

# SMARTWIZ

## GRADE 12 MATHEMATICS LITERACY EXAM

MARKS: 100

MARKS	

TIME: 2 HOURS

SCHOOL \_\_\_\_\_

CLASS (eg. 4A) \_\_\_\_\_

SURNAME \_\_\_\_\_

NAME \_\_\_\_\_

### Instructions for Learners:

- Read all instructions carefully before you begin the exam.
- Write your full name and student number clearly on the answer sheet/book.
- Answer all questions unless otherwise instructed.
- Show all your work/calculations where necessary.
- Write neatly and clearly.
- Use only a blue or black pen. Do not use correction fluid or tape.
- Electronic devices (calculators, cell phones, etc.) are not allowed unless explicitly permitted.
- Raise your hand if you have any questions.
- Do not talk to other learners during the exam.
- Any form of dishonesty will result in immediate disqualification from the exam.

**This exam consists of Five pages, including the cover page.**

## QUESTION 1: ELECTRICITY BILLING [25 marks]

The electricity tariff is as follows:

Units (kWh) used	Rate per kWh (Rands)
0 – 50	R1.50
51 – 150	R2.00
Above 150	R3.00

**1.1 Calculate the total electricity bill for a household that used 175 kWh.**

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**1.2 If a household's electricity bill was R340, calculate the number of units used.**

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## QUESTION 2: PROPORTIONALITY AND MIXTURES [20 marks]

A fruit juice is made by mixing orange juice and water in the ratio 4:7.

**2.1 How much water is needed if 12 litres of orange juice are used?**

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**2.2 How much orange juice and water are needed to prepare 33 litres of juice?**

Orange juice: \_\_\_\_\_

Water: \_\_\_\_\_

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## QUESTION 3: TAX CREDITS AND SALARY [15 marks]

An employee receives a monthly salary of R22,000. The tax rate on income over R15,000 is 18%. There is a monthly tax credit of R1,000.

**3.1 Calculate the tax payable before the tax credit.**

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### 3.2 Calculate the net salary after tax credit.

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## QUESTION 4: DATA HANDLING AND AVERAGES [20 marks]

The following data shows the daily number of customers served at a coffee shop for 7 days:

Day	Mon	Tue	Wed	Thu	Fri	Sat	Sun
Customers	42	58	55	63	70	85	40

### 4.1 Calculate the mean number of customers per day.

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### 4.2 Calculate the median number of customers.

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### 4.3 Calculate the mode.

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## QUESTION 5: TIME ZONE DIFFERENCES [20 marks]

Johannesburg is in the South African Standard Time zone (UTC+2). London is in Greenwich Mean Time (UTC+0).

### 5.1 If it is 14:30 in Johannesburg, what time is it in London?

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### 5.2 A flight departs Johannesburg at 23:00 and takes 10 hours. What time does it arrive in London? (Use 24-hour clock)

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**TOTAL : 100**

## MEMO

### QUESTION 1: ELECTRICITY BILLING [25 marks]

#### 1.1 Total electricity bill for 175 kWh:

- First 50 kWh:  $50 \times 1.50 = 75$
- Next 100 kWh (51 to 150):  $100 \times 2.00 = 200$
- Remaining 25 kWh (above 150):  $25 \times 3.00 = 75$

Total bill:  $75 + 200 + 75 = \boxed{R350}$

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#### 1.2 Electricity units if bill = R340:

Calculate cumulative cost:

- Up to 50 units:  $50 \times 1.50 = 75$
  - Up to 150 units:  $100 \times 2.00 = 200$
- Total for 150 units =  $75 + 200 = 275$

Remaining amount:  $340 - 275 = 65$

At R3.00 per unit:

$$65 \div 3 = 21.67 \approx 22 \text{ units}$$

Total units used:

$$50 + 100 + 22 = \boxed{172 \text{ units}}$$


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### QUESTION 2: PROPORTIONALITY AND MIXTURES [20 marks]

Ratio orange juice : water = 4:7

#### 2.1 Water needed for 12 litres orange juice:

$$\frac{7}{4} \times 12 = 21 \text{ litres}$$

#### 2.2 For 33 litres total:

$$\text{Sum of ratio parts} = 4 + 7 = 11$$

Each part =  $3 \frac{3}{11} = 3 \frac{3}{11} = 3$  litres

- Orange juice =  $4 \times 3 = 12$  litres
- Water =  $7 \times 3 = 21$  litres

{Orange juice: 12 litresWater: 21 litres}\boxed{\begin{cases} \text{Orange juice: } 12 \\ \text{Water: } 21 \end{cases}}{Orange juice: 12 litresWater: 21 litres}

### QUESTION 3: TAX CREDITS AND SALARY [15 marks]

Salary = R22,000

Tax rate over R15,000 = 18%

Tax credit = R1,000

#### 3.1 Tax before credit:

Taxable income:  $22,000 - 15,000 = 7,000$

Tax:  $7,000 \times 0.18 = 1,260$

R1,260

#### 3.2 Net salary after tax credit:

Tax payable =  $1,260 - 1,000 = 260$

Net salary =  $22,000 - 260 = R21,740$

R21,740

### QUESTION 4: DATA HANDLING AND AVERAGES [20 marks]

Customers per day: 42, 58, 55, 63, 70, 85, 40

#### 4.1 Mean:

$\frac{42+58+55+63+70+85+40}{7} = \frac{413}{7} \approx 59$

#### 4.2 Median:

Order data: 40, 42, 55, 58, 63, 70, 85

Median (4th value): 58

### 4.3 Mode:

No number repeats; therefore:

No mode \boxed{\text{No mode}} No mode

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## QUESTION 5: TIME ZONE DIFFERENCES [20 marks]

### 5.1 Time in London when Johannesburg is 14:30 (UTC+2 vs UTC+0):

Johannesburg is 2 hours ahead.

$$14:30 - 2:00 = 12:30 \quad 14:30 - 2:00 = \boxed{12:30} \quad 14:30 - 2:00 = 12:30$$


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### 5.2 Flight arrival time:

Departure Johannesburg: 23:00 (UTC+2)

Flight duration: 10 hours

Add 10 hours:  $23:00 + 10:00 = 09:00$  next day (Johannesburg time)

Convert to London time (subtract 2 hours):

$$09:00 - 2:00 = 07:00 \quad 09:00 - 2:00 = \boxed{07:00} \quad 09:00 - 2:00 = 07:00$$


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✅ END OF MEMO

TOTAL : 100