SMARTWIZ

GRADE 10 MATHEMATICAL LITERACY EXAM

MARKS: 100

MARKS	

TIME: 2 hours

SCHOOL _____

CLASS (e.g. 4A) _____

SURNAME _____

NAME _____

Instructions for Learners:

- Read all the instructions carefully before you begin the exam.
- Write your name and learner number clearly on the answer sheet/booklet.
- Answer all the questions unless otherwise instructed.
- Show all your work/calculations where applicable.
- Write neatly and legibly.
- Use only blue or black ink. *Do not use correction fluid or tape.*
- No electronic devices (calculators, phones, etc.) are allowed unless explicitly permitted.
- Raise your hand if you have any questions.
- Do not talk to other learners during the exam.
- Any form of cheating will lead to disqualification.

This test consists of 7 pages including the cover page.

SECTION A: FINANCIAL LITERACY & RATIOS (30 MARKS)

Question 1: Cellphone Airtime Purchases (10 marks)

Sipho buys the following airtime vouchers each month:

Date	Airtime Amount	Cost
1st	R10	R10
5th	R20	R20
14th	R29	R30
21st	R50	R52
30th	R100	R104

1.1 How much airtime (in rand) did Sipho buy this month? (2)

1.2 What is the total amount spent on airtime? (2)

1.3 Calculate the average cost per voucher. (2)

1.4 Determine the total additional cost above the airtime value. (2)

1.5 Express the R104 cost as a percentage above R100. (2)

Question 2: Exchange Rates (10 marks)

An exchange board shows the following rates:

Currency	Buying Rate	Selling Rate
USD	R18.80	R19.25
EUR	R20.50	R21.10

2.1 Sipho wants to convert R2 000 into US Dollars. How many USD will he get at the buying rate? (3)

2.2 If he returns with USD 100, how much will he receive in rands at the selling rate? (3)

2.3 Explain the difference between buying rate and selling rate. (2)

2.4 Why does the bank earn profit from currency exchanges? (2)

Question 3: Ratios (10 marks)

In a recipe, the ratio of sugar to flour to butter is 2:5:3.

3.1 How many parts total are in the recipe? (1)

3.2 If you use 1.2 kg of flour, how much sugar do you need? (2)

3.3 If butter used is 600g, how much flour was used? (2)

3.4 What fraction of the mix is butter? Simplify. (2)

3.5 Convert this fraction to a percentage. (3)

SECTION B: MEASUREMENT & SHAPES (30 MARKS)

Question 4: Perimeter and Area (15 marks)

A garden has a rectangular lawn measuring 12 m by 8 m. A circular flowerbed of radius 2 m is in the middle.

4.1 Calculate the area of the rectangle. (2)

4.2 Calculate the area of the circle. (Use $\pi = 3.14$) (3)

4.3 Calculate the area covered by grass only. (2)

4.4 Calculate the perimeter of the rectangle. (2)

4.5 If the lawn must be fenced with poles every 3 m, how many poles are needed? (3)

4.6 Give one reason why someone might remove lawn to install flowerbeds. (3)

Question 5: Volume – Boxes (15 marks)

A box company makes cube-shaped gift boxes.

5.1 A cube has edges of 10 cm. Calculate its volume. (2)

5.2 Another box is rectangular: 20 cm × 15 cm × 12 cm. Calculate its volume. (3)

5.3 Which box holds more? By how much? (2)

5.4 If the material costs R0.06 per cm² of surface, calculate the cost to make the cube box. (Surface Area = 6 × side²) (4)

5.5 Explain why large surface area increases cost. (2)

5.6 Suggest one way to reduce packaging costs. (2)

SECTION C: DATA & INTERPRETATION (40 MARKS)

Question 6: Pie Chart – Transport to School (20 marks)

A survey asked 60 students how they travel to school:

- Walk = 15
- Taxi = 20
- Bus = 10
- Bicycle = 5
- Car = 10

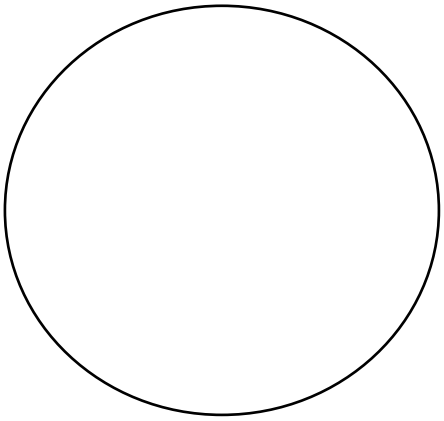
6.1 How many learners were surveyed? (1)

6.2 What fraction of learners use taxis? (1)

6.3 Convert that to a percentage. (2)

6.4 Draw a pie chart using the data. Use a protractor. (5)

(Draw pie chart in the space provided on printed version)



6.5 Calculate the angle for each group: Walk, Taxi, Bus, Bicycle, Car. (5)

6.6 Suggest a reason why some students choose to walk. (2)

6.7 What mode of transport is least used? Why might that be? (2)

6.8 If the school wants to encourage more bicycle use, suggest two incentives. (2)

Question 7: Histogram – Test Results (20 marks) The scores for 40 learners in a test are grouped as follows:

Marks (%)	Frequency
0–19	4
20–39	6
40–59	12
60–79	10
80–100	8

7.1 What is the modal class? (1)

7.2 Draw a histogram for the data. (5)

(Draw histogram in the space provided on printed version)

7.3 How many learners passed (40% and above)? (2)

7.4 What percentage failed? (2)

7.5 What is the range of marks? (2)

7.6 Suggest one reason for poor performance in the lowest group. (2)

7.7 What recommendation would you give the teacher? (2)

7.8 Calculate the total learners represented. (2)

7.9 Use this data to estimate whether the test was easy, moderate, or difficult. Explain. (2)

TOTAL: 100 MARKS

MEMO

SECTION A: FINANCIAL LITERACY & RATIOS (30 MARKS)

Question 1: Cellphone Airtime Purchases (10 marks)

1.1 R10 + R20 + R29 + R50 + R100 = **R209 ✓✓**
1.2 R10 + R20 + R30 + R52 + R104 = **R216 ✓✓**
1.3 R216 ÷ 5 = **R43.20 ✓✓**
1.4 R216 – R209 = **R7 ✓✓**
1.5 (4 ÷ 100) × 100 = **4% more ✓✓**

Question 2: Exchange Rates (10 marks)

2.1 R2 000 ÷ 18.80 = **USD 106.38 ✓✓✓**
2.2 USD 100 × 19.25 = **R1 925 ✓✓✓**
2.3 Buying rate = what bank pays you (lower),
Selling rate = what bank charges you (higher) **✓✓**
2.4 They buy low, sell high = **profit on difference ✓✓**

Question 3: Ratios (10 marks)

3.1 2 + 5 + 3 = **10 parts ✓**
3.2 (2 ÷ 5) × 1.2 = **0.48 kg sugar ✓✓**
3.3 (5 ÷ 3) × 0.6 = **1.00 kg flour ✓✓**
3.4 Butter = 3/10 **✓✓**
3.5 (3 ÷ 10) × 100 = **30% ✓✓✓**

SECTION B: MEASUREMENT & SHAPES (30 MARKS)

Question 4: Perimeter and Area (15 marks)

4.1 12 × 8 = **96 m² ✓✓**
4.2 Area = πr^2 = 3.14 × 2^2 = 3.14 × 4 = **12.56 m² ✓✓✓**
4.3 96 – 12.56 = **83.44 m² ✓✓**
4.4 2(12 + 8) = 40 m **✓✓**
4.5 40 ÷ 3 = 13.33 → **14 poles ✓✓✓**
4.6 Any valid reason: e.g. less maintenance, aesthetics **✓✓✓**

Question 5: Volume – Boxes (15 marks)

5.1 10^3 = **1 000 cm³ ✓✓**
5.2 20 × 15 × 12 = **3 600 cm³ ✓✓✓**
5.3 3 600 – 1 000 = **2 600 cm³ more ✓✓**
5.4 Surface area = $6 \times 10^2 = 6 \times 100 = 600$
Cost = 600 × 0.06 = **R36 ✓✓✓✓**
5.5 More material = more cost ✓✓
5.6 Use thinner/cheaper material or reduce size ✓✓

SECTION C: DATA & INTERPRETATION (40 MARKS)

Question 6: Pie Chart – Transport to School (20 marks)

6.1 **60 learners ✓**
6.2 20 ÷ 60 = **1/3 ✓**
6.3 (20 ÷ 60) × 100 = **33.33% ✓✓**
6.4 Learners should draw a correct pie chart with labeled slices ✓✓✓✓✓
6.5 Angles:

- Walk: (15 ÷ 60) × 360 = 90° ✓
- Taxi: (20 ÷ 60) × 360 = 120° ✓
- Bus: (10 ÷ 60) × 360 = 60° ✓
- Bicycle: (5 ÷ 60) × 360 = 30° ✓
- Car: (10 ÷ 60) × 360 = 60° ✓

✓✓✓✓✓
6.6 Reason for walking: Close to school / save transport money ✓✓
6.7 Least = Bicycle; may be due to safety/lack of bicycles ✓✓
6.8 Provide bike racks or reward system for cyclists ✓✓

Question 7: Histogram – Test Results (20 marks)

7.1 Modal class: **40–59 ✓**
7.2 Learners draw correct histogram ✓✓✓✓✓
7.3 12 + 10 + 8 = **30 learners ✓✓**
7.4 10 failed → (10 ÷ 40) × 100 = **25% failed ✓✓**
7.5 Range = 100 – 0 = **100% ✓✓**
7.6 Reason: Poor preparation / difficult questions ✓✓

7.7 Extra lessons / remedial support ✓✓
7.8 Total = 4 + 6 + 12 + 10 + 8 = **40 learners ✓✓**
7.9 Moderate. Most learners scored between 40–79 ✓✓

TOTAL : 100