

# SACAI

**SECTION C**

**GRADE 12**

**EXAMINATION GUIDELINES**

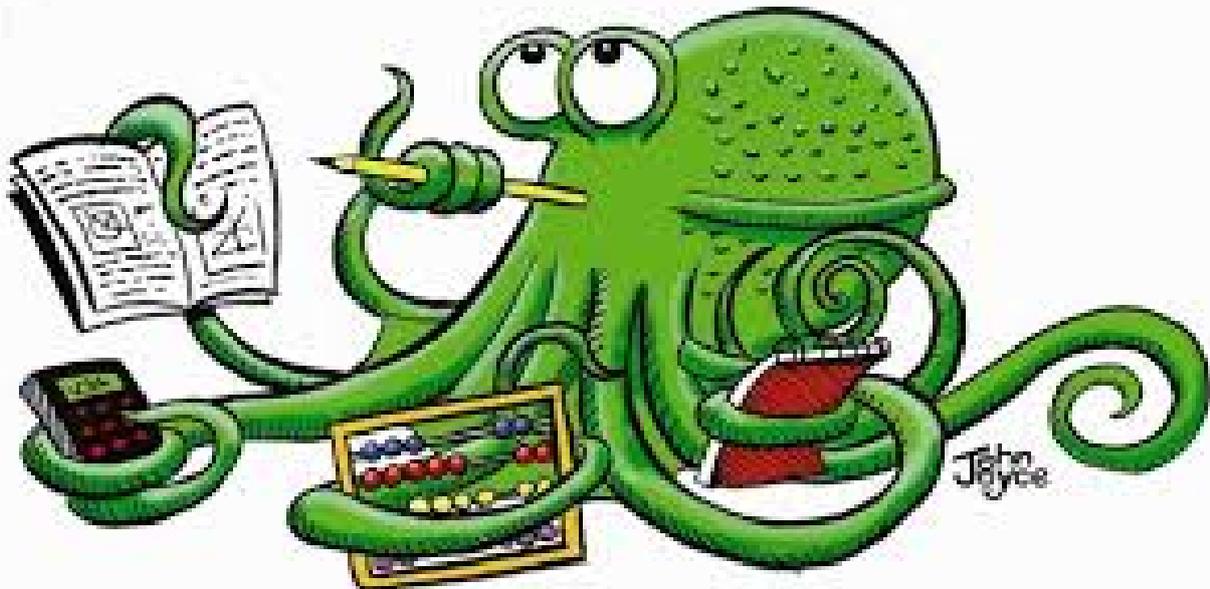
**MATHEMATICAL LITERACY**

**2016**



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## **1. Introduction**

The vision of SACAI is to provide a distinguished assessment and examination service up to level 4 on the National Qualifications Framework. (NQF)

SACAI is value driven and working towards its vision – We aim at maintaining high academic standards within the relevant policy framework while keeping our service affordable so that as many institutions and individuals as possible can benefit.

The purpose of the Examination Guidelines is to:

- Provide clarity on the depth and scope of the content to be assessed in the Grade 12 National Senior Certificate (NSC) Examinations in Mathematical Literacy.
- Assist educators to adequately prepare learners for the examinations.
- Provide guidelines to all SACAI *Mathematical Literacy* examiners as well as internal and external moderators.

The Examination Guidelines should be read in conjunction with:

### **A. *The National Curriculum Statement (NCS):***

- *Curriculum and Assessment Policy Statement (CAPS):*  
**Mathematical Literacy**
- The National Protocol for Assessment Grades R – 12.
- The National Policy pertaining to the programme and promotion requirements of the National Curriculum Statement, Grades R-12

### **B. *The Revised SACAI/CAPS Subject Guidelines (2015)***

## **2. ASSESSMENT IN GRADE 12**

### **2.1 Time and Mark allocation**

The following table indicates the number of formal question papers specified for grade 12. The table indicates the stipulated marks and time allocations for the specified question papers per term.

**TABLE 1: Number of question papers and control tests with marks and duration for Grade 12:**

<b>TERM</b>	<b>GRADE 12</b>	
<b>1</b>	Control Tests	
<b>2</b>	Paper 1 2 hours (100 marks)	Paper 2 2 hours (100 marks)
<b>3</b>	Control Test	Control Test
	Paper 1 3 hours (150 marks)	Paper 2 3 hours (150 marks)
<b>4</b>	External Examinations	
	Paper 1 3 hours (150 marks)	Paper 2 3 hours (150 marks)

#### **Important note:**

According to National Standards the requirements are 50 marks for every 60 minutes.

Educators should already prepare learners from the first term to answer question papers within limited time

### **2.2 Format of the Examination papers**

#### **2.2.1 Examinations**

The table below shows a summary of the differences between Paper 1 and Paper 2.

**TABLE 2: Summary of the differences between Paper 1 and Paper 2**

	<b>Paper 1</b>	<b>Paper 2</b>
<b>Intention</b>	Basic Skills Paper: To Assess proficiency of content and/or skills	Applications Paper: To Assess the ability to use both mathematical and non-mathematical techniques/ considerations to explore familiar and unfamiliar contexts.

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<b>Structure and scope of content and/or skills</b>	<p>Paper 1 consists of 5 questions</p> <p>Four Questions deal with contexts relating to each of the following topics:</p> <ul style="list-style-type: none"> <li>• Finance</li> <li>• Measurement</li> <li>• Maps, plans and other representations of the physical world.</li> <li>• Data Handling</li> </ul> <p>The Fifth question integrates content from across all of these Topics.</p> <p>Likelihood will be examined in the context or one or more of the other questions.</p> <p><b>NB – Each question can contain more than one context.</b></p>	<p>Paper 2 consists of 4 or 5 questions</p> <p>Each question deals with contexts drawing integrated content from across all of the following topics:</p> <ul style="list-style-type: none"> <li>• Finance</li> <li>• Measurement</li> <li>• Maps, plans and other representations of the physical world.</li> <li>• Data-handling</li> </ul> <p>Likelihood will be examined in the context or one or more of the other questions.</p> <p><b>NB – Each question can contain more than one context.</b></p>	
	<b>Below the percentage of marks to be allocated to the different taxonomy levels for Grade 12 examinations are stipulated:</b>		
	<b>Paper 1</b>	<b>Paper 2</b>	<b>Overall Allocation</b>
<b>Taxonomy Levels</b>	<b>Level 1</b>	60 % ±5%	30% ±5%
	<b>Level 2</b>	35 % ±5%	30% ±5%
	<b>Level 3</b>	5 % ±5%	20% ±5%
	<b>Level 4</b>	0	20% ±5%
<b>Contexts</b>	<p>Paper 1 consists of familiar contexts listed in the CAPS document.</p>	<p>Paper 2 consists of familiar and unfamiliar contexts not limited to the contexts in the CAPS document.</p>	

### 2.2.2 Term Tests (Weighting)

For each Term Test the following table indicates the correct taxonomy levels:

**Table 3: Summary of Taxonomy levels**

<b>Taxonomy Levels</b>	<b>Level 1 – Knowing</b>	30% ±5%
	<b>Level 2 – Applying routine procedures in familiar contexts</b>	30% ±5%
	<b>Level 3 – Applying multi-step procedures in a variety of contexts</b>	20% ±5%
	<b>Level 4 – Reasoning and Reflecting</b>	20% ±5%

**Note:** Each Term Test should have a Taxonomy level summary at the end of each memo, to indicate the correct weighing of each formal assessment.

### 2.2.3 Diagnostic Assessment

Diagnostic Assessment is implemented to provide a summative baseline for educators on how learners either successfully achieved certain outcomes as well as to identify the general barriers experienced by the learners.

Through identifying the specific barriers educators can better plan interventions to improve learners' understanding of the specific mathematical and non-mathematical concepts.

A Diagnostic Assessment should be completed after each formal assessment with the appropriate intervention plan at hand.

This form must be inserted within the educators file attached to each formal assessment.

### 2.3 Contexts

Mathematical Literacy allows individuals to make sense of, participate in and contribute to their environment and world. Learners must be able to reason, make decisions, solve problems, manage resources, interpret information, schedule events and use and apply technology. Thus, the Mathematical Literacy content should comprise of real-life contexts.

The main focus is to enable the learner to become a self-managing person, a contributing worker and a participating citizen in the society.

The context of Mathematical Literacy should comprise out of mathematical and non-mathematical techniques and/or considerations. It is thus essential that assessment items and examinations draw on **realistic and authentic contexts**.

Learners should be asked to make sense of newspaper articles, real bank statements, real plans and other authentic resources, rather than **contrived** problems containing only a semblance of reality.

## 2.4 Weighting of topics

The following minimum weightings are stipulated for each topic in examinations:

**Table 4: Minimum Weighting per Topic**

	<b>Topic</b>	<b>Weighting (%)</b>
<b>Basic Skills Topics</b>	Interpreting and communicating answers and calculations	No weighting is provided for these topics. Rather, they will be assessed in an integrated way throughout the Application Topics.
	Number and calculations with numbers	
	Patterns, relationships and representations	
<b>Application Topics</b>	Finance	35% ±5%
	Measurement	20% ±5%
	Maps, Plans and other representations of the physical world	15% ±5%
	Data Handling	25% ±5%
	Likelihood	Minimum 5%

### 3.1 Elaboration of the context for Grade 12 (CAPS)

The following tables (*Copied from DBE Examination Guidelines*) provide clarity about types of questions, calculations, applications and/or contexts that fall into the different levels of the Mathematical Literacy taxonomy.

It is essential to emphasise that the tables below do not provide a comprehensive or definitive list of all possible questions, calculations and/or tasks associated with the four levels of the taxonomy.

These examples are meant to illustrate more clearly the difference between the demands of a question at the different levels of the taxonomy.

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<b>TOPIC: FINANCE</b>				
<b>SECTION</b>	<b>LEVEL 1: Knowing</b>	<b>LEVEL 2: Applying routine procedures in familiar contexts</b>	<b>LEVEL 3: Applying multi-step procedures in a variety of contexts</b>	<b>LEVEL 4: Reasoning and Reflecting</b>
<b>Financial documents and tariff systems</b>	<ul style="list-style-type: none"> <li>* Read information directly from an electricity bill (e.g. <i>date; name of account holder; electricity consumption for the month; etc.</i></li> <li>* Show how the 'Total Due' on the electricity bill has been calculated by adding together all items listed on the bill.</li> <li>* Show how the VAT value listed on the electricity bill has been calculated when told that VAT is 14% of the value excluding VAT (that is, calculating a direct percentage of an amount).</li> </ul>	<ul style="list-style-type: none"> <li>* Use a given formula to show how the amount charged for electricity consumption shown on the bill has been determined.</li> <li>* Complete a table of values to show the cost of various quantities of electricity consumption.</li> <li>* Use the table of values to construct a graph to represent the cost of electricity consumption.</li> <li>* Increasing/ Decreasing by a given percentage</li> <li>* Determine the value before VAT was added</li> </ul>	<ul style="list-style-type: none"> <li>* Replicate the calculations/values shown on the bill for a different electricity consumption value.</li> <li>* Without any scaffold or guiding questions, draw a graph to represent the cost of electricity on a particular electricity system.</li> </ul>	<ul style="list-style-type: none"> <li>* Choose an appropriate strategy (e.g. <i>tables of values, graphs, interpreting points of intersection, etc.</i>) to compare the electricity costs for two different electricity systems and make a decision about which system is the most cost effective for a user with particular needs.</li> <li>* Analyse a newspaper article describing proposed increases in electricity tariffs and make deductions about the implications of these increases for consumers.</li> <li>* Rework the answer if the initial conditions change.</li> </ul>
<b>Income, expenditure, profit/loss, income-expenditure statements and budgets</b>	<ul style="list-style-type: none"> <li>* Classify items on an income and expenditure statement as fixed, variable and occasional income and expenditure.</li> <li>* Show how total income, expenditure and profit/loss values on an income and expenditure statement or budget have been determined.</li> </ul>	<ul style="list-style-type: none"> <li>* Construct an income and expenditure statement for an individual or a household.</li> <li>* Construct a budget for a small household project.</li> <li>* Construct a budget in order to buy and/or pay future necessities (To be able to budget for unplanned events, like car repairs or to plan for a child's university fees).</li> </ul>	<ul style="list-style-type: none"> <li>* Construct an income and expenditure statement for a business that includes a comparison of income and expenditure values over a two-year period.</li> <li>* Construct a budget for a large fundraising event.</li> <li>* Revise a budget if conditions change.</li> <li>* Construct a budget for a municipality of a small town.</li> </ul>	<ul style="list-style-type: none"> <li>* Analyse a budget for a household or business and make recommendation as to how the expenditure should be changed to improve the finances of the household/business.</li> <li>* Compare income and expenditure values for a business or organisation over a two-year period and describe differences and/or</li> </ul>

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			<p>(To responsibly allocate the correct funding to all the necessary aspects of a town, e.g. road repairs, water pipeline repairs, etc.</p>	<p>trends.                  * Analyse projected versus actual budget values and explain differences.                  * Ability to identify and/or compare responsible and irresponsible allocations within a budget and make recommendations.</p>
<p><b>Cost price and selling price</b></p>	<p>* Determine the cost price of an item by adding together given cost values for the component parts of the item.                  * Determine the income generated from the sale of an item based on a given sales price and given sales volumes.                   * Determine the cost price per kilogram of tomatoes, etc. and make comparisons between different markets (which is more economic)</p>	<p>* Compare the difference between the cost and selling price of an item by calculating the percentage mark-up in price of the selling price from the cost price.                  * Construct a table of values to show how the cost price of an item changes depending on the number of items made.                   * Determine the cost price before VAT and profit was added</p>	<p>* Draw graphs, without scaffolding or guiding questions, to show the costs involved in producing an item and money generated from the sale of the item.                  * Investigate, through research, the various costs involved in manufacturing an item, and decide on an appropriate selling price for the item.                  * Calculate profit if only one of income or expenses is given and the other still needs to be calculated.                   * Determine the needed quantity to sell and determine income of products to successfully pay the rent of the company as well as to make a profit.</p>	<p>* Conduct market research on a group of people and use the results of the research to defend a particular selling price for a product.                  * Interpret graphs showing the cost of production and income generated from the production and sale of an item, and use the graphs to make decisions about the business (e.g. <i>how many items must be manufactured and sold to cover all production costs</i>).                   * Make more economical informed decisions when deciding on calculating and comparing profits and expenditures.</p>
	<p>* Define 'break-even' in the context in which a problem is posed (e.g. <i>in</i></p>	<p>* Determine the break-even point of a business from a given table of</p>	<p>* Draw two or more graphs and identify the point of</p>	<p>* Explain the relevance of the break-even point of two</p>

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<p><b>Break-even analysis</b></p>	<p><i>the context of a business, 'break-even' refers to the income that must be generated to cover all expenses).</i></p>	<p>income and expenditure values.                  * When given two graphs that intersect, read off the value of the independent and dependent variables at the break-even point (point of intersection) of the graphs.</p> <p>Given the formulas of both income and expenditures and calculating the break-even point by only using the formulas. (Set equal to each other and calculate the unknown variables.)</p>	<p>intersection of those two graphs in order to compare different options (e.g. <i>income vs. expenditure; cellphone contract options; electricity tariff systems; etc.</i>).</p> <p>* Given the graph with the intersecting lines and break-even co-ordinates and the formula for either the income or expenditure and using the given information to calculate the other's (expenditure or income) equation.</p>	<p>graphs in relation to the problem or context for which the graphs have been drawn.                  * Explain the meaning of different regions on a graph (that is, between different points of intersection) in relation to the problem or context for which graphs have been drawn.                  * Rework the answer if the initial conditions change.                  * Make responsible decisions on profitable and future growth of a small company.</p>
<p><b>Interest, bank loans and investments</b></p>	<p>* Define 'interest' and the 'interest rate'.                  * Identify interest rate values quoted on bank statements.                  * Determine the costs of ATM withdrawals on a monthly bank statement and compare it to a fixed amount offered by the bank.</p>	<p>* Perform simple interest calculations manually (that is, without the use of a calculator) over multiple time periods.</p> <p>* Read values off graphs showing simple and compound investment scenarios.                  * Calculate compound interest compounded annually.                  * Increase or decrease a given amount by a certain percentage.</p>	<p>* Perform compound interest calculations manually (that is, without the use of a formula) over multiple time periods.</p> <p>* Complete a table that models a loan scenario and include consideration of a monthly interest calculation, monthly repayment, and monthly amount outstanding on the loan.                  * Draw graphs from given tables of values to represent loan scenarios.                  * Calculate compound growth/decline                  * Construct a simple interest and a compound interest graph on the same axes and</p>	<p>* Construct a model of a loan or investment scenario without scaffolding or guiding questions.</p> <p>* Investigate and describe the impact of increasing the monthly repayments on the total cost of the loan/investment.                  * Investigate and describe the impact of making a lump sum payment into a loan/investment during the first half of the loan/investment period on the total cost of the loan/investment.                  * Rework the answer if need be.</p>

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			make decisions from reading of from the graph. As well as reading of the break-even point	* Make informed decisions on which investment rate will offer the best outcome for the future.
<b>Inflation</b>	* Define the term 'inflation'.	* Show by calculation how the price of an item might change if affected by inflation (that is, increasing a value by a percentage).	* Calculate compound growth/decline. * Calculate costs before new inflation rates differing over two or more years were added. * Calculating how inflation is influencing a person's salary by integrating with budget questions.	* Show by calculation how the price of an item might change if affected by inflation over multiple time periods * Use knowledge of inflation rates to argue and justify a particular salary * Rework the answer if the initial conditions change.
<b>Taxation</b>	* Identify the name of the employee listed on a pay slip and the month for which the pay slip has been issued. * Identify the employee's monthly salary. * State how the employees 'taxable income' has been determined by referring to the salary and deduction values shown on the payslip. * Define the terms 'gross pay', 'net pay', 'deductions', and 'taxable income' shown on a payslip.	* Read appropriate tax values from given income tax deduction tables. * Identify the income tax bracket into which an individual falls based on a given monthly and/or annual income. * Calculate and compare the influence of taxation on an employee's salary slip before salary increase and after salary increase.	* Use formulae provided on income tax bracket tables to calculate an individual's annual and monthly income tax. * Investigate through calculation how the tax rebate value is determined. * Calculate compound growth/decline.	* Compare income tax tables over different financial periods and explain how an individual's tax may have changed from one period to another. * Investigate the effect that an increase in salary has on increased tax payments. * Analyse graphs showing changes in income tax over different time periods and explain differences
	* Identify the exchange rate between two currencies from a given table or	* Use a given exchange rate to determine the value of one	* Perform currency conversion calculations,	* Explain how the Big Mac Index' provides a tool for

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<p><b>Exchange rates</b></p>	<p>rate board. * Understand how exchange rates are determined</p>	<p>currency for a specific quantity of another currency.  * Use given exchange rates and determine the change that should be given to a client paying for a certain item using another currency, e.g. Item sold in ZA Rands but tourist pays in Euros.</p>	<p>taking into account currency exchange fees charged by banks and other financial institutions. * Ability to plan for a trip to another country, taking in regard the exchange rates, taxes included, as well as integrating it with a budget question.</p>	<p>determining the worth of one currency in relation to another currency; * Explain why it is not necessarily accurate when a South African tourist in America exclaims that a can of cool drink that costs \$2,00 (R14,00) in America is much cheaper in South Africa. * To be able to clearly discuss and explain what influences the exchange rates around the world.</p>
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**TOPIC: MEASUREMENT**

SECTION	LEVEL 1: Knowing	LEVEL 2: Applying routine procedures in familiar contexts	LEVEL 3: Applying multi-step procedures in a variety of contexts	LEVEL 4: Reasoning and Reflecting
<p><b>Conversions</b></p>	<p>* Convert between mm, cm, m and km. * Convert between g and kg. * Convert between ml and litres.</p>	<p>* Convert from °C to °F (and vice versa) using given formulae. * Convert between different systems using given conversion factors (e.g. <i>convert from m<sup>3</sup> to litres using the fact that 1 m<sup>3</sup> = 1 000 litres</i>). Note: There are many different systems that can be used to test conversion skills, thus it is important that learners understand the conversion process.</p>	<p>* Convert between different systems using given conversion tables, where it is necessary to first identify and then use an appropriate conversion factor from the table.</p>	<p>* Compare solutions to a problem expressed in different units and make a decision about what unit is the most appropriate or useful for the particular context in which the problem is posed.</p>
	<p>* Measure accurately using appropriate measuring instruments (e.g. <i>ruler; tape measure; kitchen scale; jugs</i>;</p>	<p>* Perform calculations involving measured values (e.g. <i>working out how much longer one piece of wood is</i></p>	<p>* Use measured values in conjunction with other content or skills to complete a larger project (e.g. <i>measure the</i></p>	<p>* Make decisions about the need for accuracy when performing a measurement in a particular context.</p>

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<p><b>Measure length, weight, volume and temperature</b></p>	<p><i>etc.)</i></p> <ul style="list-style-type: none"> <li>* Understanding BMI (Body Mass Index) tables and reading off all necessary information from the table.</li> <li>* Determining the amount of water (litre) used when a tab is opened for a certain period of time.</li> </ul>	<p><i>than another piece).</i></p> <ul style="list-style-type: none"> <li>* Complete basic BMI (Body Mass Index) formula's and draw conclusions</li> <li>* Determining the correct temperatures for cooking when using a Western Oven (Able to convert degree Celsius to Degree Fahrenheit and vice versa using a given formula)</li> </ul>	<p><i>dimensions of a bedroom to determine the running metres of carpet needed for the floor).</i></p> <ul style="list-style-type: none"> <li>* Make adjustments to calculated values to accommodate measurement errors and inaccuracies due to rounding.</li> <li>* Given a graph representing a baby's growth towards an adult in comparison to the BMI, draw conclusions and do calculations from within these graphs.</li> </ul>	<ul style="list-style-type: none"> <li>* Interpret a measured value and make a decision based on the value (e.g. <i>measure the temperature of a child and decide if the child should be taken to hospital).</i></li> <li>* Make informed conclusions on BMI(Body Mass Index)</li> <li>* Compare graphs on BMI (Body Mass Index) from different countries, make comparisons and discuss possible reasons for results.</li> </ul>
<p><b>Perimeter, Area, surface-area and volume</b></p>	<ul style="list-style-type: none"> <li>* Define terms (e.g. '<i>area</i>', '<i>perimeter</i>', '<i>volume</i>', '<i>radius</i>', <i>etc.</i>)</li> <li>* Identify from a list of given formulae which formulae relate to perimeter calculations, which relate to area calculations, etc.</li> <li>* Determine the radius of a circle from a given diameter.</li> <li>* Know that area is expressed in units <math>\text{cm}^2</math> (e.g. <math>\text{cm}^2</math>) and volume in units <math>\text{cm}^3</math> (e.g. <math>\text{cm}^3</math>).</li> <li>* Know and use formulae for perimeter, area, surface-area and volume.</li> </ul>	<ul style="list-style-type: none"> <li>* Calculate perimeter, area, surface-area and volume by substituting given values into given formulae.</li> <li>* Describe relationships between input and output values in a table of data concerning space, shape and measurement.</li> </ul>	<ul style="list-style-type: none"> <li>* Perform preliminary calculations to determine dimensions required in perimeter/area/volume calculations and then calculate perimeter/area/volume (e.g. <i>when asked to determine the volume of concrete needed for the foundations of a house, interpret top view plans of the foundation trench of a house, use the plans to determine the dimensions of the trench, and then calculate the volume of the trench).</i></li> <li>* Perform post-liminary calculations after perimeter, area and volume has been determined. (<i>Calculating the number of small marbles that can fit into a cylinder</i>)</li> </ul>	<ul style="list-style-type: none"> <li>* Use perimeter, area and/or volume calculations to complete a project, where it is not stated specifically what type of calculation is required (e.g. <i>when asked to determine the amount of paint needed to paint a building, first interpret plans to determine dimensions of the walls, then calculate the surface area of the walls, then use the paint conversion ratio on the back of the paint tin to determine the required number of litres of paint required).</i></li> </ul>

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<b>Time</b>	<ul style="list-style-type: none"> <li>* Read time values on a clock or watch.</li> <li>* Converting between seconds, minutes and hours</li> <li>* Read time values of a world-timeline</li> </ul>	<ul style="list-style-type: none"> <li>* Record time values and perform calculations with time.</li> <li>* Determine times in different countries using the World-Timeline graph.</li> </ul>	<ul style="list-style-type: none"> <li>* Interpret time values on a bus timetable to determine departure, arrival and travelling times.</li> </ul>	<ul style="list-style-type: none"> <li>* Perform time calculations in conjunction with maps and other travel resources in order to plan a trip (e.g. <i>determine approximate travelling times, appropriate stopping points for refuelling, the time to start a journey in order to arrive at a destination at a particular time, etc.</i>).</li> </ul>
<b>TOPIC: MAPS, PLANS AND OTHER REPRESENTATIONS OF THE PHYSICAL WORLD</b>				
<b>SECTION</b>	<b>LEVEL 1: Knowing</b>	<b>LEVEL 2: Applying routine procedures in familiar contexts</b>	<b>LEVEL 3: Applying multi-step procedures in a variety of contexts</b>	<b>LEVEL 4: Reasoning and Reflecting</b>
<b>Scale</b>	<ul style="list-style-type: none"> <li>* Explain the meaning of a given scale (e.g. <i>explain what the scale 1: 100 means in terms of the measurements on a plan and actual dimensions</i>).</li> <li>* Understand that a scale has the same units on both sides e.g. Scale= 1 cm:10 cm</li> </ul>	<ul style="list-style-type: none"> <li>* Use a given scale to determine actual measurements when given measured values, or measured values from given actual values. (<i>Determining the distances between towns from a map</i>)</li> <li>* Increase or decrease the size of an product, volume of an object, etc. through the use of a scale.</li> </ul>	<ul style="list-style-type: none"> <li>* Use a given scale in conjunction with measurement on a plan/map to determine length/dimensions.</li> <li>* Determine the scale of a map or plan.</li> <li>* Use a given scale in conjunction with other content or skills to complete a project (e.g. <i>use a given scale to determine the dimensions in which to draw a 2-dimensional plan of an object, and then draw the plan</i>).</li> </ul>	<ul style="list-style-type: none"> <li>* Critique the scale in which an object has been drawn and offer an opinion as to a more appropriate scale.</li> <li>* Decide on an appropriate scale to which to draw a picture or build a model, and then complete the project.</li> </ul>
<b>Maps</b>	<ul style="list-style-type: none"> <li>* Identify the labels/names of national roads (e.g. N3) that must be travelled on to travel between two locations.</li> <li>* Identify the names of the towns on</li> </ul>	<ul style="list-style-type: none"> <li>* Identify the position of two locations on a map and use given distance values on the map to determine the travelling distance between the two locations.</li> </ul>	<ul style="list-style-type: none"> <li>* Use a map in conjunction with a distance chart to determine the shortest route to travel between two locations.</li> </ul>	<ul style="list-style-type: none"> <li>* Critique a proposed travel route in relation to distance, estimated travelling times, etc. and suggest and justify possible alternative routes.</li> <li>* Use maps in conjunction</li> </ul>

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	<p>the route between two locations.</p> <ul style="list-style-type: none"> <li>* Identify the scale of a map.</li> <li>* Read of the Grid-Reference from a map</li> </ul>	<ul style="list-style-type: none"> <li>* Interpret a given set of directions and describe what location the directions lead to.</li> <li>* Provide a set of directions to travel between two locations in a town using street names.</li> </ul>	<ul style="list-style-type: none"> <li>* Identify a possible route between two locations on a map, measure the distance between the locations, and use a given scale to estimate the distance between the two locations.</li> <li>* Estimate travelling times between two or more locations based on estimated travelling speed and known or calculated distances</li> </ul>	<p>with other travel resources (e.g. <i>exchange rate information; distance chart; bus timetable; etc.</i>) and financial information (e.g. <i>fare tables; petrol price; etc.</i>) to plan and cost a trip).</p> <ul style="list-style-type: none"> <li>* Make decisions regarding appropriate stopping points during a journey based on considerations of fatigue, petrol consumption travelling time, etc.</li> </ul>
<b>Plans</b>	<ul style="list-style-type: none"> <li>* Identify the scale of a plan.</li> <li>* Basic knowledge of house plans (Front of house always faces North)</li> <li>* Define terms (e.g. <i>floor plan; elevation plan; layout plan; etc.</i>).</li> <li>* Read off the value(s) of given dimensions on the plan (e.g. <i>the length of the wall is 4 m</i>).</li> </ul>	<ul style="list-style-type: none"> <li>* Use a given key to identify the number of windows/doors/rooms shown on a plan for a building.</li> <li>* Identify on which plan a particular structure is shown (e.g. <i>the door is shown on the North elevation plan</i>).</li> </ul>	<ul style="list-style-type: none"> <li>* Measure dimensions on a plan and use a given scale to determine actual dimensions.</li> <li>* Use plans in conjunction with other content, skills or applications to complete a project (e.g. <i>interpret plans to determine the dimensions of a room in order to establish the amount of carpet needed for the floor of the room</i>).</li> </ul>	<ul style="list-style-type: none"> <li>* Describe an item represented in a plan.</li> <li>* Critique the design of a structure shown on a plan.</li> <li>* Decide on an appropriate scale in which to draw a plan and then draw the plan.</li> <li>* Make connections between plans showing different views of the same structure (e.g. <i>explain which wall shown on a floor plan is represented on a particular side view plan</i>).</li> </ul>
<b>Models</b>	<ul style="list-style-type: none"> <li>* Measure the dimensions of a structure for which a model or 2D drawing will be constructed.</li> <li>* Identify the Top-, Front-, and Side-View of a 2D Model.</li> </ul>	<ul style="list-style-type: none"> <li>* Build a model using a given table of dimensions or a given net/cut-out.</li> </ul>	<ul style="list-style-type: none"> <li>* Use a given scale to determine the dimensions in which to build a model or make a 2D drawing, and complete the project.</li> <li>* Build a model and use the model in conjunction with other content, skills or applications to solve a problem (e.g. <i>build a model of a container and use the model</i></li> </ul>	<ul style="list-style-type: none"> <li>* Decide on an appropriate scale in which to build a model or make a 2D drawing, use the scale to determine dimensions, and complete the project.</li> <li>* Construct and compare two models in terms of storage space and materials used and make a decision about which</li> </ul>

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			<p><i>to investigate different types of packaging arrangements; or build a model of a container and determine the surface area and volume of the model to investigate the amount of storage space available in the container).</i></p>	<p>model will be the better choice for packaging an item.</p> <p>* Analyse a model and critique the layout of the structure shown in the model.</p>
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<b>TOPIC: DATA HANDLING</b>				
<b>SECTION</b>	<b>LEVEL 1: Knowing</b>	<b>LEVEL 2: Applying routine procedures in familiar contexts</b>	<b>LEVEL 3: Applying multi-step procedures in a variety of contexts</b>	<b>LEVEL 4: Reasoning and Reflecting</b>
<b>Developing questions and collecting data</b>	<ul style="list-style-type: none"> <li>* Read information directly from a given questionnaire/survey (e.g. <i>the name of the organisation for which the questionnaire is being conducted</i>).</li> <li>* Complete a given questionnaire.</li> </ul>	<ul style="list-style-type: none"> <li>* Conduct a given questionnaire/survey with a group of people.</li> </ul>	<ul style="list-style-type: none"> <li>* Decide on appropriate questions to include on a questionnaire/survey, construct and then conduct the questionnaire/survey.</li> </ul>	<ul style="list-style-type: none"> <li>* Critique the questions/layout of a questionnaire/survey.</li> </ul>
<b>Classifying and organising data</b>	<ul style="list-style-type: none"> <li>* Sort data from smallest to biggest.</li> <li>* Count the number of values in a data set.</li> <li>* State the difference between categorical data and numerical data; discrete and continuous data.</li> <li>* Read information from frequency tables.</li> </ul>	<ul style="list-style-type: none"> <li>* Sort data according to two categories (e.g. <i>sort a set of data separately for females and males</i>).</li> <li>* Complete a given frequency table.</li> <li>* Calculate percentage values to represent the relative sizes of different categories of data.</li> </ul>	<ul style="list-style-type: none"> <li>* When given a raw set of data, sort the data, decide on appropriate intervals (if necessary), and construct a frequency table to organise the data. If necessary, use the frequency table to draw an appropriate graph to represent the data.</li> </ul>	<ul style="list-style-type: none"> <li>* Make a deduction about whether collected information is biased or valid based on the structure of instrument used to collect the data and the way in which the data was collected.</li> <li>* Explain with justification whether data is discrete or continuous.</li> <li>* Analyse data organised in tables and make deductions about trends in the data.</li> </ul>

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<p align="center"><b>Measuring data/ Summarising data</b></p>	<ul style="list-style-type: none"> <li>* Identify the maximum and minimum values in a set of data.</li> <li>* Identify the mode for arranged data.</li> <li>* Identify the median for odd data that has already been arranged.</li> </ul>	<ul style="list-style-type: none"> <li>* Calculate mean and range.</li> <li>* Calculate the median for even data.</li> <li>* Calculate the median if the data is not arranged.</li> <li>* Calculate the quartile values for arranged data.</li> <li>* Calculate the inter-quartile range when quartile values are given.</li> </ul>	<ul style="list-style-type: none"> <li>* Calculate the mean, median and modal average for a set of data and decide with reasons which average provides the most accurate representation of the data.</li> <li>* Use data presented on a graph to determine the mean, median, mode and range of a data set.</li> <li>* Calculate the quartile values for data that is not arranged.</li> <li>* Calculate the inter-quartile range when the quartile values are not given.</li> </ul>	<ul style="list-style-type: none"> <li>* Analyse measures of central tendency and spread and make deductions about trends in the data.</li> <li>* Interpret tables and charts showing percentile/quartile values and explain what those values represent in relation to the scenario represented in the table/chart.</li> <li>* Compare measures of central tendency/spread calculated for two or more sets of data and use these measures to explain differences between the data sets.</li> </ul>
<p align="center"><b>Representing data</b></p>	<ul style="list-style-type: none"> <li>* Read values directly from the values provided on graphs.</li> </ul>	<ul style="list-style-type: none"> <li>* Draw a specified graph from a given table of data.</li> <li>* Estimate values from given graphs.</li> </ul>	<ul style="list-style-type: none"> <li>* Organise data using an appropriate table, decide on the most appropriate format for representing the data (that is, actual values or percentages), and decide on the most appropriate graph needed to represent the data.</li> </ul>	<ul style="list-style-type: none"> <li>* Analyse graphs and make deductions about trends in the data and predictions for the future.</li> <li>* Identify and describe the use and misuse of statistics and make justified recommendations.</li> </ul>
<b>TOPIC: PROBABILITY</b>				
<b>SECTION</b>	<b>LEVEL 1: Knowing</b>	<b>LEVEL 2: Applying routine procedures in familiar contexts</b>	<b>LEVEL 3: Applying multi-step procedures in a variety of contexts</b>	<b>LEVEL 4: Reasoning and Reflecting</b>
	<ul style="list-style-type: none"> <li>* Read values directly from the values provided on graphs.</li> </ul>	<ul style="list-style-type: none"> <li>* Draw a specified graph from a given table of data.</li> <li>* Estimate values from given graphs.</li> </ul>	<ul style="list-style-type: none"> <li>* Organise data using an appropriate table, decide on the most appropriate format for representing the data (that is, actual values or</li> </ul>	<ul style="list-style-type: none"> <li>* Analyse graphs and make deductions about trends in the data and predictions for the future.</li> </ul>

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<b>Representing data</b>			percentages), and decide on the most appropriate graph needed to represent the data.	* Identify and describe the use and misuse of statistics and make justified recommendations.
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**3.2 Familiar Topics**

<b>SOME FAMILIAR TOPICS</b>		
<b>FINANCE</b>	<b>Financial documents and tariff systems</b>	Household bills; shopping documents; banking documents; household budgets. Documents relating to workplace and small business finance. Documents relating to national/global and more complex financial topics. Municipal tariffs, telephone tariffs; transport tariffs – two or more comparisons.
	<b>Income, expenditure, profit/loss, income- and expenditure statements and budgets</b>	Small business – bread-baking, tuck shop, street vendor, flea-market stall, cell phone container; garden services; painting; car wash, catering; crèche; Personal income and expenditure Business and/or workplace income and expenditure Income and expenditure for larger organisations
	<b>Cost price, Selling price and Profit</b>	Small business – bread-baking, tuck shop, street vendor, flea-market stall, cell phone container; garden services; painting; car wash, catering; crèche
	<b>Break-even analysis</b>	Small home industry Small business Subsistence farming Tariff systems – electricity, telephone, rental options, etc. Interest comparisons – Investments, inflation, original value and value decrease comparisons e.g. vehicles, bicycles
	<b>Interest bank loans and investments</b>	Hire purchase agreements and loans Investments – fixed deposit accounts only Bank accounts with a changing balance Other investments – retirement annuities, funeral plans, etc. All banking topics – credit cards, loans, etc.
	<b>Inflation</b>	Influence of inflation on personal/household, business and global financial activities Inflation impact on the value of bicycles (past, present and future)
	<b>Taxation</b>	VAT (Value before VAT was added and after VAT was added in any business) , UIF, Personal Income Tax
	<b>Exchange rates</b>	Planning trips/holidays in other countries Working with exchange rates within a small business

<b>SOME FAMILIAR TOPICS</b>		
<b>MEASUREMENT</b>	<b>Conversions</b>	Household, school and wider community projects – baking, cooking, catering, building, painting, etc.
	<b>Measure length, weight, volume and temperature</b>	Household, school and wider community projects – baking, cooking, catering, building, etc.
	<b>Perimeter, area and volume</b>	Household, school and wider community projects – baking, cooking, catering, building, etc. Pizza hut, Barbeque Grill, Kitchen Cupboards, Bookracks, Water troughs
	<b>Time</b>	Household, school and wider community projects – baking, cooking, catering, building, etc .
	<b>Maps and Scales</b>	Maps showing:

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<b>DATA HANDLING</b>		<ul style="list-style-type: none"> <li>• Seating plan and/or layout of a classroom</li> <li>• Layout of buildings and or sports fields at a school</li> <li>• Layout of stores in shopping centres</li> <li>• Seating plans in cinemas and sport stadiums, examinations, weddings, matric dance, etc.</li> <li>• Street maps with and without a grid reference</li> <li>• National and provincial road and rail maps</li> <li>• Strip charts showing distance on a portion of road</li> <li>• Elevation maps – e.g. comrades marathon route</li> <li>• Residential or housing estate</li> </ul>
	<b>Plans</b>	Instruction and assembly diagrams containing words and/or pictures Also all the contexts covered in Maps and Scales Views of houses, schools, and other buildings – Front, Side and Top view
	<b>Models</b>	Packaging containers – fruit juice containers, chocolate boxes, etc. Pizza hut, Barbeque Grill, Kitchen Cupboards, Bookracks, Water troughs.

SOME FAMILIAR TOPICS		
<b>DATA HANDLING</b>	<b>Classifying and Organising Data</b>	Test and Exam results School sports Results
	<b>Summarising Data</b>	National and provincial:
	<b>Representing Data</b>	<ul style="list-style-type: none"> <li>* Health statistics (BMI tables and graphs)</li> <li>* Education Statistics</li> <li>* Accidents (Road accidents on Public Holidays compared to other days, alcoholism, etc.)</li> <li>* Population (Percentage of different races, Languages in SA, etc)</li> <li>* Historical inflation and/or exchange rate data</li> </ul> Growth and Charts for babies and Children

SOME FAMILIAR TOPICS		
<b>PROBABILITY</b>	<b>Expressions of Probability/ Prediction/ Evaluate expressions of probability</b>	Games with coins and dice Weather Predictions Pregnancy Test/ Drug Test National Lottery gambling scenarios – Powerball, slot, machines, etc. Risk Assessment – insurances Newspaper articles Sport match outcomes

#### 4. CONCLUSION

The Examination Document is only meant to act as an Aiding Tool for Educators to provide an informative perspective on what to expect when learners prepare for examinations.

It is important that this document is read in correspondence with the **Revised SACAI CAPS Mathematical Literacy Guidelines (2015)**.