



Province of the  
**EASTERN CAPE**  
EDUCATION

**NATIONAL  
SENIOR CERTIFICATE**

**GRADE 12**

**SEPTEMBER 2014**

**MATHEMATICAL LITERACY P2**

**MARKS: 150**

**TIME: 3 hours**



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This question paper consists of 15 pages, including an annexure of 3 pages.

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**INSTRUCTIONS AND INFORMATION**

Read the following instructions carefully before answering the questions.

1. This question paper consists of FOUR questions. Answer ALL the questions.
2. QUESTION 3.1 must be answered with reference to ANNEXURE A. QUESTIONS 4.1.1 must be answered on ANNEXURE B, and QUESTION 4.1.2 must be answered on ANNEXURE C. Write your name in the spaces provided and hand in the ANNEXURES with your ANSWER BOOK.
3. Number the questions correctly according to the numbering system used in this question paper.
4. An approved calculator (non-programmable and non-graphical) may be used, unless stated otherwise.
5. ALL calculations must be shown clearly.
6. ALL the final answers must be rounded off to TWO decimal places, unless stated otherwise.
7. Start EACH question on a NEW page.
8. Write neatly and legibly.

**QUESTION 1**

- 1.1 The table below shows the income tax for individuals for the financial year 01 March 2013 – 28 February 2014.

**Income Tax Table****1 March 2013 – 28 February 2014**

<b>Taxable Income</b>	<b>Tax Rate</b>
R0 – R165 600	18% of each rand
R165 601 – R258 750	R29 808 + (25% of amount above R165 600)
R258 751 – R358 110	R53 096 + (30% of amount above R258 750)
R358 111 – R500 940	R82 904 + (35% of amount above R358 110)
R500 941 – R638 600	R132 894 + (38% of amount above R500 940)
R 638 601 and above	R185 205 + (40% of amount above R638 600)

**Tax rebates**

Primary Rebate	R12 080
Secondary Rebate (Persons 65 and older)	R6 750
Tertiary Rebate (Persons 75 and older)	R2 250

**Tax Thresholds**

Below age 65	R67 111
Age 65 and below 75	R104 611
Age 75 and over	R117 111

Refer to the income tax table for individuals in the fourth row, second column where the tax rate is R82 904 + (35% of the amount above R358 110), and show with the necessary calculations how the amount of R82 904 is calculated.

(5)

- 1.2 Calculate the tax rebate that a person of 75 years and older will receive. (3)
- 1.3 Briefly explain what is meant by the tax threshold for persons below the age of 65. (2)
- 1.4 Show by calculation why a person who is 65 years and older and who earns R104 611 or less per year pays no tax. Write your answer correct to the nearest rand. (6)

- 1.5 Mr Zee earns a gross salary of R22 421,00 per month for the tax year 2013/2014. Deductions are made from his salary every month which include PAYE (Pay As You Earn), medical aid and pension fund contributions.

The following table is ONLY an extract of Mr Zee's June 2013 salary slip.

Mr A. Zee			Date of birth: 25-06-1972		
ALLOWANCES			DEDUCTIONS		
Code	Description	Amount	Code	Description	Amount
0001	Basic Salary	R22 421,00	0001	Tax RSA	R4 233,25
0005	Service Bonus	R22 421,00	0002	Pension	R1 685,57
0544	Housing subsidy	R 900,00	0005	Medical Aid	R1 156,00
			0007	FNB: Bond Repayment	R3 230,00
	<b>Gross salary</b>	R45 742,00		<b>Net salary</b>	R35 437,18

**Please Note:** Annual service bonuses are paid in the month of your birthday and amounts to a full basic salary which is non-taxable.  
Housing subsidy is also non-taxable.

- 1.5.1 Mr Zee claims that his tax for this month was calculated incorrectly. Show by calculation whether you agree or disagree with Mr Zee's statement. (8)
- 1.5.2 With reference to your answer in QUESTION 1.5.1, what should Mr Zee's actual net salary amount to? (3)
- 1.5.3 The pension contribution deduction from employees' salaries must not exceed 7,5% of an employee's basic salary. Show that this is the correct percentage to 1 decimal place. (3)
- 1.5.4 Collectively Mr Zee and his wife decided to save  $\frac{2}{3}$  of his service bonus. He investigated the following two options:
- 9,25% compound interest per annum, compounded half yearly for 3 years
  - 10,5% simple interest per annum for a period of 3 years

The consultant at the bank advised Mr Zee to take the second option, as he will be paid out much more than the first option. With all the necessary calculations, show how much more Mr Zee will receive if he takes the advice of the consultant. The following formulae should be used:

$$A = P(1 + ni) \text{ and } A = P(1 + i)^n$$

where

$A$  = final amount;  $P$  = original amount;  $i$  = interest rate and  $n$  = period in years

(12)

- 1.6 With his service bonus, Mr Zee bought his wife a flower bouquet with only roses.



In the flower bouquet was 12 red roses, 15 pink roses and the remainder of roses had different colours.

- 1.6.1 How many roses are there in the bouquet if the roses with different colours are 10% of the total roses? (4)
- 1.6.2 How many of the roses have different colours? (2)
- 1.6.3 Calculate the probability of a rose chosen at random will be a red rose. Write your answer as a fraction and as a percentage. (2)
- 1.6.4 Mr Zee paid R250 inclusive of VAT (Value Added Tax) for the bouquet. Calculate the price of ONE rose, exclusive of VAT. (4)

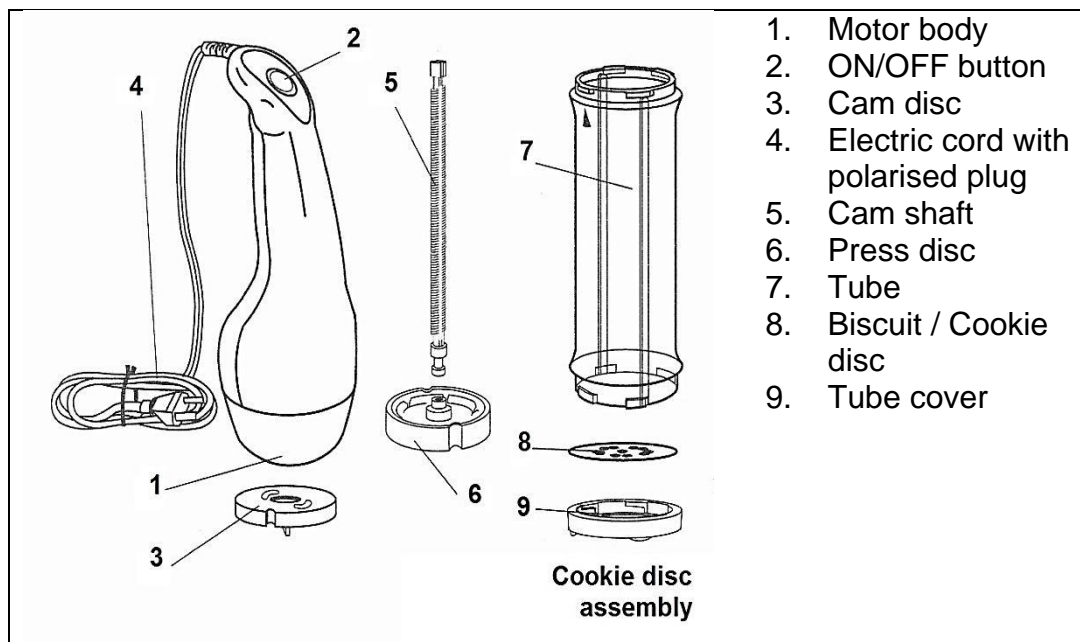
**[54]**

**QUESTION 2**

- 2.1 2.1.1 Minah, a housewife, is in to business of baking and selling of biscuits and cookies. To make her task easier, she decided to buy an electrical biscuit and cookie maker as shown in the diagram below.



In order for her to use the biscuit and cookie maker, she has to read through all the instructions to assemble it. The following shows illustrations of the different parts of the biscuit and cookie maker.



The following pictured instructions were included in the box. The pictures are not necessarily in the correct order for assembly.

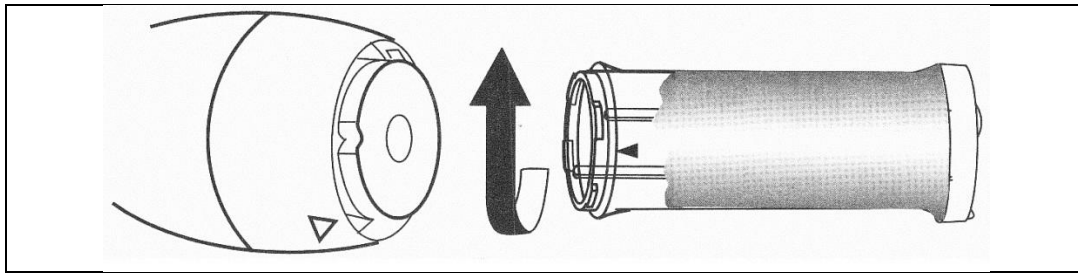


FIGURE A

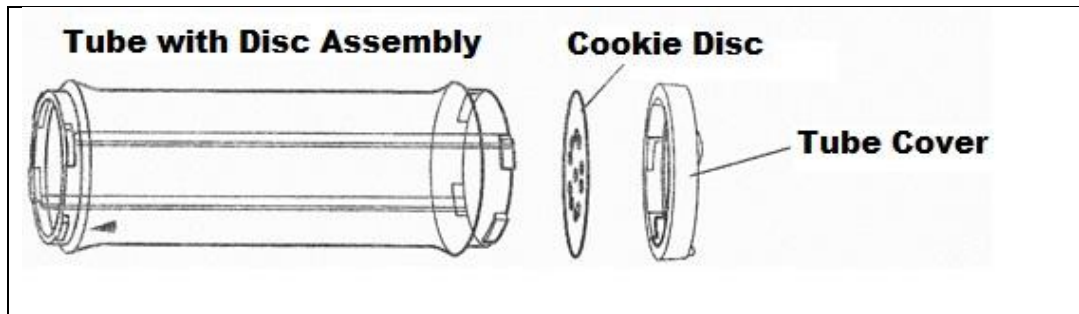


FIGURE B

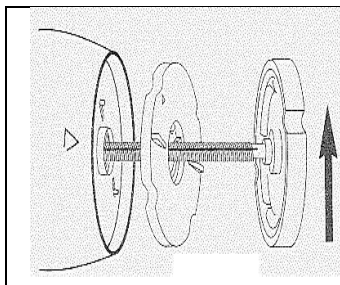


FIGURE C

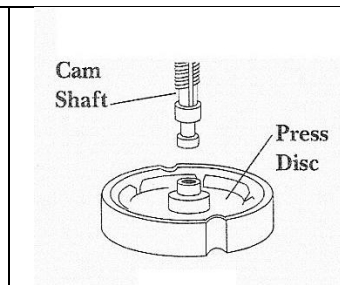


FIGURE D

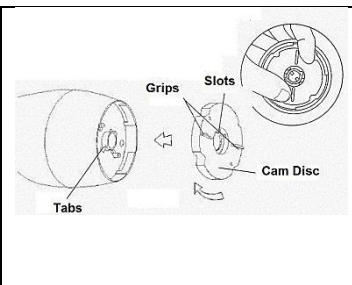


FIGURE E

Read through the following chronological instructions. Choose the correct figure that best matches each of the instructions below.

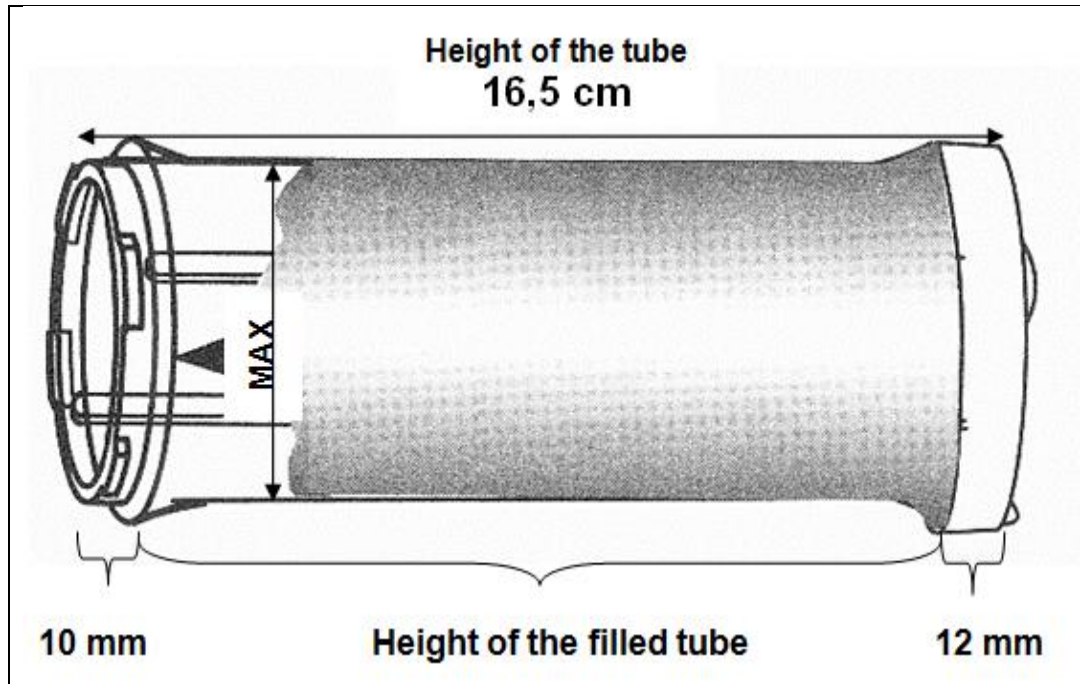
- 1 Attach Cam Shaft to the Press Disc by inserting the stem of the Shaft into the Press Disc's centre hole. Press firmly. You will hear a click as the Shaft snaps in place.
- 2 Line the Tabs on the Motor Body up with the slots on the Cam Disc. Insert the Cam Disc into the Motor Body. Using the two Grips on the Cam Disc, turn slightly clockwise until the Disc clicks into position.
- 3 Fit the Shaft all the way inside the unit, until the outside contours of the 2 Discs line up.
- 4 Select a disc and place it inside the Tube cover. Then place the Tube into the Tube Cover, turning clockwise until locked.
- 5 With a spoon or spatula, load the freshly prepared dough into the top of the Tube.
- 6 Look inside the Tube to see the ridges extending from top to bottom. These ridges align with the outside contours of the 2 Discs. Grasp Tube firmly, join the Body with the filled Tube and turn clockwise until the Tube locks into position.

(6)

- 2.1.2 The introduction to the instructions is that you always have to unplug the biscuit and cookie maker from the outlet before assembly or disassembly of parts.

Why do you think this is an important instruction? (2)

- 2.2 The following diagram shows the tube that needs to be filled with prepared dough. (Diagram not drawn to scale.)

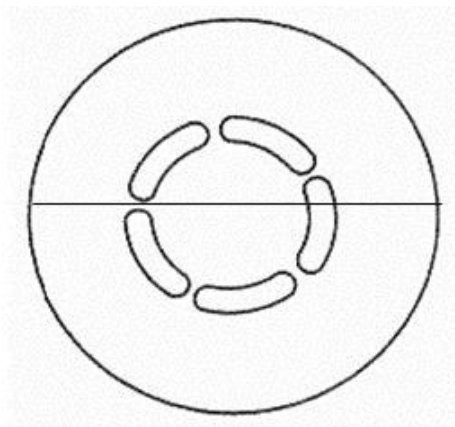


- 2.2.1 Determine the height of the filled tube. (3)

- 2.2.2 On the tube there is an indication that the filling must not pass the MAX, fill line. If the height of the filling in the tube must be 76,9% of the height of the filled tube, calculate the height of the tube that must not be filled. Give your answer to 1 decimal place. (4)

- 2.2.3 If the height of ONE unbaked cookie is 5 mm, how many cookies can Minah press from ONE filled tube? (4)

- 2.3 The unbaked cookie has a circumference of 17,9094 cm. The following diagram is only a representation that is not drawn to scale.



The following formulae should be used:

**Area =  $\pi r^2$**

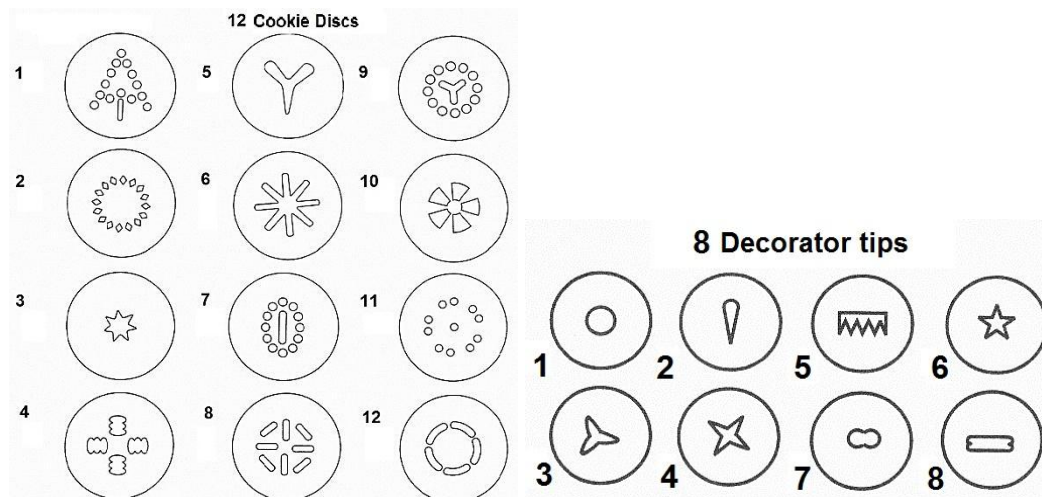
**Circumference =  $2\pi r$**

**Use  $\pi$  as 3,142**

- 2.3.1 Show with necessary calculations that the radius of the unbaked cookie is 2,85 cm. (4)

- 2.3.2 Calculate the area of the unbaked cookie. (3)

- 2.4 With the biscuit and cookie maker, Minah also received cookie discs and decorator tips as shown below.



- Calculate the probability that Minah will use cookie disc number 11 and decorator tip number 8. (2)

- 2.5 The cookies that Minah is going to bake, needs to be baked at 375 °F for the first 15 minutes and then for further baking 25 °F less than the initial temperature for 10 minutes.
- 2.5.1 Calculate the total baking time of the cookies. (2)
- 2.5.2 Convert both temperatures to °C to the nearest degree as Minah's oven is marked in °C. Use the following formula:
- $$^{\circ}\text{C} = \frac{(^{\circ}\text{F} - 32)}{1,8}$$
- (5)
- 2.5.3 If the oven temperature dial of Minah's stove is marked in sections of 20 °C, what temperatures should Minah select on the dial for QUESTION 2.5.2? (2)
- [37]**

### QUESTION 3

- 3.1 Craven is a sports fanatic and glad that he stays close to the Loftus Versfeld Stadium. Use the map, **ANNEXURE A**, of the area around Loftus Versfeld Stadium in Pretoria to answer the questions that follow.
- 3.1.1 Craven lives at the corner of Vos Street and De Kock Street and the Loftus Versfeld Stadium is on the corner of Kirkness Lane. State the position of these two locations on the map. (2)
- 3.1.2 Give the compass direction as well as the compass bearing (in degrees) from Craven's house to the entrance of the Loftus Versfeld Stadium. (2)
- 3.1.3 Explain the scale of the map. (2)
- 3.1.4 There are various alternate routes that will take Craven to the Loftus Versfeld Stadium. Provide ONLY one set of route that will take him from his house to the Loftus Versfeld Stadium (the entrance to the stadium is opposite Park Street), using Spuy Road. (3)
- 3.1.5 A rugby match is starting at 15:00 on a Saturday. Craven claims that it will take him less than 2 minutes with his car at a speed limit of 40 km/h to reach Loftus Versfeld Stadium in this residential area due to road works. Use your set of directions in QUESTION 3.1.4 and show with the necessary calculations whether you agree or disagree with his statement.

Any of the following formulae can be used:

$$\text{Speed} = \frac{\text{Distance}}{\text{Time}} \quad ; \quad \text{Time} = \frac{\text{Distance}}{\text{Speed}} \quad (8)$$

- 3.1.6 The estimated time that you have calculated in QUESTION 3.1.5 can be very misleading because there are some factors that you need to take into account. Name TWO such factors that you must take into account. (2)

- 3.2 At the stadium's parking area, there are car watchers who want to make some extra money. Craven recorded their earnings in rand after the rugby match.

27 ; **B** ; 60 ; 73 ; 88 ; 15 ; **A** ; **B** ; 45 ;

34 ; 68 ; **B** ; 43 ; 37 ; **B** ; 16 ; 25 ; 53

The range for the earnings was R80 and the mean (average) earnings were R40.

- 3.2.1 Calculate the earnings of **A**, the least earnings for the period. (2)
- 3.2.2 **B** is the modal value for the data set. Calculate the value for **B**. (4)
- 3.2.3 Calculate the median of the earnings. (3)
- 3.2.4 The range cannot be used to describe the data the best. Why do you think it cannot be used? (2)
- 3.2.5 After Craven completed his calculations of central tendencies, he discovered there was another car watcher who earned R18. Without any calculations, which of these central tendencies do you think will be affected? (2)

**[32]**

#### QUESTION 4

- 4.1 Anne formerly worked at a holiday resort in South Africa, but decided to start her own Bed-and-Breakfast (B&B) business, because she felt she has enough experience. She started her business in July 2012. For her first six months in business, she recorded the number of visitors she had locally and internationally.

She used the contingency table for her recording.

Visitors from:	July	August	September	October	November	December	Total
SA	15	8		5	9		<b>67</b>
Abroad		3	12	6	4	26	<b>61</b>
Total	<b>25</b>		<b>22</b>	<b>11</b>	<b>13</b>		

- 4.1.1 Use the contingency table on **ANNEXURE B** and fill in the missing values. (6)
- 4.1.2 Use the data in your completed contingency table to draw a stacked bar graph. The graph must be drawn on **ANNEXURE C**. (6)

4.1.3 Compare the number of visitors from abroad in August and December and give ONE reason for the difference in numbers. (2)

4.1.4 Determine the probability of a visitor drawn at random that will visit the B&B in October. Write your answer as a fraction and as decimal to 3 decimal places. (3)

4.2 A visitor from United States of America and a couple from France made reservations at Anne's B&B for a seven day visit in December. Anne's costs are as follows:

Accommodation: R450 per person per night  
Breakfast: R70 per person

To confirm their booking, people have to pay a 50% deposit. The deposits are rounded to the nearest ten.

Show by means of calculation whether the people abroad deposited the correct amount in their currencies if the person from the USA deposited \$200 and the couple from France deposited €250. Both deposits were made on the 9<sup>th</sup> September 2012.

Use the following exchange rates for that date:

**1€ (Euro) = R10,4743384379 ZAR (South African Rand)**

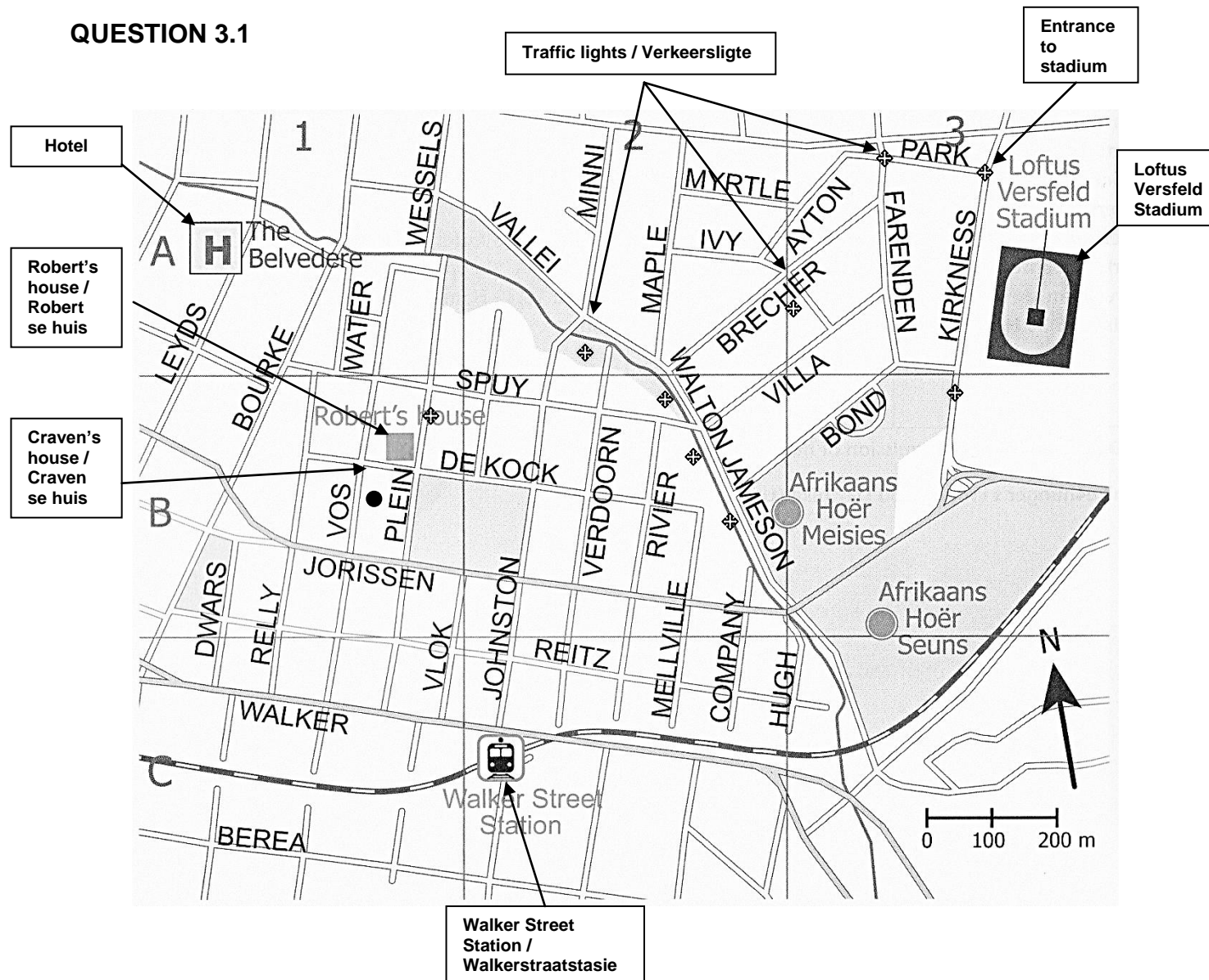
**1\$ (American Dollar) = R8,17365**

(10)  
[27]

**TOTAL: 150**

ANNEXURE A

QUESTION 3.1





**ANNEXURE B****QUESTION 4.1.1****NAME:** .....**GRADE 12:** .....

Visitors from:	July	August	September	October	November	December	Total
<b>SA</b>	15	8		5	9		<b>67</b>
<b>Abroad</b>		3	12	6	4	26	<b>61</b>
<b>Total</b>	<b>25</b>		<b>22</b>	<b>11</b>	<b>13</b>		



**ANNEXURE C****QUESTION 4.1.2****NAME:** \_\_\_\_\_**GRADE 12:** \_\_\_\_\_**Number of visitors from SA and abroad from July to December**