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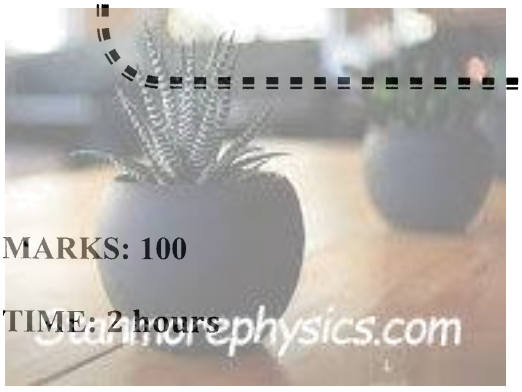
# NATIONAL SENIOR CERTIFICATE

## GRADE 11

## MATHEMATICAL LITERACY

## COMMON TEST

## MARCH 2022




**This question paper consists of 9 pages,**
**1 answer sheet and an addendum with 2 annexures.**

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## INSTRUCTIONS AND INFORMATION

1. This question paper consists of FOUR questions. Answer ALL the questions.

2. The question paper consist of two ANNEXURES AND ONE ANSWER SHEET

   2.1 Use the ANNEXURES in the ADDENDUM to answer the following questions:

   - ANNEXURE A for QUESTION 2.1
   - ANNEXURE B for QUESTION 3.2

   2.2 Answer QUESTIO
   N 4.1.2 on the attached ANSWEER SHEET.

   2.3 Write your name and surname in the spaces on the ANSWER SHEET. Hand in 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 the calculation clearly.

7. Round off ALL the final answers appropriately according to the given context, unless stated otherwise.

8. Indicate units of measurements, where applicable.

9. Diagrams are NOT necessary drawn to scale, unless stated otherwise.

10. Write neatly and legibly.

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## QUESTION 1

1.1 Mr Lunga works as a bricklayer; he works 6.5 hours a day and charges R110 per hour or part thereof




1.1.1 Convert 6.5 hours to hours and minutes. (2)

1.1.2 Explain the term part thereof according to the given context. (2)

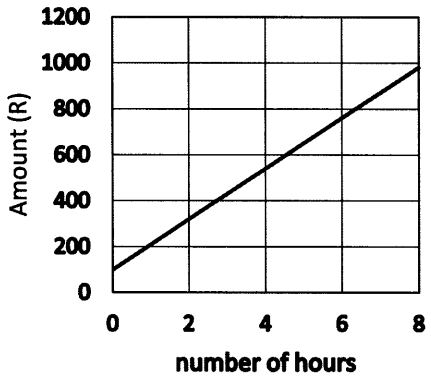
1.1.3 Determine the total amount of money Mr Lunga will receive per day, if he works 6,5 hours. (3)

1.1.4 Calculate the number of hours worked for a total income of R440 received. (2)

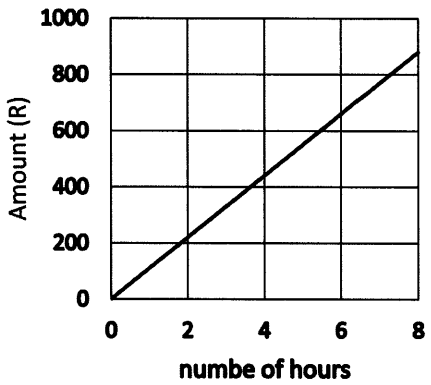
1.1.5 Which of the following graphs below will represents Mr Lunga's total charge per hour?

Write ONLY a letter that represent the correct graph. (2)

**A**

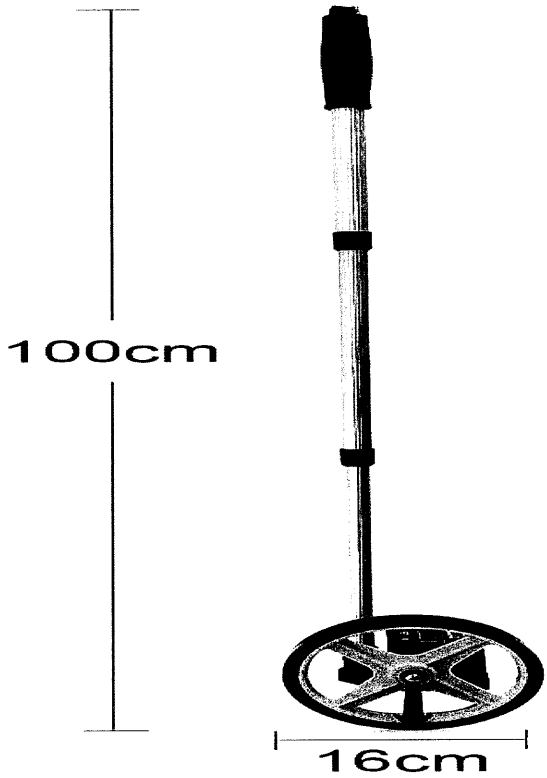



**B**



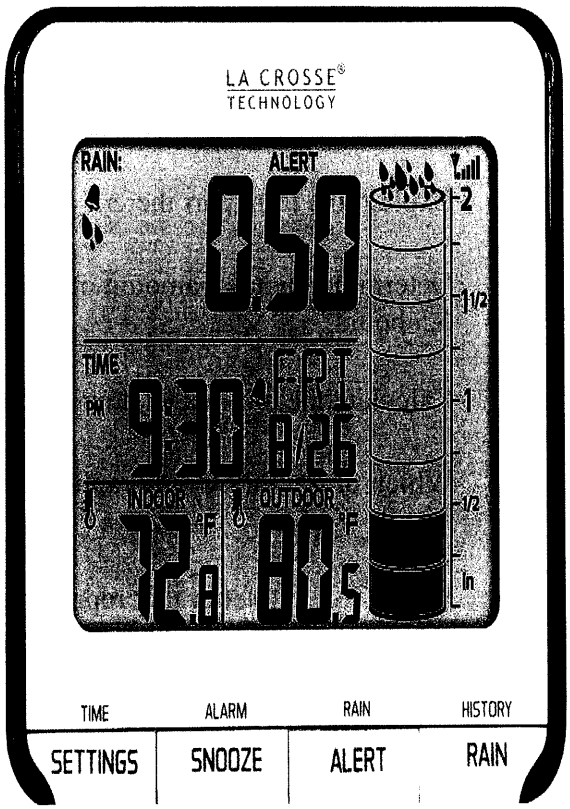
1.2 Tom is a farmer he uses the following tools to measure lengths and rain in his farm.

**Trundle wheel**




[Source: https://reliablestore.co.za/products/]

**Digital Rain gauge**




[Source: http//ebayimg.com]

Use the information above to answer the questions that follow.

1.2.1 Write down the radius of the trundle wheel in cm. (2)

1.2.2 The circumference of the wheel is approximately 50,3cm.
Determine the total length Tom measured, if it rolled 30 times. (2)

1.2.3 Give the rain gauge reading displayed on Friday 26 August. (2)

1.2.4 Calculate the difference in outdoor temperature and indoor temperature readings given on the rain gauge. (3)
**[20]**

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## QUESTION 2

2.1 ANNEXURE A shows the bank statement for miss MJ Smith.

Use ANNEXURE A to answer the question that follow.

2.1.1 Define the term "*opening balance*" with reference to bank statement. (2)

2.1.2 Write down the closing balance on 18th April 2021. (2)

2.1.3 Calculate the total amount deposited between the 8th of April 2021 to the 14th of April 2021. (3)

2.1.4 Determine the number of days covered by this statement. (3)

2.1.5 Show by calculations using the account summary, how the closing balance of R5719,47 was calculated. (3)

2.2 Study an extract of ABC Teleking income and expenditure business for the month.

| **Income** | **A** | **Expenses** | **R24 510** |
|---|---|---|---|
| Consultancy | R25 000 | Freelancers | R1 200 |
| Guides | R17 500 | Telephone | R2 000 |
| | | Marketing | R2 000 |
| | | Travel | R1 500 |
| | | Office Suppliers | R3 210 |
| | | Bank charges | R 500 |
| | | Bank interests | R 500 |
| | | Repair expense | R1 500 |
| | | Insurance | R600 |
| | | Wage expense | R8 000 |
| | | Water and electricity | R3 500 |
| **TAXABLE BUSINESS PROFITS** | | **R17 990** | |

2.2.1 Calculate the value of **A**, the total income for the business. (2)

2.2.2 Name ONE example of the running expense from ABC Teleking. (2)

2.2.3 Express the marketing expense as the percentage of the taxable profit. (3)

2.2.4 ABC Teleking offers an installation of the landline that charges R160 for the first 100 minutes talk-time and R0,80 per minute thereafter.

(a) Determine the total cost of 120-minute talk-time. (3)

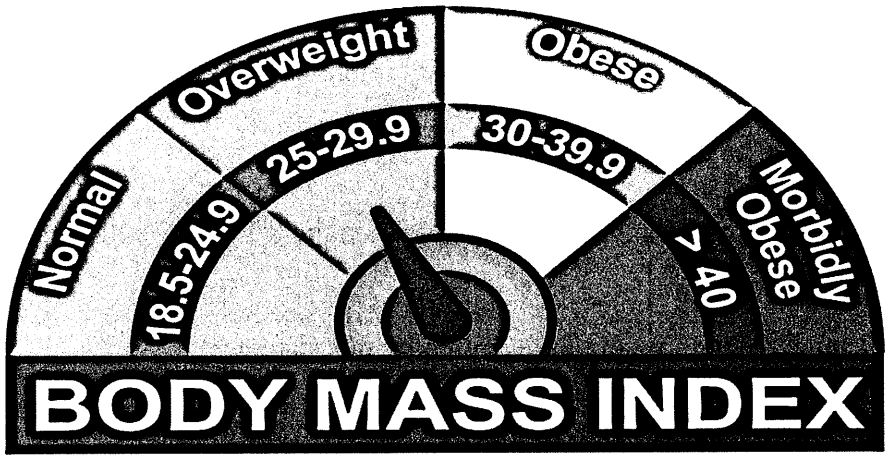
(b) State which relation between a **combination relations** and **inverse relation** will be the best to represent ABC Teleking installation charge. (2)

**[25]**

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## QUESTION 3

3.1 Mr Looney is tracking his body weight using the body mass index radar. He is currently weighing 83,5kg with a height of 1,7m.




[source: https://www.wltx.com/article/news/health]

Use the information and the BMI radar above to answer the questions that follow.

3.1.1 Identify Mr Looney's weight status as indicated on the radar. (2)

3.1.2 Calculate his body mass index round off to the nearest 1 decimal.

You may use the formula: $\mathbf{BMI} = \frac{\mathbf{Weight\ in\ kg}}{\mathbf{(height\ in\ metres)^2}}$ (4)

3.1.3 Give any TWO advices Mr Looney should consider in order to be classified as normal. (4)

3.1.4 Convert Mr Looney's weight to pounds if 1kg = 2.2 pounds. (2)

3.2 ANNEXURE B shows the diagram of the tennis court with dimensions in metres. Study the diagram in ANNEXURE B and answer the questions that follow.

3.2.1 Show by calculations that the width of the base line is 10.97m. (2)

3.2.2 Hence, Calculate the perimeter of the whole tennis court.

You may use the formula: **Perimeter of rectangle = 2× length +2× width** (3)

3.2.3 Determine the length between baseline and the service line in metres. (4)

3.2.4 Calculate the area of ONE doubles alley in square metres.

You may use the formula: **Area of a rectangle = length × width** (3)

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3.3

On average a male tennis player with a weight of 70kg can burn approximately 583 calories per hour in a tennis games.

3.3.1 Determine how many calories will a male tennis player with 83.5kg in one hour. (3)

3.3.2 A male tennis player with a weight of 83.5kg will lose more than 0.077kg, if he plays consistently the tennis game.

Verify this statement showing all calculations if 1 gram = 9 calories. (4)

3.3.3 Calculate the number of hours a tennis player needs to play in order to lose 1600 calories. (2)

**[33]**

## QUESTION 4

4.1 Anna owns a small bakery in her home, she pays R375 for electricity and water to her parents every month. TABLE 1 below shows her total monthly income and expenses for one month. The cost to produce one bread is R5.00

**TABLE1: Anna's Monthly income and expenses**

| **Number of breads** | **0** | **10** | **20** | **30** | ... | **100** | **150** | **200** |
|---|---|---|---|---|---|---|---|---|
| **Expenses(R)** | 375 | 425 | 475 | 525 | ... | 875 | 1125 | 1375 |
| **Income(R)** | 0 | 125 | 250 | 375 | ... | 1250 | 1875 | 2500 |

Use TABLE 1 and information to answer the questions that follow.

4.1.1 Identify the dependant variable represented in TABLE1 above. (2)

4.1.2 The graph for Anna's total income has been drawn in ANSWER SHEET.

(a) Draw another graph showing the total expenses using TABLE 1. (3)

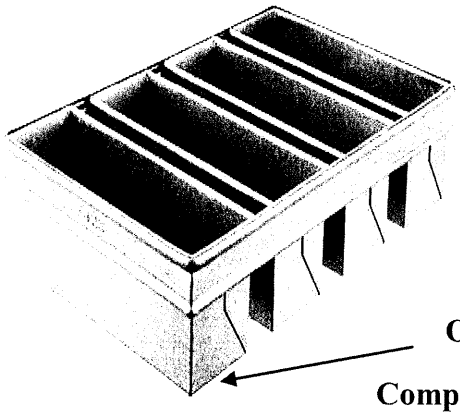
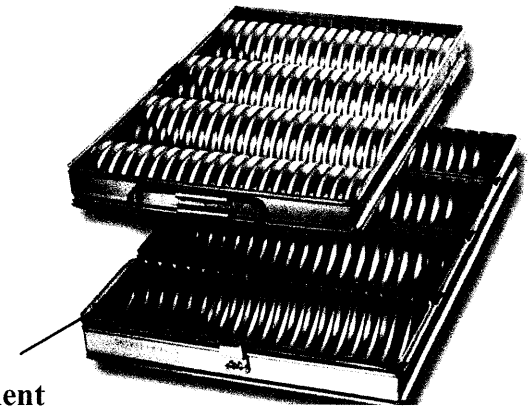
(b) Using your graph, determine how many breads Anna needs to produce in order to break even. (2)

(c) Determine using your graph the total expenses, if she produces 120 breads. (2)

4.1.3 The equation to calculate Anna's total expenses is given as:
**Total expenses = R375 +R5 ×no. of breads produced.**

Write down the equations to calculate her total income in the form of:
**Total income = ... ×x number of breads sold** (2)

4.2 Anna uses a FOUR division type bread pan to bake her breads.

| **Dimensions of each rectangular compartment pan** | **Dimensions of each cylindrical compartment pan** |
|---|---|
|   **Length = 40cm** **Width = 10cm** **Height = 10cm** |  **Height =42,5cm** **Radius = 5,08cm** [Source: http://www.sheetmetalprocess.com/sale] |

Use the information above to answer the questions that follow.

4.2.1 Calculate the volume of all four rectangular bread compartments.
You may use the formula:
**Volume of a rectangular prism = length × width × height ×4** (3)

4.2.2 The volume of ONE cylindrical bread compartment is 3 501,19cm$^3$.

Determine in grams which compartments between a cylindrical and a rectangular bread pan will have more mass. **Note:** 1g = 1cm$^3$. (3)

4.2.3 Write down the unit ratio of the radius of a cylindrical compartment to the length of rectangular compartment. (2)

4.2.4 Anna bakes her breads in an oven that is heated to standard temperature of 450°F.

Convert the temperature to degree Celsius using the following formula.
$°C = (°F - 32°) \div 1.8$ (3)

**[22]**

**TOTAL MARKS: 100**

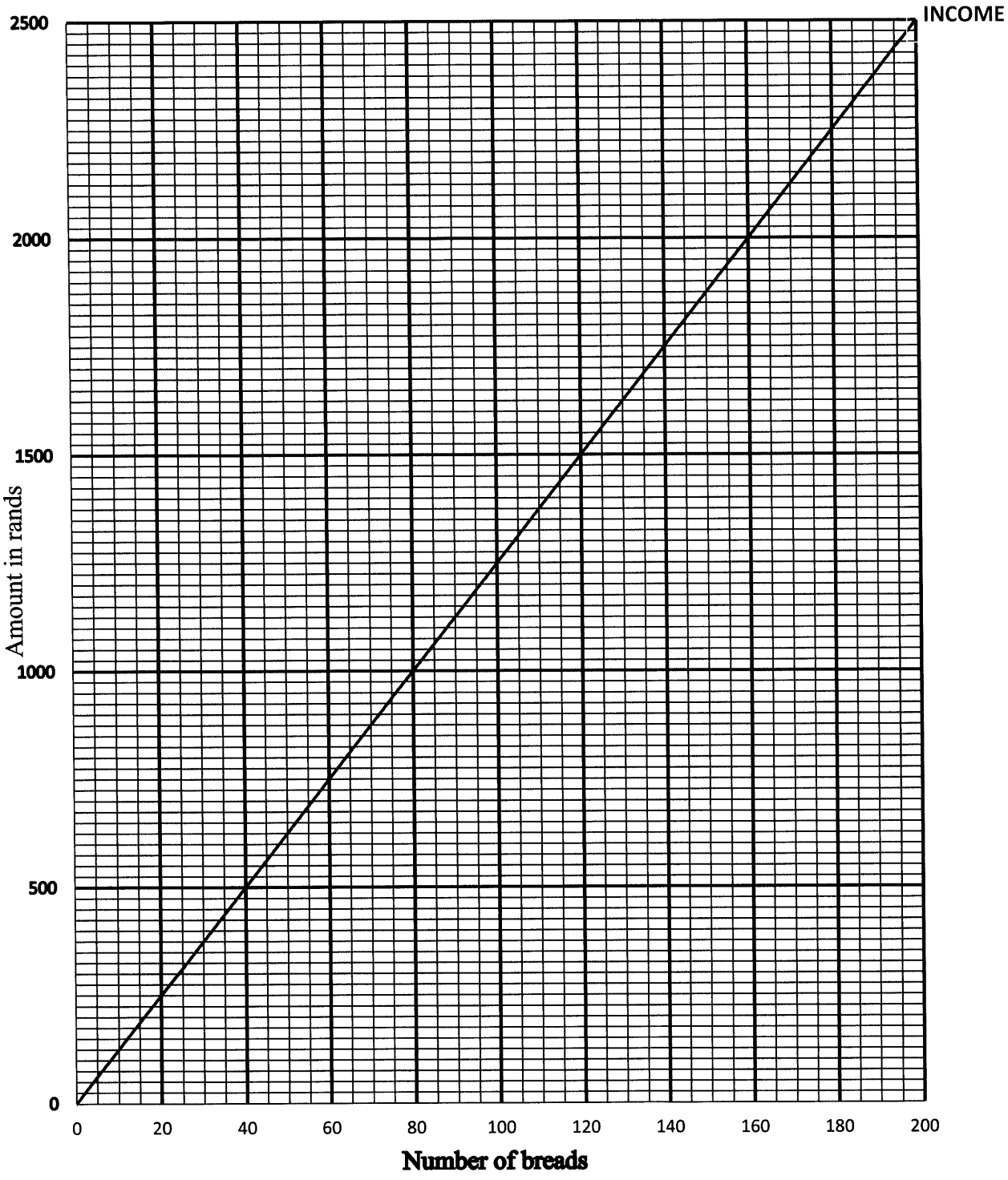
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**ANSWER SHEET**

**QUESTION 4.1.2**

**NAME & SURNAME**_____**GRADE 11**___

**ANNA'S TOTAL INCOME AND EXPENSES**




TEAR – OFF SHEET

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## ADDENDUM

## MARCH 2022

**This addendum consists of 3 pages with 2 annexures.**

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## ANNEXURE A

### Question 2.1

**CROWDTECH BANK STATEMENT**

**Ms MJ Smith**
**100 Pine Street**
**Metro west**
**AA 09371**

**For 15 Mar 2021 to 18 Apr 2021**
**Account number**
**00-1235678**
**Branch Transits Number**
**075 097 8765**

**Account Summary**

| | |
|---|---|
| **Opening balance** | **R5 234,09** |
| **Withdrawals** | **R2 387.07** |
| **Deposits** | **R2 872,45** |

**Contact information**
**Crowdtech@bankxa.com**
**Contact by phone for questions, general enquiries 24/7**

**Closing Balance on 18 Apr. 2021**
**R5 719,47**

**Main branch**
**100 Main Street**
**Metro east**
**AA 09370**

**You are eligible for R100 bonus**



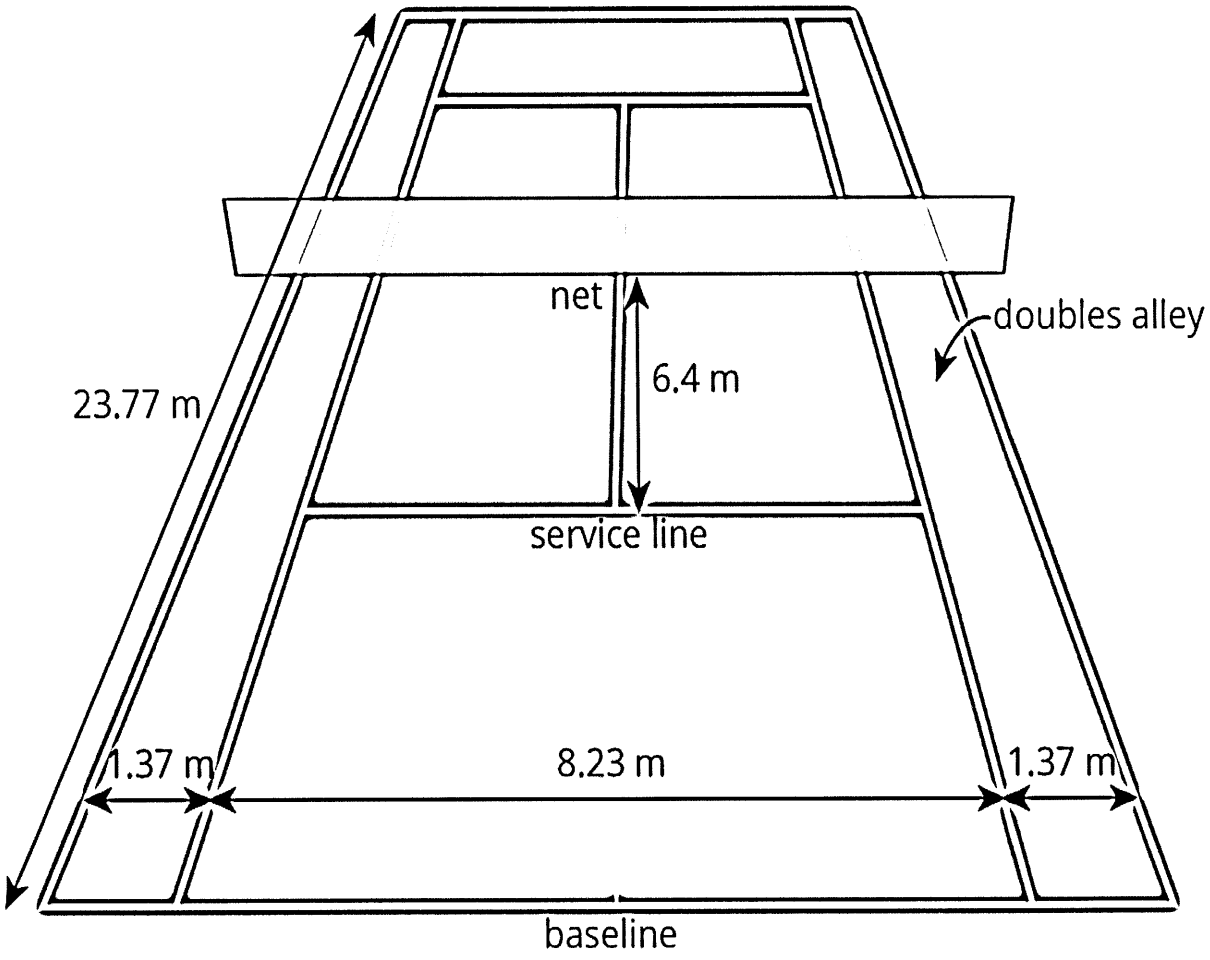
**Your Transactions Details**

| Date | Details | Withdrawals | Deposits | Balance |
|---|---|---|---|---|
| 8 Apr | Opening Balance | | | 5 234,09 |
| 8 Apr | Insurance | | 272,45 | 5 506,54 |
| 10 Apr | ATM | 200,00 | | 5 306,54 |
| 12 Apr | Internet Transfer | | 250,00 | 5 556,54 |
| 12 Apr | Payroll | | 2 100,00 | 7 656,54 |
| 13Apr | Bill payment | 135,07 | | 7 521,47 |
| 14 Apr | Direct debit | 200,00 | | 7 321,47 |
| 14Apr | Deposit | | 250,00 | 7 571,47 |
| 15Apr | Bill payment | 525,72 | | 7 045,75 |
| 17 Apr | Bill payment | 372,63 | | 6 673,12 |
| 17 Apr | Bill payment | 729,96 | | 5 943,16 |
| 18Apr | Bill payment | 223,69 | | 5 719,47 |
| | Closing balance | | | XXXXX |

**ANNEXURE B**

**Question 3.2**

**TENNIS COURT**




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# MARKING GUIDELINE

**MARKS: 100**

| SYMBOL | EXPLANATION |
|---|---|
| M | Method |
| MA | Method with accuracy |
| CA | Consistent accuracy |
| A | Accuracy (Answer) |
| C | Conversion |
| S | Simplification |
| RT/RG/RD | Reading from a table/ graph/ diagram |
| NPR | No penalty for units/rounding |
| SF | Correct substitution in a formula |
| O | Opinion/ reason/deduction/example |
| J | Justification |
| R | Rounding off/ |
| F | deriving a formula |
| E | Explanation |
| U | Units |
| AO | Answer only full marks |

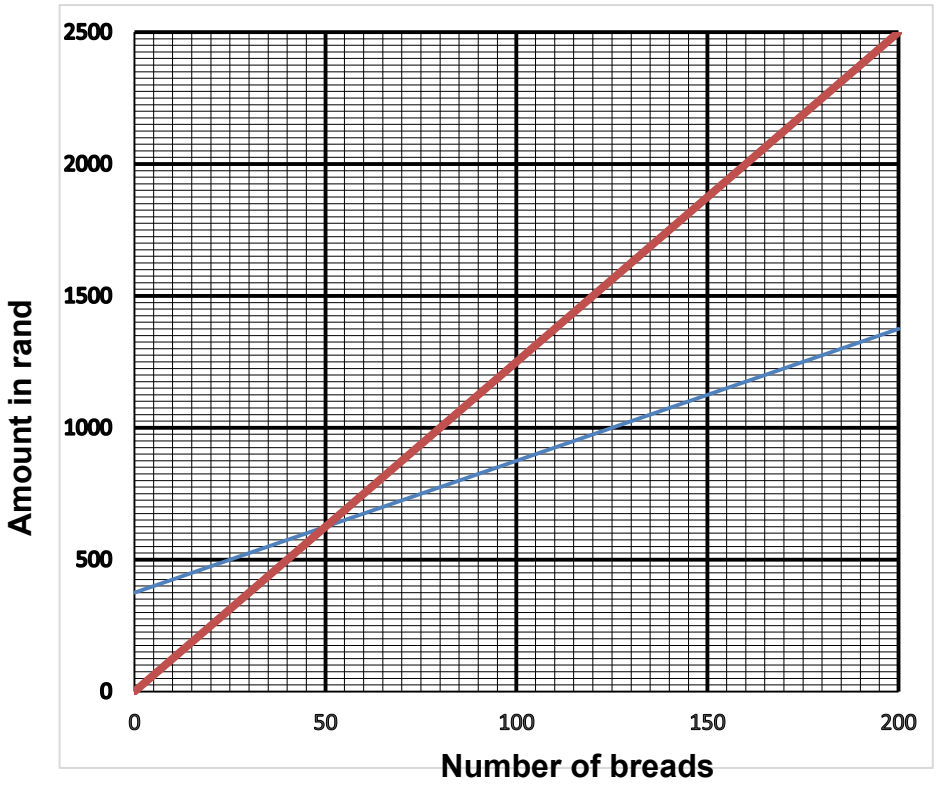
**This marking guideline consists of 6 pages.**

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| **QUESTION 1 [20 MARKS]** | | | |
|---|---|---|---|
| | **SOLUTION** | **EXPLANATION** | **T/L** |
| 1.1.1 | 6hours +0,5×60 ✓MA<br>6hrs and 30minutes✓A | 1MA, Multiplying by 60<br>1A, Time in hours and minutes<br>(2) | M<br>L1 |
| 1.1.2 | It means that the 30 minutes will be charged at R110. ✓✓**E** | 2E, Explanation<br>(2) | M<br>L1 |
| 1.1.3 | ✓M<br>Income = R110×6 +R110 ✓MA<br>=R770✓CA | 1M, Multiplying by 6<br>1MA, Adding R110<br>1CA, Answer<br>(3) | F<br>L1 |
| 1.1.4 | No of hours = $\frac{R440}{R110}$ ✓MA<br>=4 ✓A | 1MA, Dividing by the rate<br>1A, Answer<br>(2) | M<br>L1 |
| 1.1.5 | B ✓✓A | 2A, Correct graph<br>(2) | B<br>L1 |
| 1.2.1 | Radius =$\frac{16cm}{2}$ ✓MA<br>=8cm✓A | 1MA, Dividing by 2<br>1A. Answer<br>**AO** (2) | M<br>L1 |
| 1.2.2 | Total length = 50,3cm ×30✓ M<br>=1 509cm✓CA | 1M, Multiplying by 30<br>1CA, Answer<br>**AO** (2) | M<br>L1 |
| 1.2.3 | 0,5 inches ✓✓RT<br>**OR**<br>$\frac{1}{2}$ inch✓✓RT | 2RT, Correct reading<br>(2) | M<br>L1 |
| 1.2.4 | ✓RT ✓M<br>Difference = 80,5 – 72,8<br>=7,7 $^{o}$F ✓CA | 1RT, Reading correct values<br>1M, Subtracting correct values<br>1CA, Difference<br>(3) | M<br>L1 |
| | | **[20]** | |

| QUESTION 2 [25 MARKS] | | | |
|---|---|---|---|
| | **SOLUTION** | **EXPLANATION** | **T/L** |
| 2.1.1 | Opening balance is a balance brought forward from the previous account period. ✓✓E | 2E, Explanation (2) | F L1 |
| 2.1.2 | Balance = R5 719,47✓✓A | 2A, Answer (2) | F L1 |
| 2.1.3 | ✓RT ✓M<br>Total deposits =R272,45 +R250+R2100+R250<br>=R2 872,45✓CA | 1RT, Reading correct values<br>1M, Adding correct values<br>1CA, Answer (3) | F L2 |
| 2.1.4 | ✓MA<br>Days = (31 – 15) +1+18<br>= 17+18✓M<br>=35 days✓CA | 1MA, Days in March<br>1M, addition<br>1CA, Answer. (3) | M L2 |
| 2.1.5 | ✓RT ✓ MA ✓ MA<br>Closing balance = R5 234,09-R2387,07 +R2872,45<br>= R5 717,47 | **CA from question2.1.3**<br>1RT, Opening balance.<br>1MA, Subtracting withdrawals<br>1MA, Adding deposits (3) | F L2 |
| 2.2.1 | ✓M<br>Income = R25 000+ R17500<br>=R42 500✓A | 1M, Adding correct values<br>1A, Answer<br>**AO** (2) | F L1 |
| 2.2.2 | Water and electricity✓✓A | 2A, Answer (2) | F L1 |
| 2.2.3 | Markerting exp%= $\frac{R2000}{R17990}$ × 100%✓M ✓M<br>=11,12%✓MA | 1M, Dividing Correct values<br>1M, Percentage concept<br>1CA, Answer<br>**NPR** (3) | F L2 |
| 2.2.4 | a) ✓MA<br>Total cost = R160 +R0,80×20✓M<br>=R176✓CA | 1MA, Multiplying by 20minutes<br>1M, Addition<br>1CA, Answer (3) | F L3 |
| 2.2.4 | b) Combination relation ✓✓A | 2A, Answer (2) | B L1 |
| | | **[25]** | |

| QUESTION 3 [33 MARKS] | | | |
|---|---|---|---|
| | **SOLUTION** | **EXPLANATION** | **T/L** |
| 3.1.1 | Overweight. ✓✓RT | 2RT, Correct answer<br>(2) | M<br>L2 |
| 3.1.2 | BMI = $\frac{83,5kg}{(1,7m)^2}$✓✓SF<br>=28,8927✓CA<br>=28,9kg/m$^2$✓R | 2SF, Substitution correct weight and height<br>1CA, Answer<br>1R, Rounding<br>(4) | M<br>L3 |
| 3.1.3 | Exercise regularly ✓✓O<br>**OR**<br>Eat healthy food ✓✓O<br>**OR**<br>Follow the diet programme✓✓O | 2O, Opinion<br>2O, Opinion<br>(4) | M<br>L4 |
| 3.1.4 | Weight in pounds = 2,2 ×83,5 ✓MA<br>=183,7 pounds✓A | 1MA, Multiplication by 2,2<br>1A, Answer<br>**AO**<br>(2) | M<br>L2 |
| 3.2.1 | ✓M ✓M<br>Width of the baseline = 8,23m+1,37m+1,37m<br>= 10,97m | 1M, Addition<br>1M, Adding 1,37m both sides<br>(2) | M<br>L2 |
| 3.2.2 | ✓SF ✓A<br>P = 2×23,77m +2×10,97m<br>= 69,48m✓CA | 1SF, Substitution<br>1A, Correct values<br>1CA, Answer<br>(3) | M<br>L2 |
| 3.2.3 | ✓M<br>23,77m – 6,4m-6,4m<br>10,97m✓MCA<br>2 ✓MA<br>5,485m✓CA | 1M, Subtracting both sides 6,4m<br>1MCA, 10,97m<br>1MA, Dividing by 2<br>1CA, Answer<br>(4) | M<br>L4 |
| 3.2.4 | ✓SF<br>Area =23,77m×1,37m ✓M<br>=32,5649m$^2$✓CA | 1SF, Substitution<br>1Multiplying<br>1CA, Answer.<br>(3) | M<br>L2 |
| 3.3.1 | No of calories = $\frac{83,5kg}{70kg}$ × 583✓M✓S<br>= 695,44calories ✓A | 1M, Multiplying by 583<br>1S, Dividing by 70 kg<br>1A, Answer.<br>(3) | M<br>L3 |
| 3.3.2 | Mass = $\frac{695,44 \text{ calories}}{9}$✓MA<br>= $\frac{77,27711g}{1000}$✓C<br>= 0,077kg ✓A<br>The statement is invalid. ✓J | **CA from Question 3.3.1**<br>1MA, Dividing by 9<br>1C, Dividing by 1000<br>1A, Answer<br>1J, Justification<br>(4) | M<br>L4 |
| 3.3.3 | No of hours = $\frac{1600}{583}$✓M<br>=2,744✓A | 1M, Dividing by 583<br>1A, Answer<br>**NPR** (2) | M<br>L3 |
| | | **[33]** | |

| QUESTION 4 [22] | | | |
|---|---|---|---|
| | **SOLUTION** | **EXPLANATION** | **T/L** |
| 4.1.1 | Amount in rands✓✓RT | 2RT, Answer (2) | F L1 |
| 4.1.2 | a)   | 1A, Starting point<br>1CA, Joining straight line point<br>1CA, Label (3) | F L3 |
| 4.1.2 | b) 50 breads✓✓RT | 2RT, Answer (2) | F L2 |
| 4.1.2 | c) R975✓✓RT | 2RT, Answer (2) | F L2 |
| 4.1.3 | Income for one bread = $\frac{R125}{10}$<br>=R12,50✓M<br>Total income = R12,50 ×No of bread sold✓CA | 1M, Rate of R12,50<br>1CA, Equation (2) | F L3 |
| 4.2.1 | Volume = 40cm ×10cm×10cm ×4 ✓✓SF<br>=16 000cm$^3$✓A | 2SF, Correct Substitution<br>1A, Answer (3) | M L3 |

| | | | |
|---|---|---|---|
| 4.2.2 | Rect. =16 000g✓C<br>Cylindrical = 3501,19×4✓MA<br>=14004,76g<br>A rectangular compartment will have more mass✓CA | **CA from question 4.2.1**<br>1C, Conversion of $cm^3$ to grams<br>1MA, Multiplying by 4<br>1CA, Opinion (3) | M<br>L4 |
| 4.2.3 | 5,08cm :40cm✓MA<br>5,08cm 5,08cm<br>1:7,874…✓CA | 1MA, Correct ratio order and dividing<br>1CA, Answer<br>**AO**<br>(2) | M<br>L2 |
| 4.2.4 | ℃= (450-32) ÷1,8✓SF<br>=418÷1,8✓S<br>=232✓CA | 1SF, Substitution<br>1S, Simplification<br>1CA, Answer (3) | M<br>L2 |
| | | **[22]** | |
| | | **TOTAL MARKS: 100** | |

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