Mathematics Literacy

PATTERNS AND RELATIONSHIPS,
CONVERSIONS &
FINANCIAL DOCUMENTS

Worksheets & Answers

GRADE 11

@udu tuition

Grade 11 Mathematical Literacy Worksheets

1. Worksheet Content and Structure

The worksheet consists of three main sections**:**

Patterns and Relationships:

Questions cover sequences, identifying terms, deriving formulas, and applying patterns to real-life scenarios.

Conversions:

Focus on basic unit conversions (e.g., meters to kilometers, grams to kilograms), percentage and fraction conversions, and more complex conversions (e.g., speed and area).

Financial Documents:

Questions about understanding payslips, VAT, deductions, calculating net salary, loan interest, and installment plans.

- **Section A**: Focuses on patterns, sequences, and their application in business or real-life problems.
- **Section B**: Tests students on their ability to convert between units, solve for decimals, fractions, and percentages.
- **Section C**: Covers practical applications involving financial documents like payslips, VAT, salary deductions, and interest calculations.
- The **Memorandum (Download**: www.emmanuelsithole.co.za/tutoring **)** provides detailed answers for each question, along with step-by-step calculations.

SECTION A

Test & Examination Practice Worksheet

Topic 1:Patterns and Relationships

1. Determine the next three terms in the sequence: **2, 5, 10, 17, 26, ...**
2. Find the general formula for the sequence: **3, 7, 11, 15, 19, ...**
3. A pattern follows the rule $T_n = 2n^2 + 3$. Find the 6th term.
4. The nth term of a sequence is given by $T_n = 4n - 1$. What is the 10th term?
5. Identify the relationship in the pattern: **1, 4, 9, 16, 25, ...**
6. A sequence starts with 8 and follows the rule: **Multiply by 2, then subtract 3**. Write the first 5 terms.
7. A car rental company charges a base fee of **R150** plus **R3 per km**. Write an equation for the cost C in terms of k km traveled.
8. A cellphone plan charges R200 per month plus R0.50 per minute of call time. How much will a person pay for **120 minutes** of calls in a month?
9. Given the function $y = 3x + 5$, find y when $x = 4$.
10. The pattern **5, 10, 20, 40, 80, ...** follows which mathematical operation?
11. If a business's revenue follows the equation $R = 50n + 100$, where   is the number of products sold, find the revenue when **10 products** are sold.
12. A quadratic pattern follows the rule $T_n = n^2 - 2n + 1$. Find the first four terms.
13. Identify the next three terms in the pattern: **3, 8, 15, 24, 35, …**
14. Determine the general formula for the sequence: **5, 10, 17, 26, 37, ...**
15. A pattern follows the rule $T_n = n^2 + 2n$. Find the 5th term.
16. The nth term of a sequence is given by $T_n = 6n - 2$. Calculate T_8.
17. A quadratic pattern follows the formula $T_n = n^2 - 3n + 2$. Find the first four terms.
18. A taxi service charges a **base fee of R50** plus **R7 per km**. Write a formula for the cost C in terms of distance d.
19. A person earns **R250 per hour**. Write an equation for their total earnings after h hours of work.
20. The number of employees in a company follows the pattern: **12, 20, 30, 42, ...**. Find the 6th term.
21. The pattern **4, 12, 36, 108, ...** follows which mathematical operation?
22. A company's revenue is modeled by the equation $R = 40n + 200$, where n is the number of items sold. Find the revenue when **15 items** are sold.
23. If a savings plan follows the sequence **100, 300, 600, 1000, ...**, determine the general term.
24. A sequence follows the rule: **Multiply by 3, then subtract 2**. If the first term is **5**, write the next 5 terms.
25. Identify the next three terms in the pattern: **4, 9, 16, 25, …**
26. Determine the general formula for the sequence: **2, 6, 12, 20, 30, ...**
27. A sequence follows the rule $T_n = n^2 + 3n$. Find the 6th term.
28. The nth term of a sequence is given by $T_n = 5n - 4$. Calculate T_{10}.
29. Identify the pattern rule in the sequence: **2, 5, 10, 17, 26, ...**
30. A water tank fills according to the pattern: **5, 15, 30, 50, 75, …**. Find the 7th term.
31. A taxi service charges a base fee of **R35** plus **R8 per km**. Write a formula for the cost C in terms of distance d.
32. A person earns **R300 per hour**. Write an equation for their total earnings E after h hours.

33. A business's revenue follows the equation $R = 60n + 500$, where n is the number of products sold. Find the revenue when **20 products** are sold.
34. The pattern **3, 6, 12, 24, 48, ...** follows which mathematical operation?
35. The formula for a pattern is $T_n = n^2 - n$. Find the first four terms.
36. A sequence follows the rule: **Multiply by 2, then subtract 1**. If the first term is **3**, write the next 5 terms.
37. Identify the next three terms in the pattern: **2, 5, 10, 17, 26, …**
38. Determine the general formula for the sequence: **3, 7, 13, 21, 31, …**
39. A pattern follows the rule $T_n = n^2 + 4n$. Find the 5th term.
40. The nth term of a sequence is given by $T_n = 4n - 3$. Calculate T_9.
41. A quadratic pattern follows the formula $T_n = n^2 - 2n + 1$. Find the first four terms.
42. A ride-sharing service charges a **base fee of R40** plus **R6 per km**. Write a formula for the cost C in terms of distance d.
43. A person earns **R280 per hour**. Write an equation for their total earnings after5 hours of work.
44. The number of workers in a factory follows the pattern: **15, 22, 31, 42, …**. Find the 6th term.
45. The pattern **5, 15, 45, 135, …** follows which mathematical operation?
46. A company's revenue is modeled by the equation $R = 50n + 300$, where n is the number of products sold. Find the revenue when **18 products** are sold.
47. If a savings plan follows the sequence **200, 600, 1200, 2000, …**, determine the general term.
48. A sequence follows the rule: **Multiply by 3, then add 2**. If the first term is **4**, write the next 5 terms.

SECTION B
Test & Examination Practice Worksheet
Topic 2: Conversions

1. Convert **2.5 km** to meters.
2. Convert **4500 g** to kilograms.
3. How many milliliters are in **3.25 liters**?
4. Convert **5 hours and 30 minutes** into minutes.
5. Convert **250 cm** to meters.
6. Express **3/4** as a decimal.
7. Convert **R1500** into **US dollars** if the exchange rate is **R18.75 = $1**.
8. If 1 inch = **2.54 cm**, how many centimeters are in **15 inches**?
9. Convert **3.6 m²** to cm².
10. Express **75%** as a fraction in its simplest form.
11. A recipe requires **2 pints of milk**. Convert this to liters, given **1 pint = 0.473 liters**.
12. Convert a speed of **90 km/h** to **m/s**.
13. Convert **3.2 km** to meters.
14. Convert **7500 g** to kilograms.
15. How many milliliters are in **4.5 liters**?
16. Convert **6 hours and 45 minutes** into minutes.
17. Convert **350 cm** to meters.
18. Express **5/8** as a decimal.
19. Convert **R2500** into **US dollars** if the exchange rate is **R19.20 = $1**.
20. If 1 inch = **2.54 cm**, how many centimeters are in **20 inches**?
21. Convert **5.2 m²** to cm².
22. Express **85%** as a fraction in simplest form.
23. A recipe requires **3 pints of milk**. Convert this to liters, given **1 pint = 0.473 liters**.
24. Convert a speed of **120 km/h** to **m/s**.
25. Convert **4.8 km** to meters.
26. Convert **5200 g** to kilograms.
27. How many milliliters are in **2.75 liters**?
28. Convert **7 hours and 20 minutes** into minutes.
29. Convert **185 cm** to meters.
30. Express **7/9** as a decimal.
31. Convert **R3200** into **US dollars** if the exchange rate is **R18.50 = $1**.
32. If 1 inch = **2.54 cm**, how many centimeters are in **25 inches**?
33. Convert **6.5 m²** to cm².
34. Express **92%** as a fraction in its simplest form.
35. A recipe requires **4.5 pints of water**. Convert this to liters, given **1 pint = 0.473 liters**.
36. Convert a speed of **80 km/h** to **m/s**.
37. Convert **5.3 km** to meters.
38. Convert **8600 g** to kilograms.
39. How many milliliters are in **3.75 liters**?
40. Convert **5 hours and 50 minutes** into minutes.
41. Convert **275 cm** to meters.
42. Express **6/11** as a decimal.

43. Convert **R4500** into **US dollars** if the exchange rate is **R18.80 = $1**.
44. If 1 inch = **2.54 cm**, how many centimeters are in **30 inches**?
45. Convert **8.4 m²** to cm².
46. Express **78%** as a fraction in its simplest form.
47. A recipe requires **2.5 pints of oil**. Convert this to liters, given **1 pint = 0.473 liters**.
48. Convert a speed of **95 km/h** to **m/s**.

SECTION C
Test & Examination Practice Worksheet

Topic 3: Financial Documents

1. Define a **budget** and explain its importance in financial planning.
2. A person earns **R18,500 per month** and spends **R7,200 on expenses**. What percentage of their income is spent?
3. A receipt shows **R4500** spent with **15% VAT included**. How much was the VAT amount?
4. Identify **three** common items found on a payslip.
5. If a payslip shows a **gross salary of R12,000** and deductions of **R2,500**, calculate the **net salary**.
6. A company invoices a client **R25,000** for services. If the client pays in **three equal installments**, how much is each installment?
7. An electricity bill is **R820**, with a **basic charge of R150** and usage charged at **R2.50 per kWh**. How many kWh were used?
8. Define **interest** and differentiate between **simple** and **compound interest**.
9. A loan of **R50,000** has a **10% simple interest rate** per year. Calculate the total amount to be paid after **5 years**.
10. A salary increase of **8%** is given on an original salary of **R22,500**. What is the new salary?
11. A customer buys a TV on **lay-by** for R9,000, paying a **30% deposit**. How much is the deposit?
12. A bank statement shows an **opening balance of R15,000** and deposits of **R8,500**, with withdrawals of **R4,200**. What is the closing balance?
13. Define a **payslip** and list three key components found on it.
14. A person earns **R21,500 per month** and spends **R9,750 on expenses**. What percentage of their income is spent?
15. A receipt shows **R5600** spent, including **15% VAT**. Calculate the VAT amount.
16. Identify **two common deductions** that appear on a payslip.
17. If a payslip shows a **gross salary of R18,000** and deductions of **R3,800**, determine the **net salary**.
18. A company invoices a client **R32,500** for services. If the client pays in **four equal installments**, how much is each installment?
19. An electricity bill shows a **total cost of R1,050**, where the **basic charge is R250**, and the electricity rate is **R3.50 per kWh**. How many kWh were used?
20. Define **interest** and differentiate between **simple interest** and **compound interest**.
21. A loan of **R65,000** has a **12% simple interest rate** per year. Calculate the total amount to be paid after **4 years**.
22. A worker receives a **9% salary increase** on an original salary of **R27,500**. What is the new salary?
23. A customer buys a fridge on **lay-by** for **R12,000**, paying a **25% deposit**. How much is the deposit?
24. A bank statement shows an **opening balance of R24,000**, deposits of **R10,500**, and withdrawals of **R6,750**. What is the closing balance?
25. Define a **payslip** and explain its purpose.
26. A person earns **R19,800 per month** and spends **R8,100 on expenses**. What percentage of their income is spent?
27. A receipt shows **R6300** spent with **15% VAT included**. Calculate the VAT amount.
28. Identify **three common deductions** that appear on a payslip.
29. If a payslip shows a **gross salary of R22,500** and deductions of **R4,200**, determine the **net salary**.
30. A company invoices a client **R40,000** for services. If the client pays in **five equal installments**, how much is each installment?

31. An electricity bill is **R1,200**, with a **basic charge of R300** and usage charged at **R2.80 per kWh**. How many kWh were used?
32. Define **interest** and differentiate between **simple interest** and **compound interest**.
33. A loan of **R75,000** has a **10% simple interest rate** per year. Calculate the total amount to be paid after **6 years**.
34. A worker receives a **7% salary increase** on an original salary of **R24,000**. What is the new salary?
35. A customer buys a couch on **lay-by** for R15,500, paying a **35% deposit**. How much is the deposit?
36. A bank statement shows an **opening balance of R18,000**, deposits of **R9,500**, and withdrawals of **R4,300**. What is the closing balance?
37. Define a **payslip** and list three key components found on it.
38. A person earns **R22,400 per month** and spends **R10,080 on expenses**. What percentage of their income is spent?
39. A receipt shows **R8200** spent, including **15% VAT**. Calculate the VAT amount.
40. Identify **two common deductions** that appear on a payslip.
41. If a payslip shows a **gross salary of R20,750** and deductions of **R3,950**, determine the **net salary**.
42. A company invoices a client **R55,200** for services. If the client pays in **four equal installments**, how much is each installment?
43. An electricity bill shows a **total cost of R1,550**, where the **basic charge is R350**, and the electricity rate is **R4.20 per kWh**. How many kWh were used?
44. Define **interest** and differentiate between **simple interest** and **compound interest**.
45. A loan of **R90,000** has a **14% simple interest rate** per year. Calculate the total amount to be paid after **5 years**.
46. A worker receives a **10% salary increase** on an original salary of **R30,500**. What is the new salary?
47. A customer buys a washing machine on **lay-by** for **R18,600**, paying a **30% deposit**. How much is the deposit?
48. A bank statement shows an **opening balance of R28,500**, deposits of **R12,400**, and withdrawals of **R7,750**. What is the closing balance?

GRADE 11 MATHEMATICAL LITERACY EXAMINATION

Paper: Mathematics Literacy
Time: 2 Hours
Total: 100 Marks

Instructions:

- Answer ALL questions.
- Show ALL calculations clearly.
- Round off answers to **two decimal places** where applicable.
- Clearly indicate your answers.

SECTION A: PATTERNS AND RELATIONSHIPS (40 Marks)

Question 1 (10 Marks)

1.1. Identify the next three terms in the pattern: **3, 8, 15, 24, 35, …** (3)
1.2. Determine the general formula for the sequence: **2, 6, 12, 20, 30, …** (4)
1.3. A pattern follows the rule $T_n = n^2 + 2n$. Find the 7th term. (3)

Question 2 (10 Marks)

2.1. The nth term of a sequence is given by $T_n = 4n - 5$. Calculate T_{12}. (2)
2.2. A taxi service charges a **base fee of R50** plus **R7 per km**. Write a formula for the total cost C in terms of distance d. (3)
2.3. A person earns **R320 per hour**. Write an equation for their total earnings after 5 hours of work. (2)
2.4. The number of seats in a stadium follows the pattern: **50, 70, 90, 110, …**. Find the 6th term. (3)

Question 3 (10 Marks)

3.1. The pattern **2, 6, 18, 54, …** follows which mathematical operation? (2)
3.2. A business's revenue is modeled by the equation $R = 75n + 500$, where n is the number of products sold. Find the revenue when **20 products** are sold. (3)
3.3. If a savings plan follows the sequence **250, 750, 1500, 2500, …**, determine the general term. (3)
3.4. A sequence follows the rule: **Multiply by 4, then subtract 1**. If the first term is **5**, write the next 5 terms. (2)

SECTION B: CONVERSIONS (30 Marks)

Question 4 (10 Marks)

4.1. Convert **6.2 km** to meters. (2)
4.2. Convert **9400 g** to kilograms. (2)
4.3. How many milliliters are in **4.8 liters**? (2)
4.4. Convert **6 hours and 45 minutes** into minutes. (2)
4.5. Convert **320 cm** to meters. (2)

Question 5 (10 Marks)

5.1. Express **5/9** as a decimal. (2)
5.2. Convert **R5,200** into **US dollars** if the exchange rate is **R19.20 = $1**. (2)
5.3. If 1 inch = **2.54 cm**, how many centimeters are in **40 inches**? (2)
5.4. Convert **7.9 m²** to cm². (2)
5.5. Express **86%** as a fraction in its simplest form. (2)

Question 6 (10 Marks)

6.1. A recipe requires **3.2 pints of milk**. Convert this to liters, given **1 pint = 0.473 liters**. (2)
6.2. Convert a speed of **105 km/h** to **m/s**. (2)
6.3. A room measures **4.5 m by 3.2 m**. Convert this to cm². (3)
6.4. A car travels **140 km** in **2 hours**. Convert this speed to **m/s**. (3)

SECTION C: FINANCIAL DOCUMENTS (30 Marks)

Question 7 (10 Marks)

7.1. Define a **payslip** and list three key components found on it. (3)
7.2. A person earns **R18,900 per month** and spends **R8,505 on expenses**. What percentage of their income is spent? (3)
7.3. A receipt shows **R7,500** spent, including **15% VAT**. Calculate the VAT amount. (4)

Question 8 (10 Marks)

8.1. Identify **two common deductions** that appear on a payslip. (2)
8.2. If a payslip shows a **gross salary of R19,500** and deductions of **R3,250**, determine the **net salary**. (2)
8.3. A company invoices a client **R48,000** for services. If the client pays in **six equal installments**,

how much is each installment? (2)

8.4. An electricity bill shows a **total cost of R2,040**, where the **basic charge is R390**, and the electricity rate is **R3.90 per kWh**. How many kWh were used? (4)

Question 9 (10 Marks)

9.1. Define **interest** and differentiate between **simple interest** and **compound interest**. (3)

9.2. A loan of **R120,000** has a **12% simple interest rate** per year. Calculate the total amount to be paid after **4 years**. (3)

9.3. A worker receives a **9% salary increase** on an original salary of **R28,600**. What is the new salary? (2)

9.4. A customer buys a television on **lay-by** for **R22,400**, paying a **40% deposit**. How much is the deposit? (2)

● **Download worksheets and examinations memorandum at:**

Web link: *Memorandum*

Reference

1. Textbooks

- **Mathematical Literacy** Grade 11 (Various Publishers)
    - Commonly used textbooks in South Africa for Mathematics Literacy students that cover the curriculum.

2. Curriculum Guides

- **Curriculum and Assessment Policy Statements (CAPS)**
    - Official document outlining the syllabus and expected learning outcomes for Mathematics Literacy in South Africa.
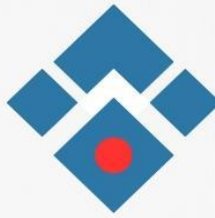
3. Online Resources

- **Khan Academy** (https://www.khanacademy.org/)
    - Free educational platform that provides lessons and exercises on various topics, including patterns, sequences, conversions, and financial mathematics.
- **Brilliant.org** (https://www.brilliant.org/)
    - Offers problem-solving and critical thinking practice for mathematics students.

4. Past Exam Papers

- **National Senior Certificate (NSC) Past Papers** from the Department of Basic Education (https://www.education.gov.za/)
    - Access to previous examination papers for practice.

These resources will provide valuable assistance in understanding the core topics and preparing for exams.

Mathematics Literacy

Unlock your potential with this comprehensive Grade 11 Mathematics Literacy Workbook. Designed to strengthen your understanding and application of key concepts, this workbook provides you with all the tools you need to excel. With clear explanations, step-by-step solutions, and a variety of practice exercises,

This workbook is aligned with the CAPS curriculum, ensuring that every activity prepares you for your final exams. Whether you're reinforcing classroom lessons or working through extra practice, this guide will help you build both knowledge and confidence in Mathematical Literacy.

Perfect for self-study or as a supplement to your lessons, this workbook will ensure you're well-prepared for all assessments and everyday financial challenges.

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