



basic education

Department:
Basic Education
REPUBLIC OF SOUTH AFRICA

**NATIONAL
SENIOR CERTIFICATE**

GRADE 12

MATHEMATICAL LITERACY P2

NOVEMBER 2011

MARKS: 150

TIME: 3 hours

This question paper consists of 10 pages and 4 annexures.

INSTRUCTIONS AND INFORMATION

1. This question paper consists of FIVE questions. Answer ALL the questions.
2. Answer QUESTION 1.1.2 on ANNEXURE A. Use ANNEXURES B and C to answer QUESTION 2, and ANNEXURE D to answer QUESTION 3. Write your examination number and centre number in the spaces provided on the ANNEXURES and hand in the ANNEXURES with your ANSWER BOOK.
3. Number the answers correctly according to the numbering system used in the 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 the calculations clearly.
7. Round ALL the final answers off to TWO decimal places, unless stated otherwise.
8. Indicate units of measurement, where applicable.
9. Write neatly and legibly.



QUESTION 1

- 1.1 Timothy is a newly qualified marketing graduate. He has been offered two positions, one as a medical sales representative for Meds SA and the other as a tobacco sales representative for ABC Cigs.

The formula for calculating the monthly salary for a medical sales representative is:

$$\text{Salary} = \text{R3 000} + \text{R500} \times \text{number of days worked.}$$

As a tobacco sales representative, he will earn a salary of R750 per day for each day worked in a month. He will only receive a salary if he works for one or more days in a month.

- 1.1.1 Write down a formula that can be used to calculate the monthly salary of a tobacco sales representative. (2)
- 1.1.2 Draw TWO line graphs on the same grid on ANNEXURE A to represent the monthly salaries for both the positions of medical and tobacco sales representatives. Clearly label each graph. (8)
- 1.1.3 Use the graphs drawn on ANNEXURE A, or otherwise, to answer the following.
- (a) After how many working days will the two salaries be the same? (2)
- (b) Suppose Timothy worked at Meds SA for 18 days. How many days would he have to work at ABC Cigs to earn the same salary? (2)

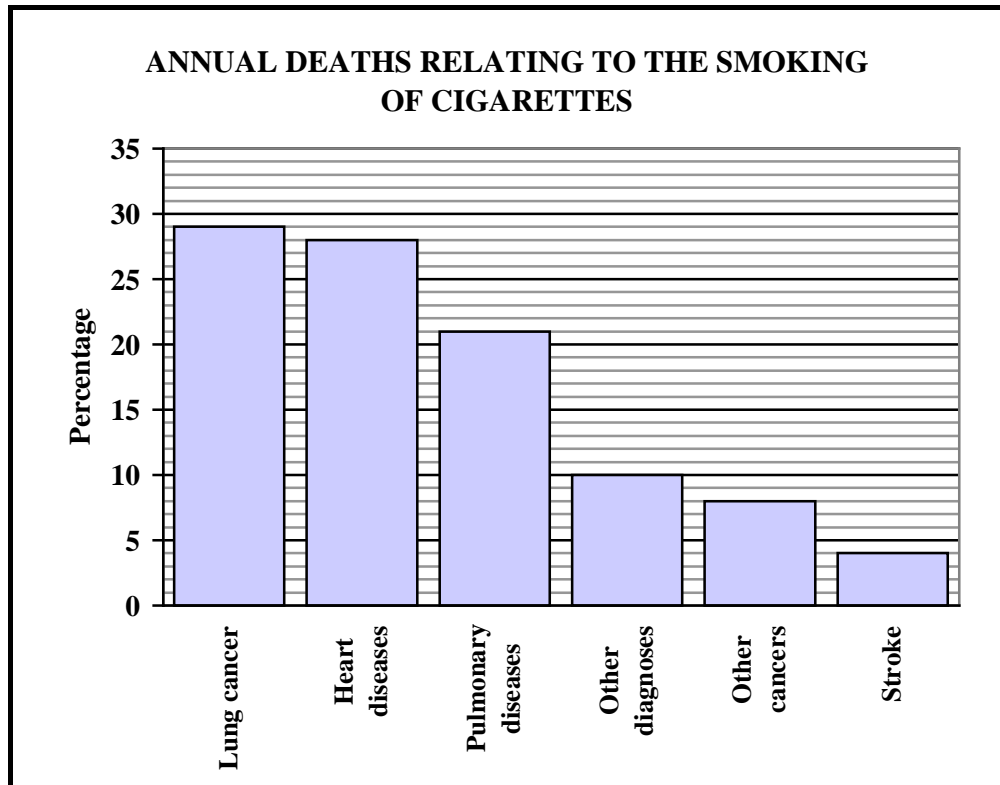
- 1.2 Timothy has difficulty deciding which position to accept as there are other factors besides the salary to consider. Firstly, the offices of ABC Cigs are 40 km further from his home than the offices of Meds SA, and secondly, he is against the smoking of cigarettes.

Timothy plans on working for 20 days every month.

- The petrol consumption of Timothy's car is 7,5 ℓ per 100 km. The average cost of petrol is R9,82 per litre.
- He has a car maintenance plan that costs him 70 cents per kilometre travelled.

- 1.2.1 Determine how much more it would cost him to travel to work each month if he accepted the position at ABC Cigs. (8)
- 1.2.2 Use the salary and the travel calculations to advise Timothy which of the two positions he should accept. Justify your answer. (4)

1.2.3 The manager at ABC Cigs used the graph below to try to convince Timothy to accept the position at the tobacco company. The manager stated: **'The graphs clearly show that there is an annual decline in the number of deaths relating to the smoking of cigarettes.'**



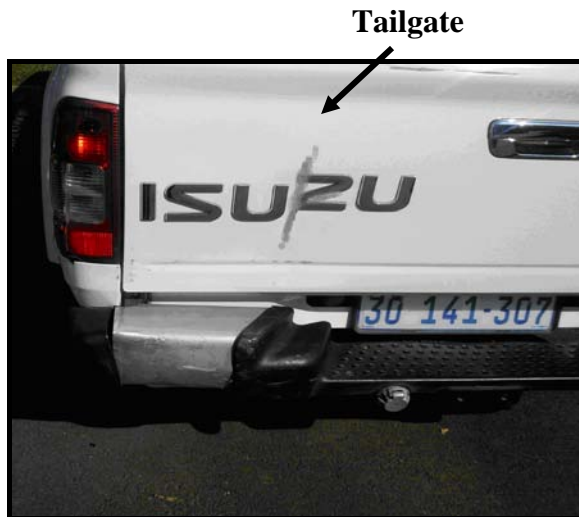
Criticise the manager's statement with at least TWO justifications.

(4)
[30]

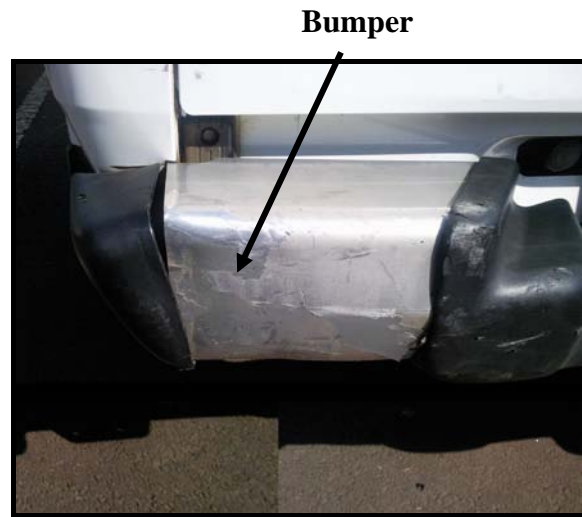
QUESTION 2

Ms Vermaas had an accident with her bakkie. The left rear end of her vehicle was hit, resulting in damage to the bumper and the tail gate.

Below are pictures of the damages to Ms Vermaas' bakkie.



**THE LEFT REAR END OF
THE BAKKIE**



**ENLARGED PICTURE OF THE
DAMAGED BUMPER**



She obtained quotations from three panel beaters (Gail's Panel Beaters, TBOS' Panel Shop and Dong's Panel Beaters) for the repair of the damages to the bakkie.

Each of the quotations (summarised in ANNEXURE B) lists the parts to be replaced, repair work and paint work. The quotations **excluded** 14% VAT (Value Added Tax).

An additional amount has to be added to each quotation for sundries and consumables. Sundries: administrative cost like telephone calls made to clients and suppliers.

Consumables: cleaning materials.

2.1 Use the summary of the quotations on ANNEXURE B to answer the following questions.

2.1.1 Without doing any calculations, Ms Vermaas stated that Dong's Panel Beaters charged the lowest hourly rate to strip and assemble the bakkie. Verify, showing **ALL** the calculations, whether her statement is **CORRECT**. (6)

2.1.2 Gail's Panel Beaters quoted a final total amount of R9 497,93 (including VAT) which included the amount charged for sundries and consumables.

Calculate the amount, excluding VAT, charged for sundries and consumables. (6)

2.2 Dong's Panel Beaters and TBOS' Panel Shop displayed graphs in their offices, showing their charges per hour for stripping and assembling a vehicle. The graphs of the two companies are drawn on ANNEXURE C.

2.2.1 Use ANNEXURE B and the graphs drawn on ANNEXURE C to identify which graph (GRAPH X or GRAPH Y) represents the charges for stripping and assembling by TBOS' Panel Shop.

Explain your answer.

(2)

2.2.2 Use the graphs on ANNEXURE C to determine the difference in time, in minutes, for stripping and assembling if both panel beaters charged R640,00.

(5)

2.3 Ms Vermaas had to decide which panel beater to use and also whether she wanted the tailgate to be repaired or replaced.

The final total costs, inclusive of VAT, sundries and consumables, are given in TABLE 1 below:

TABLE 1: Final total costs, inclusive of VAT, sundries and consumables

| NAME OF COMPANY | FINAL TOTAL COSTS |
|----------------------|-------------------|
| Gail's Panel Beaters | R9 497,93 |
| TBOS' Panel Shop | R5 132,55 |
| Dong's Panel Beaters | R12 983,11 |

Ms Vermaas decided that the tailgate had to be replaced. Use ANNEXURE B and TABLE 1 above to answer the following questions.

2.3.1 Briefly explain why she did not choose TBOS' Panel Shop.

(1)

2.3.2 Which panel beater would be the best option for her? Give a reason for your answer.

(3)
[23]

QUESTION 3

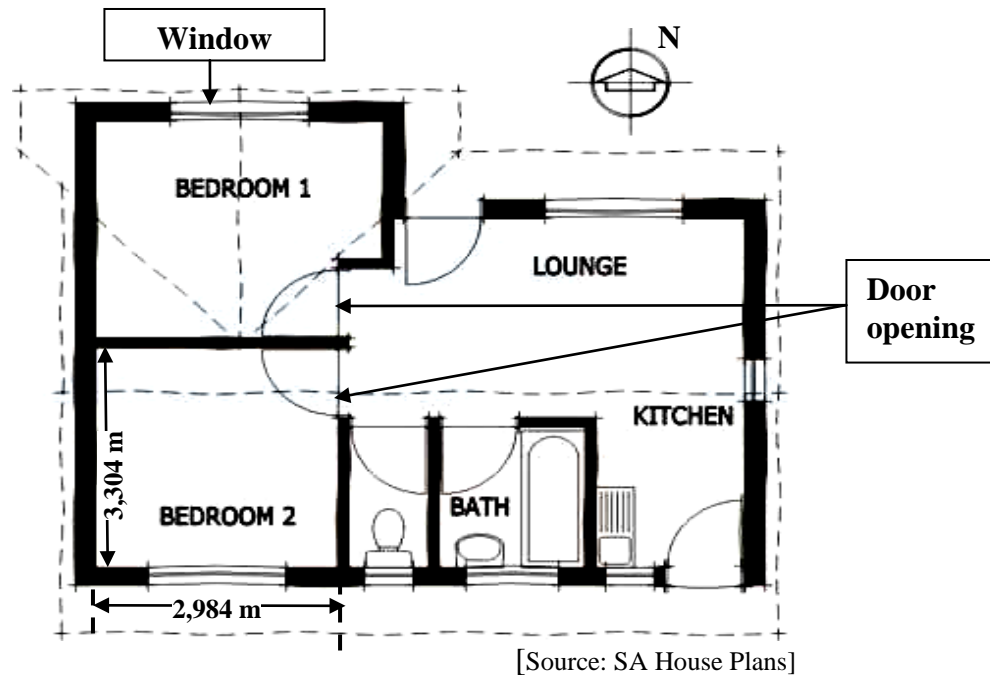
The Naidoo family lives in Pietermaritzburg. A map of South Africa showing the national roads (marked N1, N2, et cetera) is given on ANNEXURE D.

Use the map on ANNEXURE D to answer the following questions.

- 3.1 The family travelled from Pietermaritzburg to Johannesburg by car, using the N3.
- 3.1.1 (a) Use the map and, if necessary, the ruler on ANNEXURE D to measure the distance, in centimetres, on the map between these two cities. (2)
- (b) Hence, use the scale given on the map to calculate the actual distance, in kilometres, between these two cities. (5)
- 3.1.2 The car travelled at an average speed of 110 km/h. They departed at 08:15 and planned to arrive in Johannesburg at 14:30. Determine whether they arrived at their destination at the predicted time.
- Use the formula: **Distance = average speed × time** (4)
- 3.1.3 The family left Pietermaritzburg with a full tank of petrol. Along the way they stopped at a petrol station to refuel at a cost of R455,40.
- The capacity of the tank is 60 litres and the cost of fuel is R10,12 per litre.
- (a) Before refuelling, the fuel gauge indicated that the tank was half full. Verify, showing ALL calculations, whether the fuel gauge was working properly. (6)
- (b) If the car's fuel consumption was 9 litres per 100 km, determine how far they were from Johannesburg when they refuelled. (3)
- 3.2 Describe, in detail, the shortest possible route, using the national roads, to travel from Port Shepstone to Upington. (5)
- 3.3 Mr Naidoo gave the following directions to Mrs Khumalo using his cellphone:
- From George, travel north along the N12. When you reach Beaufort West, take the N1 and travel through Bloemfontein to Pretoria. Then travel along the N4 in a westerly direction. The next town will be your destination.
- What is Mrs Khumalo's destination? (2)
- [27]

QUESTION 4

The diagram below is the floor plan of Mrs Wong's new home.



- * The height of the INSIDE WALLS of all rooms, from the floor to the ceiling, is 2 400 mm.
- * The dimensions of the windows in each BEDROOM are 160 cm × 130 cm.
- * The height of a DOOR OPENING is 2,14 m.

The following formula may be used: **Area = length × breadth**

- 4.1 In which general direction does the window in BEDROOM 2 face? (2)
- 4.2 The area of a door opening is 9% more than the area of a bedroom window. Calculate the width of a door opening in metres. (5)
- 4.3 Mrs Wong wants to paint the inside walls of the two bedrooms. The inside walls of BEDROOM 1 have a total area of 28,44 m².
- 4.3.1 Calculate the total inside wall area of BEDROOM 2. (10)
- 4.3.2 Mrs Wong estimated that the paint for both bedrooms will cost less than R500,00. She intended using paint that covers 4 m² per litre and which is sold in 5 ℓ containers at a price of R169,99 per container. Verify, showing ALL calculations, whether her estimation was correct. (7)
- 4.4 The painter's normal labour charge is R35,90 per hour. On Saturdays he charges 50% more than the normal rate. On Friday and Saturday he works for six hours each day to paint the two bedrooms. His invoice showed that Mrs Wong owed him R638,50 for the paintwork. Verify whether the invoiced amount was correct. (4)

[28]

QUESTION 5

5.1

Bathini High School and Vuka Secondary School entered some of their learners in a science competition. The scores (in percentages) for the first round of the competition are given below.

BATHINI HIGH SCHOOL

59 67 67 67 67 72 78 87 87 90 99

VUKA SECONDARY SCHOOL

90 67 67 89 50 78 54 67 95 90 98 57 49 78

5.1.1 If a learner is selected randomly from Vuka Secondary School, determine the probability that the learner scored more than 90%. Write the answer in simplified form. (3)

5.1.2 The following table shows the median, mode, mean and range for the two schools:

TABLE 2: Median, mode, mean and range

| NAME OF SCHOOL | MEDIAN | MODE | MEAN | RANGE |
|----------------|----------|------|----------|----------|
| Bathini High | 72% | 67% | 76,4% | R |
| Vuka Secondary | P | 67% | Q | 48 |

(a) Determine the missing values **P**, **Q** and **R**. (8)

(b) Which school performed better in the competition? Explain your answer. (3)

5.1.3 The following table shows the percentiles of scores obtained in the science competition for the two schools:

TABLE 3: Scores for the two schools

| NAME OF SCHOOL | 25 th Percentile | 60 th Percentile | 75 th Percentile |
|----------------|--------------------------------|--------------------------------|--------------------------------|
| Bathini High | 67% | 75,6% | 87% |
| Vuka Secondary | 57% | 78% | 90% |

(a) List the scores of the learners from Vuka Secondary School who scored at the 75th percentile or more. (3)

(b) How many learners from Vuka Secondary School obtained scores that were less than the 25th percentile of Bathini High School? (2)

5.1.4 The science competition consisted of 30 multiple-choice questions worth 2 marks each, 10 questions with one-word answers worth 1 mark each, and 10 short questions worth 3 marks each.

(a) Except for 12 multiple-choice questions, Lindiwe answered all the other questions correctly. The competition records showed that she was a learner from Bathini High School. Verify, by calculation, whether the records were correct. (5)

(b) Pieter correctly answered all the multiple-choice questions and scored a total of 95 marks. Determine ONE possible way in which he scored this total. Show ALL working details. (5)

5.2 The principals of Bathini High School and Vuka Secondary School compared their schools' 2010 matric results. The comparisons of the passes are shown in the table below.

TABLE 4: Comparison of 2010 matric passes for the two schools

| NAME OF SCHOOL | NUMBER OF LEARNERS PER TYPE OF MATRIC PASSES | | | PERCENTAGE PASS |
|----------------|--|---------|-------------|-----------------|
| | Degree | Diploma | Certificate | |
| Bathini High | 4 | 5 | 20 | 96,67 |
| Vuka Secondary | 65 | 44 | 25 | 87,58 |

5.2.1 How many learners of Bathini High failed their matric examination in 2010? (4)

5.2.2 If a learner from Vuka Secondary School is chosen randomly from those who passed, what is the probability that this learner qualified for degree studies? Give the answer as a percentage, rounded off to ONE decimal place. (4)

5.2.3 In 2010 one hundred and fifty three learners wrote the matric examination at Vuka Secondary School.

Analyse the results of the two schools to determine which school performed better. Motivate your answer by giving at least TWO valid reasons. (5)
[42]

TOTAL: 150

ANNEXURE A

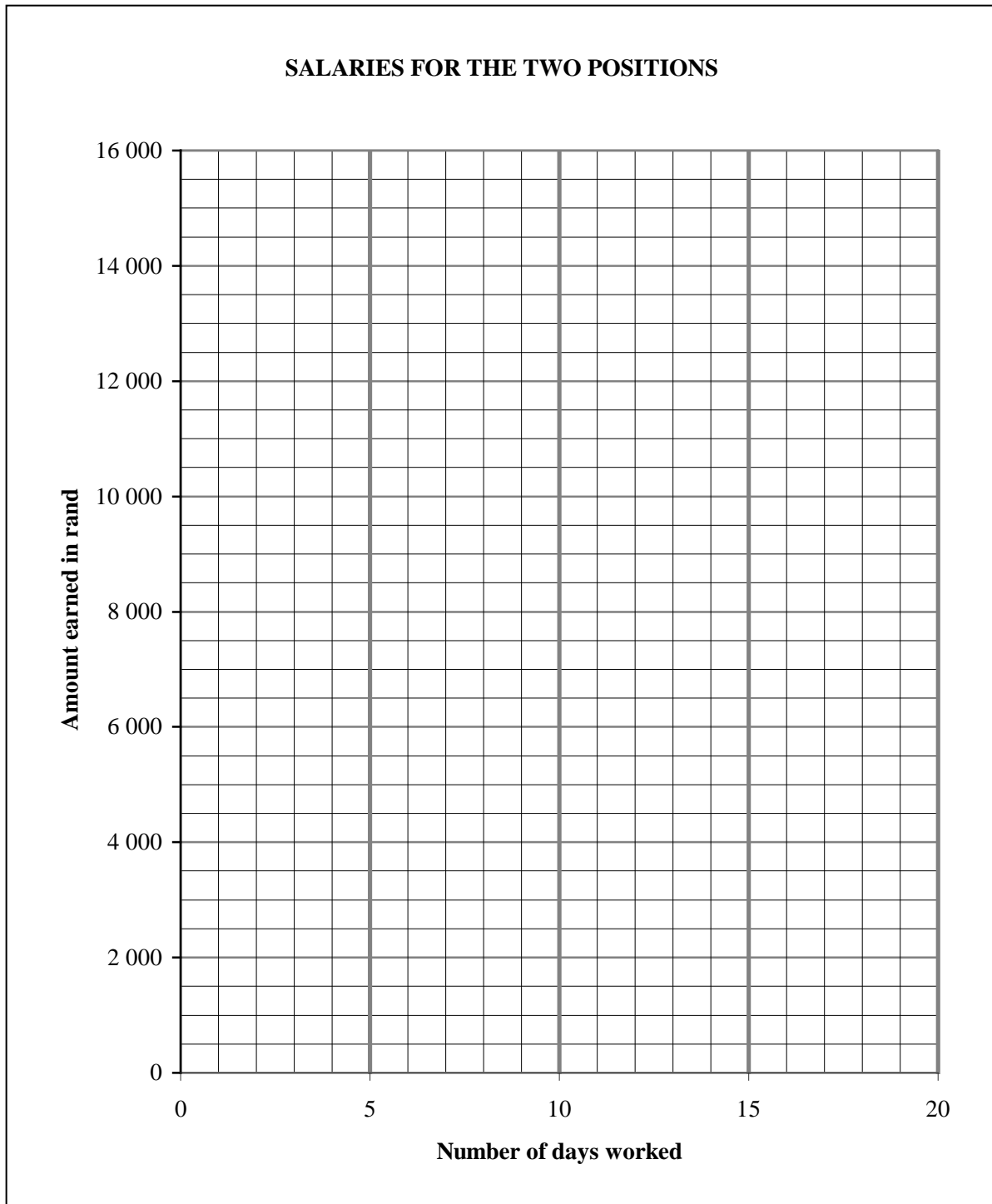
CENTRE NUMBER:

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QUESTION 1.1.2



ANNEXURE B

QUESTION 2.1: SUMMARY OF QUOTATIONS FROM PANELBEATERS

| GAIL'S PANELBEATERS | | | LABOUR COSTS | | | |
|--------------------------|---------------------------|------------------|---------------------------------------|------------------|-----------------------|------------------|
| | | | Paint/ Spray | | Strip and Assemble | |
| Method | Parts/Description | Price in rand | Hours | Total in rand | Hours | Total in rand |
| Strip | Strip and assemble | | | | 3,75 | 750,00 |
| Paint | Rear bumper | | 1 | 850,00 | | |
| Replace | 1 tailgate | 5 348,26 | | | | |
| | 1 L/Rear bumper | 298,35 | | | | |
| | 1 L/Rear bumper end | 368,17 | | | | |
| | 1 centre bumper rubber | 584,75 | | | | |
| Total Parts Costs | | R6 599,53 | Total Labour Costs = R1 600,00 | | | |

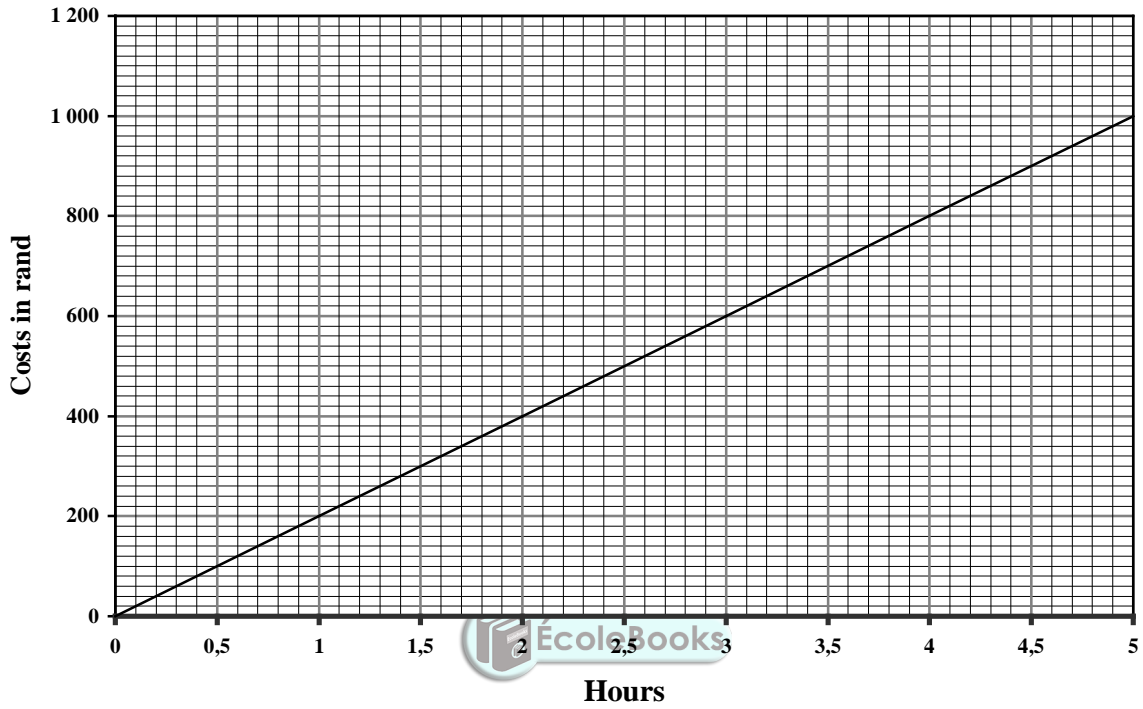
| TBOS' PANELSHOP | | | LABOUR COSTS | | | |
|--------------------------|--------------------|------------------|---------------------------------------|------------------|---------------------------------------|------------------|
| | | | Paint/ Spray | | Strip and Assemble/ Repair work | |
| Method | Parts/Description | Price in rand | Hours | Total in rand | Hours | Total in rand |
| Strip | Strip and assemble | | | | 2,5 | 400,00 |
| Paint | Repaired areas | | 1 | 1 000,00 | | |
| Replace | Towbar cover | 514,08 | | | | |
| | Towbar centre step | 505,22 | | | | |
| | Towbar ends | 638,36 | | | | |
| Repair | Tailgate | | | | 5,0 | 800,00 |
| | Towbar | | | | 3,75 | 600,00 |
| Total Parts Costs | | R1 657,66 | Total Labour Costs = R2 800,00 | | | |

| DONG'S PANELBEATERS | | | LABOUR COSTS | | | |
|--------------------------|--------------------------------|------------------|---------------------------------------|------------------|-----------------------|------------------|
| | | | Paint/ Spray | | Strip and Assemble | |
| Method | Parts/Description | Price in rand | Hours | Total in rand | Hours | Total in rand |
| Strip | Strip & assemble | | | | 3,5 | 700,00 |
| Paint | Repaired areas | | 2 | 1 800,00 | | |
| Replace | 1 tailgate | 5 348,26 | | | | |
| | 1 tailgate badges | 749,13 | | | | |
| | 1 rear bumper and tow hitch | 2 592,50 | | | | |
| Total Parts Costs | | R8 689,89 | Total Labour Costs = R2 500,00 | | | |

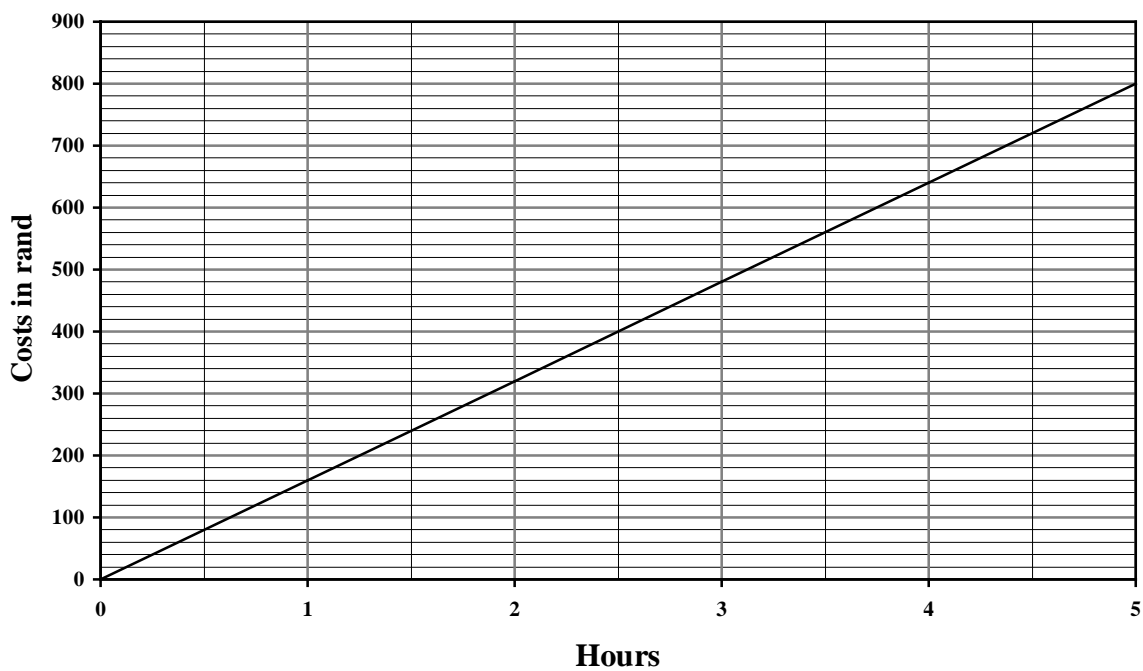
ANNEXURE C

QUESTION 2.2

GRAPH X: COSTS FOR STRIP AND ASSEMBLE



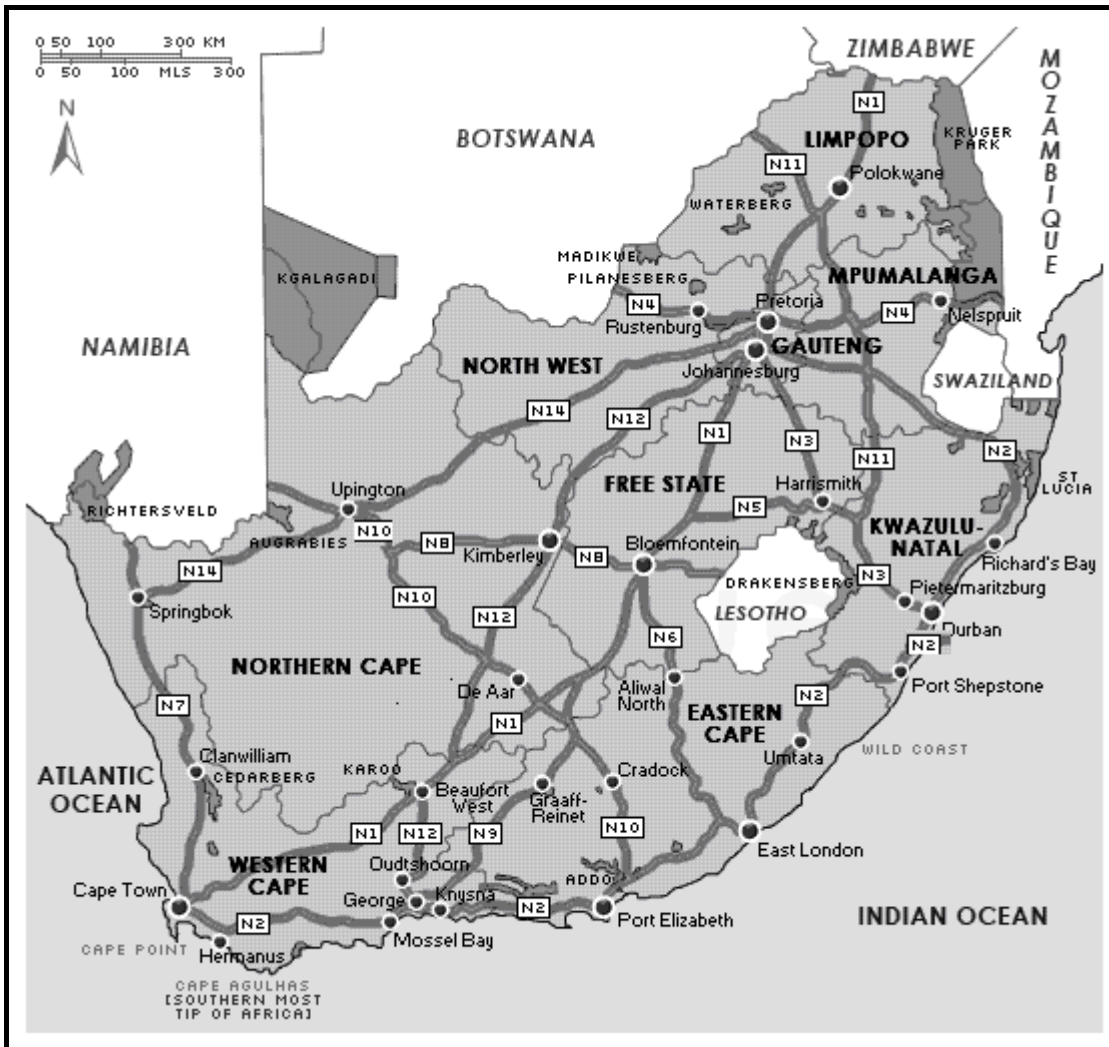
GRAPH Y: COSTS FOR STRIP AND ASSEMBLE



ANNEXURE D

QUESTION 3

MAP OF SOUTH AFRICA



RULER

