amounts for Songelwa : Magome in the form **1 : ...** (2)
- 5.1.5 Determine which executive member received the largest annual increase in total remuneration compared to the previous year. Show ALL calculations. (5)
- 5.1.6 Identify the executive member who received a bonus during the 2013/2014 financial year, but would not qualify for a bonus for the next financial year. (2)

5.2 During the 2013/2014 financial year SANParks held the following meetings:

- 6 board meetings
- 3 conservation and tourism committee meetings
- 6 audit and risk committee meetings
- 3 human relations meetings

5.2.1 It can be stated with certainty that ONE of the board members attended all the meetings.

Write down the percentage attendance for this board member. (2)

5.2.2 Another board member did not attend four of the meetings.

Determine (as a common fraction) the probability that this member attended a randomly selected meeting. (3)

5.3 The total number of visitors to the national parks was 4 705 306 at the end of a financial year. For the next two financial years the number of visitors increased annually by 5% and 5,9% respectively.

Determine the total number of visitors at the end of the second financial year. (5)
[27]

TOTAL: 150

**ANNEXURE A
QUESTION 1.2**

EMPLOYEE TAX CERTIFICATE

Transaction year: 2013

Year of Assessment: 2013

Period of reconciliation: 2012/2013

TYPE OF CERTIFICATE: IRP5

EMPLOYEE INFORMATION

Surname: Ramile
First name: Ulwazi

Date of birth: 19750616
Income tax number: 0804858209

EMPLOYER INFORMATION

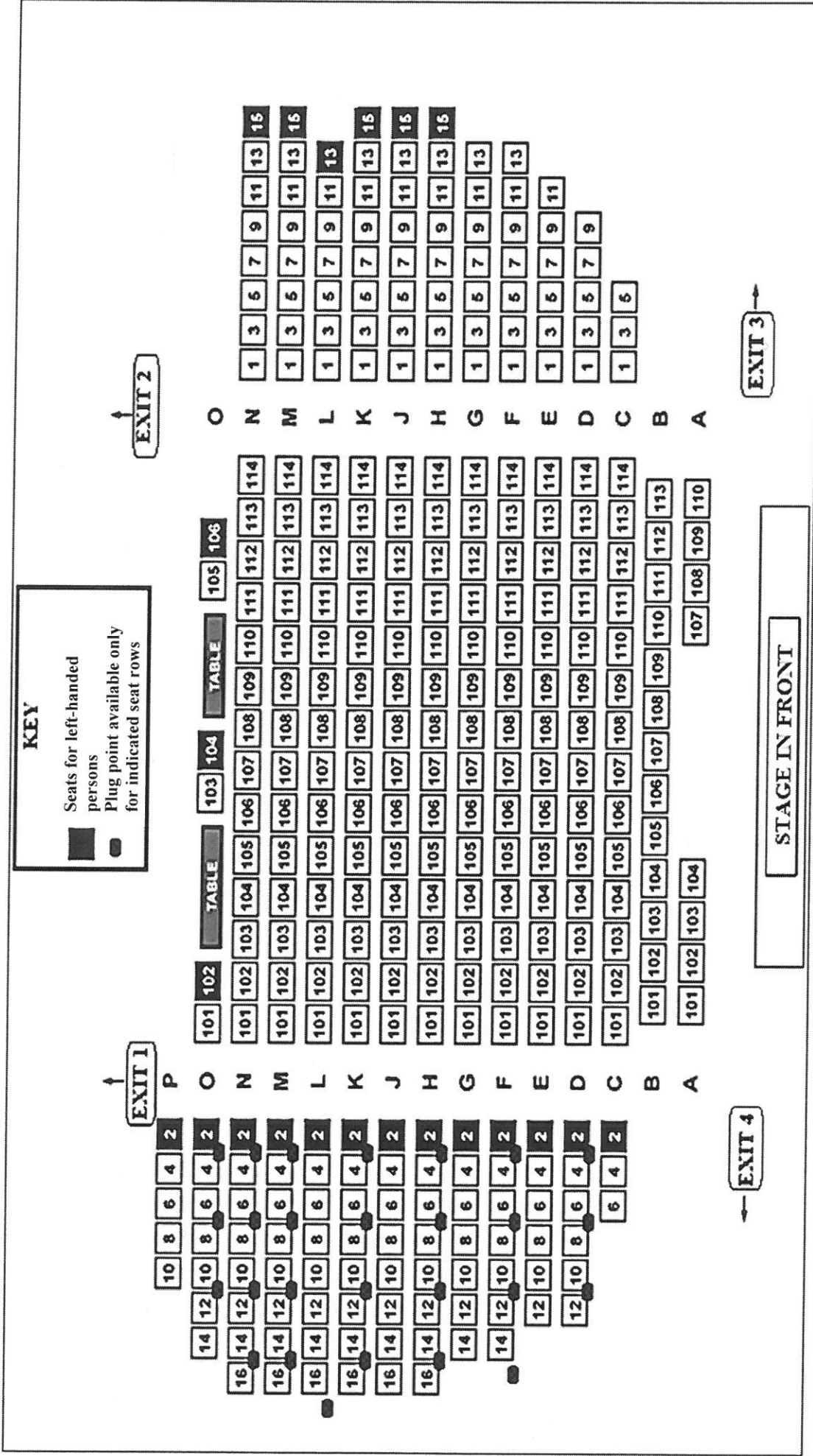
Trading or other name: Department of Education

INCOME RECEIVED		INCOME RECEIVED CONTINUED ...		TAX CREDITS, CONTRIBUTIONS	
AMOUNT	SOURCE CODE	AMOUNT	SOURCE CODE	AMOUNT	SOURCE CODE
R 185 463	3601	GROSS RETIREMENT FUNDING INCOME	3697	PAY-AS-YOU-EARN	4102
R 15 521	3605	R 185 463		R 30 075,79	
R 26 188	3713	GROSS NON-RETIREMENT FUNDING INCOME	3697	TOTAL TAX AND UIF	4149
R 8 640	3810	R 50 349		R 30 075,79	
		DEDUCTIONS/CONTRIBUTIONS		MEDICAL SCHEME CONTRIBUTIONS TAX CREDIT	4116
		R 13 909	4001	R 2 760,00	
		R 20 013	4005		
		R 8 640	4474		
		TOTAL DEDUCTIONS/CONTRIBUTIONS			
		R	4497		
			A		

SOME SOURCE CODES

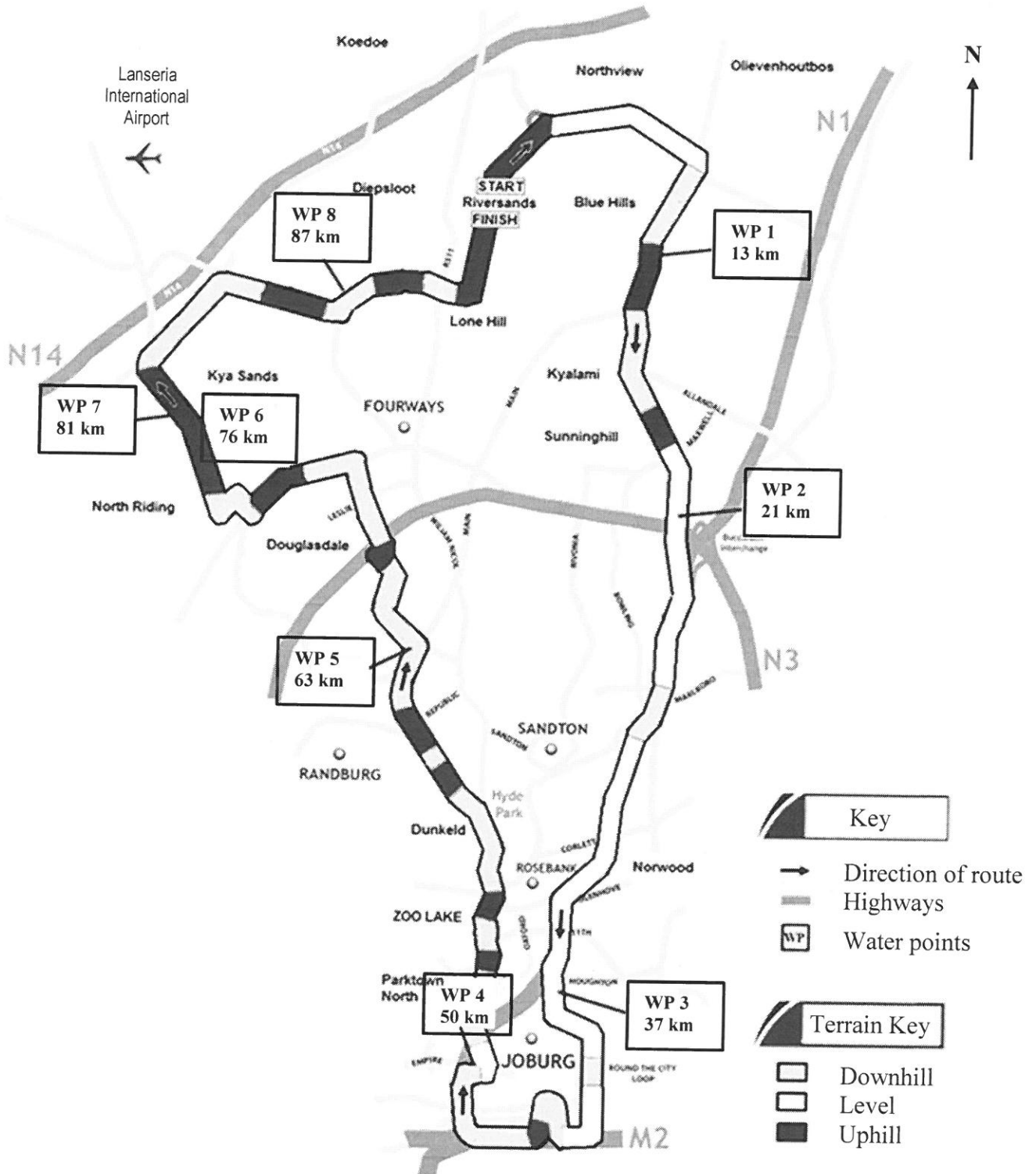
- 3601 INCOME – TAXABLE
- 3605 ANNUAL PAYMENT – TAXABLE
- 3703 REIMBURSIVE TRAVEL ALLOWANCES – NON-TAXABLE
- 3713 OTHER ALLOWANCES – TAXABLE
- 3810 MEDICAL AID CONTRIBUTIONS PAID ON BEHALF OF EMPLOYEE
- 4001 CURRENT PENSION FUND CONTRIBUTIONS
- 4005 MEDICAL AID CONTRIBUTIONS
- 4474 EMPLOYER'S MEDICAL AID CONTRIBUTIONS
- 4497 TOTAL DEDUCTIONS/CONTRIBUTIONS

ANNEXURE B
QUESTION 3.1
LAYOUT PLAN OF LECTURE ROOM



ANNEXURE C
QUESTION 3.2

ROUTE MAP OF THE 947 CYCLE CHALLENGE







[Adapted from www.cyclechallenge.com]

ANNEXURE D

QUESTION 4.1

TABLE 2: Percentages of the world population and global use of different means of communication

	Global regions	 World population (%)	Percentage distribution of global means of communication		
			 Internet usage	 Social network usage	 Cellphone usage
A	CENTRAL ASIA	2	1	1	2
B	OCEANIA	---	1	1	1
C	CENTRAL AMERICA	3	3	3	3
D	MIDDLE EAST	4	4	3	5
E	SOUTH-EAST ASIA	9	6	8	10
F	CENTRAL AND EASTERN EUROPE	4,5	7	6	7
G	SOUTH AMERICA	6	8	10	8
H	AFRICA	...	8	4	11
I	SOUTH ASIA	23	8	6	18
J	NORTH AMERICA	4,5	11	11	5
K	WESTERN EUROPE	5,5	13	10	8
L	EAST ASIA	22	30	37	22

[Adapted from wearesocial.net]

ANSWER SHEET

QUESTION 4.1.6

CENTRE NUMBER

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EXAMINATION NUMBER

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**WORLD POPULATION AND MEANS OF COMMUNICATION
PERCENTAGES PER GLOBAL REGION**

