



INDEPENDENT EXAMINATIONS BOARD

NATIONAL SENIOR CERTIFICATE (IEB)

SUBJECT ASSESSMENT GUIDELINES
MATHEMATICAL LITERACY

(Updated June 2025)

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A. MEANS OF ASSESSMENT

Paper 1	3 hours	[150]
Paper 2	3 hours	[150]
School Based Assessment		[100]

400 marks

B. REQUIREMENTS

This document must be read in conjunction with the Curriculum and Assessment Policy Statement (CAPS): Mathematical Literacy – Section 3, Department of Basic Education, Republic of South Africa (2011).

MATHEMATICAL LITERACY EXAMINATION PAPER 1 AND PAPER 2

The two examination papers assess the achievement of the subject content through integrated questions and tasks set within relevant real-life contexts.

Paper 1	Weighting
Finance	60% (± 5)
Data Handling	35% (± 5)
Probability	5%
Paper 2	Weighting
Maps, plans and other representation of the physical world	40% (± 5)
Measurement	55% (± 5)
Probability	5%

Note:

- Finance content (e.g., income, expenditure, budgeting) may be assessed in Paper 2 if linked to Measurement or Maps and Plans.
- Growth Charts (CAPS p. 65) may appear in Data Handling in Paper 1 as they involve measures of spread.

C. COGNITIVE LEVEL WEIGHTING ACROSS PAPER 1 AND PAPER 2

Assessment aligns with the following weighting based on Bloom's Taxonomy:

Table 2

The Four Levels of Bloom's Taxonomy for Mathematical Literacy		Paper 1	Paper 2
Level		%	%
1	Knowing	30($\pm$ 5)	30($\pm$ 5)
2	Applying routine procedures in familiar contexts	30($\pm$ 5)	30($\pm$ 5)
3	Applying multi-step procedures in a variety of contexts	20($\pm$ 5)	20($\pm$ 5)
4	Reasoning and reflecting	20($\pm$ 5)	20($\pm$ 5)

The structure of the papers will be as follows:

1. Each examination paper will consist of five questions.
2. Question 1 will assess only Level 1 thinking and will contribute 20% of the total marks, with a permissible deviation of $\pm 5\%$.
 - 2.1 In Paper 1 of the end-of-year examination, Question 1 will integrate content from the Finance and Data Handling content areas.
 - 2.2 In Paper 2 of the end-of-year examination, Question 1 will integrate content from Measurement, and Maps, Plans and Other Representations of the Physical World.
 - 2.3 Although Question 1 in both papers may include tasks requiring calculator use, it is not limited to calculator-based questions.
3. Questions 2 to 5 will be integrated and will assess a range of cognitive levels.

D. SCHOOL BASED ASSESSMENT

School-Based Assessment (SBA) constitutes 25% of the total assessment for the National Senior Certificate. The requirements for the SBA component are outlined in Table 3.

All schools are required to retain and make available the SBA evidence for all learners, should it be requested by the IEB or Umalusi.

These Subject Assessment Guidelines must be read in conjunction with the *IEB Manual for the Moderation of School-Based Assessment*, available at www.ieb.co.za.

Table 3: Portfolio Requirements for Grade 12

Descriptions	Weighting	Marks
Two alternate assessment tasks Each task must be between 1–2 hours in duration	2 × 15	30
Two tests / June Examinations These must be standardised and conducted under controlled conditions, each lasting between 45 minutes and 1 hour	2 × 15	30
Grade 12 Preliminary Examination This must comprise two papers, Paper 1 and Paper 2	2 × 20	40
Total marks:		100

Note:

- Alternate assessment Tasks must include at least two different task types. (Refer to page 26/6 for examples.)
- The combination of standardised tests and alternate assessment tasks must cover a minimum of three of the five topics in the curriculum.
- Tasks completed in Grades 10 and 11 may **not** be included in the Grade 12 learner file.

Grades 10 and 11

It is strongly recommended that the assessment format in **Grades 10 and 11** align with that of **Grade 12** to promote consistency and support the progressive development of learners' assessment skills.

Standardised tests

- Moderated and administered under controlled conditions
- Common memoranda or marking criteria must be used
- Can be topic-specific or integrative
- Questions must cover all four cognitive levels

Grade 12 Examinations

One examination (Paper 1 and Paper 2) according to the end of year format.

Alternate Assessment Tasks

1. Projects

Projects in Mathematical Literacy allow learners to apply mathematical knowledge and skills to real-world or unfamiliar contexts. They are typically more substantial than assignments or investigations and may be done individually or collaboratively. Projects often extend beyond classroom supervision and involve meaningful, independent engagement.

A good project:

- is practical and grounded in everyday life, the school setting, or community issues;
- may integrate multiple content areas or subjects;
- supports deeper conceptual understanding through authentic application;
- encourages learners to explore topics that are relevant and personally meaningful.

Assessment should be guided by clear, shared criteria, such as:

- **Relevance and clarity of the problem** (especially for learner-generated topics)
- **Organisation and structure** of the project
- **Effective use of resources and tools**, including digital or AI-based media
- **Accuracy and quality** of mathematical reasoning and presentation
- **Group collaboration**, where applicable
- **Time management** and planning
- **Respect for diverse perspectives and contexts**

Examples of project activities include:

- Budgeting with AI-supported spreadsheets
- Modelling costs or data trends using simulation tools
- Critically analysing outputs from AI platforms (e.g. chatbots, planners)

Projects should be realistic, relevant, and assessed transparently using agreed-upon criteria.

2. Assignments

Assignments in Mathematical Literacy are structured tasks designed to reinforce and consolidate key concepts. They are shorter and more directed than projects, typically based on familiar content.

Assignments:

- support consolidation of prior learning and preparation for tests or examinations;
- may be completed individually or collaboratively;
- are often partially supervised to assess specific skills in action;
- may also be done independently outside of class time;
- should take no more than two hours to complete.

Clear instructions and assessment criteria must be shared upfront so that learners understand the focus and expectations of the task.

Examples of assignment activities include:

- Analysing household budgets using spreadsheet templates
- Interpreting graphs from real data sources (e.g. fuel prices, weather patterns)
- Using AI tools to generate a planning schedule and evaluating its feasibility
- Comparing outputs from different online calculators or interest simulators
- Completing a guided investigation into cellphone data packages or transport costs
- Assignments offer learners regular opportunities to apply their skills in structured, familiar contexts while building confidence in mathematical reasoning.

3. Investigations

Investigations in Mathematical Literacy develop critical thinking and reasoning by engaging learners in the process of exploring patterns, forming conjectures, and justifying conclusions. The emphasis is on the *mathematical process*, not just the final answer.

Investigations typically involve:

- identifying and analysing patterns through multiple examples;
- formulating and testing conjectures;
- drawing generalisations and constructing logical arguments;
- using a variety of representations such as tables, graphs, or diagrams.

Investigations often integrate concepts across topics and promote deeper understanding through discovery and exploration.

For investigations to be meaningful:

- **Instructions must be clear and assessment criteria shared upfront;**
- learners must have space to explore, reflect, and revise their thinking;
- the focus should be on reasoning and justification, not just procedural fluency.

Suggested assessment criteria include:

- Clarity in defining the problem
- Logical reasoning and argument construction
- Appropriate use of mathematical tools and representations
- Discovery and generalisation of patterns
- Justification and testing of claims
- Clear and accurate presentation, including correct notation

Examples of investigation tasks include:

- Exploring number patterns in cellphone tariffs or loyalty rewards
- Using AI tools to generate patterns or sequences, then verifying their accuracy
- Investigating inflation trends using data tables and graphs
- Analysing travel cost options and conjecturing the most economical conditions
- Creating “what if” scenarios using spreadsheets to test hypotheses

Investigations are an ideal form of performance assessment, encouraging learners to think critically, reason logically, and communicate mathematically — key competencies for success in real-world problem-solving.

4. Research Task

In the context of Mathematical Literacy, a research task involves the collection of data and/or information in order to investigate and solve a defined problem. Although the problem posed in the research task is clearly outlined, the nature and quality of the data collected will influence the solution or conclusions drawn.

The following steps can be used to guide the development and implementation of a research task:

- Clearly define the research question or problem for the learners.
- Develop a questionnaire or appropriate data collection tool.
- Identify and select a suitable sample group for the research.
- Collect the data. Learners should explain the purpose of the research to respondents and ensure that all information provided will be kept confidential.
- Analyse the data using relevant mathematical techniques, such as frequency tables or summary statistics.
- Represent the data appropriately using graphs, tables, or other visual tools.
- Where appropriate, compare the learners' findings with the results of other surveys or data sources.
- Compile a report summarising the findings, analysis, and conclusions.

A well-constructed research task promotes mathematical thinking, real-world application, and ethical data handling. It also encourages learners to engage with the mathematical modelling cycle – from problem definition through data collection to interpretation and reporting.

5. Case Study

In Mathematical Literacy, a case study requires the learner to monitor a real-life event or situation over time, gather relevant data, and make informed predictions based on observed trends and changes.

Possible steps in developing a case study include:

- The learner keeps a logbook or record of data related to a specific topic (e.g., tracking monthly household expenses).
- Based on the collected data, the learner draws conclusions and makes predictions about how various factors (e.g., changes in interest rates) could impact the situation.
- The case study may also be used to assess the learner's ability to identify the key problems within a scenario and to suggest viable solutions.
- Learners may present their case study findings in either written or oral form. Oral presentations provide an opportunity to develop and demonstrate social and communication skills such as articulating and defending a viewpoint, engaging with the perspectives of others, and responding constructively to feedback.

A case study enables learners to apply mathematical reasoning to real-world situations in a structured and reflective way, making it a valuable form of performance-based assessment.

Summary of Alternate Assessment Tasks in Mathematical Literacy

Alternate assessment tasks in Mathematical Literacy provide diverse opportunities for learners to apply mathematical concepts in real-world contexts. These tasks support the development of critical thinking, problem-solving, and decision-making skills, and can be enriched through the use of technology and artificial intelligence (AI).

Task Type	Description	Examples (including AI/Technology Use)
Projects	Involve comprehensive, practical work—often with limited supervision—where learners apply mathematical knowledge to real-life situations.	- Analysing transport costs and suggesting the most economical route using mapping software. - Using AI tools (e.g. ChatGPT or data modelling apps) to evaluate household energy consumption and propose savings strategies.
Assignments	Structured, guided tasks used to consolidate learning and prepare learners for tests and exams.	- Developing an income-and-expenditure report for a fictional household. - Using spreadsheet software to track and graph monthly spending patterns.
Investigations	Tasks focused on discovering patterns, testing conjectures, and exploring mathematical relationships.	- Investigating the relationship between data usage and cost across mobile providers. - Using AI-generated datasets to test a mathematical rule and report on findings.
Research Tasks	Involve collecting, analysing, and interpreting data to solve a defined problem.	- Surveying classmates on commuting habits and comparing results to city data. - Using online survey tools and AI-driven analysis platforms to explore student budgeting behaviour.
Case Studies	Require learners to monitor a situation over time, gather data, and reflect on implications.	- Tracking monthly grocery expenses over a term and identifying trends. - Using AI to simulate economic changes (e.g. inflation impact) and reflect on personal financial decisions.

E. INTERPRETATION OF REQUIREMENTS

Description of the Levels in the Mathematical Literacy Assessment Taxonomy

(Adapted from the *DBE Mathematical Literacy CAPS Document, 2011*)

Level 1: Knowing

Questions at Level 1: Knowing serve two primary functions:

- To familiarise learners with the context in which the problem is situated, by asking questions that explore understanding of the scenario;
- To assess the learner's ability to interpret contextual information, apply familiar techniques to perform basic calculations, and explain commonly used terms.

Level 2: Applying Routine Procedures in Familiar Contexts

Tasks at this level require learners to apply well-known procedures and carry out common tasks within familiar contexts. The learner is able to identify the appropriate procedure or method based on how the problem is framed, and all necessary information is readily available.

These questions typically involve:

- Single-step calculations;
- Repetition of the same calculation using different values; or
- Completion of familiar tasks (e.g. compiling an income-and-expenditure statement to reflect an individual's finances).

At this level, the emphasis is on accuracy and fluency in applying standard methods in predictable situations.

Level 3: Applying Multi-step Procedures in a Variety of Contexts

Tasks at this level require learners to solve problems or complete tasks using well-established procedures and methods; however, the appropriate method is not immediately apparent from the way the problem is presented. Learners must determine which procedure or combination of procedures is most suitable and may need to carry out one or more preliminary steps before reaching a final solution.

These tasks often:

- Involve multiple stages or steps to arrive at a solution;
- Require learners to integrate mathematical and non-mathematical knowledge or skills across different topics in the curriculum;
- Present less explicit guidance than routine procedure tasks, placing greater responsibility on the learner to interpret, plan, and execute the solution process.

At this level, learners are expected to make decisions about the relevant content, procedures, and contextual considerations needed to solve the problem effectively.

Level 4: Reasoning and Reflecting

Tasks at this level require learners to engage in higher-order thinking, where they must interpret, evaluate, justify, and reflect on mathematical results, methods, or contextual implications. These tasks can be categorised into two main types:

(a) Questions requiring a decision, opinion, or prediction based on prior calculations or provided information

These questions ask learners to analyse information or outcomes—either from earlier questions or from contextual data—and use mathematical reasoning to:

- Make informed decisions;
- Formulate justified opinions;
- Provide predictions or critiques.

Examples include:

- Comparing the cost outcomes of two different electricity tariff structures and selecting the most suitable option for a household with specific needs;
- Critiquing claims made in a newspaper article based on presented crime statistics;
- Making projections about business income based on current financial trends;
- Comparing the performance data of two groups of learners in an examination and explaining which group performed better based on statistical evidence;
- Offering a viewpoint on how a government official might respond to a given set of data;
- Reviewing a household's income-and-expenditure statement and suggesting changes to improve their financial situation.

(b) Questions requiring learners to define and select appropriate mathematical strategies, while recognising limitations and external influences

These questions demand deeper engagement with problem-solving processes. Learners must determine:

- What mathematics is required to address the problem;
- Which tools or methods (e.g., tables, graphs, equations) are most suitable;
- How to perform the required calculations and interpret their results;
- The limitations of mathematical models and the role of non-mathematical factors (e.g. personal preferences or practical constraints) in real-life decision-making.

Examples include:

- Comparing two cell phone contracts by modelling the cost structures using tables, graphs, or equations, and deciding on the most cost-effective option for a specific individual—while acknowledging that a final decision may still be influenced by personal preferences such as phone model or colour;
- Using financial data to determine whether a business is financially sustainable;
- Comparing bank charges across different account types and identifying the most suitable option for a particular user profile;
- Constructing a table to model a loan scenario, considering interest, repayments, and monthly balances, and exploring the impact of interest rate changes or increased repayments on the total cost of the loan;

- Designing two packaging boxes for a product and comparing them based on material usage (surface area) and efficiency (volume), then selecting the most cost-effective design.

At this level, the emphasis is not only on accurate calculations but on critical analysis, contextual awareness, and the ability to justify decisions using both mathematical and non-mathematical reasoning. This level reflects the essence of Mathematical Literacy as a subject rooted in real-world application, reflection, and responsible decision-making.

Summary of the Mathematical Literacy Assessment Taxonomy

Level	Name	Focus	Typical Task Characteristics
Level 1	Knowing	Familiarisation with context and recall of basic concepts and terms	• Interpret information in context • Perform basic, familiar calculations • Explain common mathematical terms
Level 2	Applying Routine Procedures in Familiar Contexts	Application of known procedures to straightforward, familiar problems	• Use clearly defined methods • All required information is provided • Often single-step or repetitive tasks
Level 3	Applying Multi-step Procedures in a Variety of Contexts	Application of known procedures in less familiar or integrated contexts	• Requires choice of appropriate method • Involves multiple steps • May integrate content across topics or concepts
Level 4	Reasoning and Reflecting	Evaluation, justification, prediction, and reflection using both mathematical and real-world logic	• Involves analysis, decision-making, or critique • Requires justification or reflection • May include non-mathematical factors

F. ADMINISTRATIVE AND SUPPORT DOCUMENTATION

Appendix A: School-Based Moderation Form

Appendix B: Evidence of Moderation Form (example)

Appendix C: Consolidation Form for Learners

Appendix D: Moderation Tool

Appendix E: Letter from the Principal (*template for authentication of teacher and learner evidence*)

Appendix F: Consolidated Mark Schedule (example)

Appendix G: Learner Declaration: Use of AI (example)

APPENDIX A



MATHEMATICAL LITERACY SCHOOL BASED MODERATION FORM

Attach to Final Draft

Grade: 10 / 11 / 12		
Alternate assessment: Yes / No	Test: Yes / No	Examination: Paper 1 / 2
Date: _____		
Length: _____	Set by: _____	
Marks: _____	Moderated by: _____	

[illegible]

APPENDIX B



MATHEMATICAL LITERACY EVIDENCE OF MODERATION FORM

(Can be attached to Appendix A)

	1st Draft	Final Draft
Memo attached	Yes / No	Yes / No
Front page	Comments:	Comments:
Type setting	Correct / Incorrect Concerns:	Correct / Incorrect Concerns:
Mark allocations	Correct / Incorrect Concerns:	Correct / Incorrect Concerns:
Question level indicated? Is the distribution correct?	Yes / No Concerns:	Yes / No Concerns:
General comments		
Ready for printing?	Yes / No	Yes / No
Signature of moderator		
Date of moderation		

APPENDIX C



MATHEMATICAL LITERACY CONSOLIDATION FORM FOR LEARNERS

(To be filled in by the learner, controlled by the teacher and included as the 1st Page of the Learner File)

Examination Number:

	Date of submission	According to Appendix B	Description of task	Actual Mark	%	Weighting (Correct to 1 decimal place)
1		Test 1				<u>15</u>
2		*Test 2				<u>15</u>
3		Alternate Task 1				<u>15</u>
4		Alternate Task 2				<u>15</u>
5a		Examination – Paper 1				<u>20</u>
5b		Examination – Paper 2				<u>20</u>
		Total (rounded off to the nearest integer)				<u>100</u>

**If an examination is used as a test, the final percentage of the combined exams must be used as the raw score.*

DECLARATION OF OWNERSHIP OF WORK DONE IN THIS LEARNER FILE

Declaration by the Teacher:

I declare that, to the best of my knowledge, all the work done in this learner file is the sole work of this student.

Signed: _____

Date: _____

Declaration by the Learner:

I, _____, declare that all external sources used in this file have been properly referenced, including any use of artificial intelligence (AI) tools, and that the remaining work contained in this file is my own original work. I understand that if this is found to be untrue, I am liable for disqualification from the National Senior Certificate.

Signed: _____

Date: _____

APPENDIX D



MATHEMATICAL LITERACY MODERATION TOOL

To be completed and returned to the school

EXAMINATION CENTRE: _____ **DATE:** _____

MODERATOR: _____

Nº Learners entered for Senior Cert: _____ Nº Learner Files Moderated: _____

TEACHER FILE		(3 = fully achieved; 2 = partially achieved; 1 = no evidence)			
		3	2	1	Comment(s)
ORGANISATION					
Cover with Centre Details					
Contents page with clearly labelled digital sections or bookmarks					
FORMS					
Learner files supplied according to IEB list					
Principals letter					
Moderation forms: Regional (where applicable)					
MARKS	SBA		PRELIMS		
Appendix F – Whole group marksheet					
SBA Ranked mark sheet					
PRELIMINARY EXAMINATIONS					
Paper 1 – Evidence of school-based moderation (Appendix B)					
Paper 1 – Achieves the weighting according to thinking levels (Appendix A)					
Paper 1 – Detailed memo available					
Paper 2 – Evidence of school-based moderation (Appendix B)					
Paper 2 – Achieves the weighting according to thinking levels (Appendix A)					
Paper 2 – Detailed memo available					
TEST 1					
Minimum of 45 minutes					
Evidence of school-based moderation (Appendix B)					
Detailed memo available					
Standard of test					
TEST 2					
Minimum of 45 minutes					
Evidence of school-based moderation (Appendix B)					
Detailed memo available					
Standard of test					
Alternate Assessment 1					
Evidence of school-based moderation (Appendix B)					
Detailed memo available					
Minimum 1 – 2 hours					
Standard of task					
Alternate Assessment 2					
Evidence of school-based moderation (Appendix B)					
Detailed memo available					
Minimum 1 – 2 hours					

Standard of task				
LEARNER'S FILE				
	3	2	1	Comment(s)
Contents page with clearly labelled digital sections or bookmarks				
Appendix B				
PRELIMINARY EXAMINATIONS				
Included				
Marked according to the memo applying concept marking where required				
Correct marks have been captured onto mark sheet				
TESTS × 2				
Included				
Marked according to the memo applying concept marking where required				
Correct marks been captured onto mark sheet				
ALTERNATE ASSESSMENTS × 2				
Included				
Marked according to the memo applying concept marking where required				
Correct marks been captured onto mark sheet				

3 Topics covered (excluding preliminary examinations)	YES	NO
2 Different types of alternate assessment	YES	NO

COMMENTS: _____

Moderator's Signature: _____ Date: _____

Teacher's Signature: _____ Date: _____

APPENDIX E



MATHEMATICAL LITERACY LETTER FROM THE PRINCIPAL

School Address: _____

The IEB
 P O Box 875
 Highlands North
 2037

Dear IEB Moderator

RE: School-Based Assessment and Moderation of SBA in Grade 12

We hereby certify that:

- the School-Based Assessment (SBA) tasks submitted for moderation have been administered in accordance with the IEB Subject Assessment Guidelines;
- all assessment tasks have been internally moderated and quality assured by the relevant subject teachers;
- the required standardisation processes have taken place within the subject department;
- accurate and complete records have been maintained for all learners;
- all relevant documentation has been included, including Appendix A (School-Based Moderation Form), Appendix B (Evidence of Moderation), and Appendix C (Consolidation Form for Learners);
- the first page of each learner's portfolio has been fully completed and verified;
- all administrative requirements for SBA submission have been met.

Yours sincerely,

Subject Teacher
HOD / SBA Coordinator
Principal

Date: _____

Teacher: _____

Date: _____

Principal: _____

Date: _____



MATHEMATICAL LITERACY
EXAMPLE OF CONSOLIDATED MARK SCHEDULE

Centre Number: _____

		Learner Name/ Examination Number														
Tests	Test 1	Actual Mark														
		%														
	Test 2	Actual Mark														
		%														
		30														
Examinations	Paper 1	Actual Mark														
		%														
	Paper 2	Actual Mark														
		%														
		40														
Alternate Assessment	Task 1	Actual Mark														
		%														
	Task 2	Actual Mark														
		%														
		30														
OVERALL TOTAL		100														

APPENDIX G



MATHEMATICAL LITERACY

LEARNER DECLARATION – US OF AI IN ASSESSMENT TASKS

Candidate Name	
Subject	
Assessment Title	
Teacher	
Assessment Due Date	

I (full name), _____, hereby confirm that:

- I have read and understood my school's policy relating to Academic Dishonesty.
- The task submitted has been completed in full by me.
- I have clearly indicated in the task any sections work that were generated or assisted by AI, giving credit where it is due.
- I have adhered to the school policy regarding Academic Dishonesty – specifically, identifying where AI has been used and citing all sources of information.
- I acknowledge that I may have to verbally explain my answers / solutions presented in this task if asked by my teacher.

Candidate Signature: _____ Date: _____

Candidate must complete the table below to declare any use of AI tool in their assessment tasks:

Section of Task	AI Tool Used	Purpose of Use	Extent of AI Use	Candidate's Own Contribution
e.g. Research, drafting, editing	e.g. ChatGPT, Grammarly	e.g. Idea generation, grammar check	e.g. Light, Moderate, Extensive	e.g. Wrote all the content, AI checked grammar