



## CAMI Education links: Maths Literacy NQF Level 3

<b>MATHS LITERACY – NQF Level 3</b>		
<b>CONTENT</b>	<b>LEARNING OUTCOME</b>	<b>CAMI LINKS</b>
<b>1.1</b> <b>Use numbers correctly when working with problems in the workplace</b>	<ul style="list-style-type: none"><li>• Use numbers to count, order and estimate</li><li>• Use positive and negative numbers as directional indicators</li><li>• Use fractions, decimals and percentages as measures of parts of a whole</li><li>• Find decimal equivalents of any fraction using a calculator</li><li>• Convert between decimal fractions and percentages</li><li>• Write time using conventions of:<ul style="list-style-type: none"><li>- am/pm</li><li>- 24 hour clock</li><li>- Analogue and digital</li><li>- Convert between different time notations</li></ul></li></ul>	<b>1.7.2.3</b> <b>2.4.5.2</b> <b>2.4.6.1</b> <b>2.4.6.2</b> <b>2.3.5.3</b> <b>2.3.5.4</b> <b>2.3.5.5</b> <b>2.3.5.6</b> <b>2.3.5.9</b> <b>2.3.5.10</b> <b>9.2.1.3</b> <b>9.2.1.8</b> <b>9.2.2.6</b> <b>9.2.2.7</b> <b>9.2.2.8</b> <b>9.2.2.9</b> <b>9.2.2.10</b>
<b>1.2</b> <b>Perform calculations correctly to solve problems in the workplace</b>	<ul style="list-style-type: none"><li>• Perform calculations correctly by means of paper, mental and/or calculators</li><li>• Round numbers (round up, down or off) according the requirements of the context</li><li>• Apply addition and multiplication properties (distributive and associative) to simplify calculations where possible and/or useful</li><li>• Estimate to anticipate answers and evaluate the result of a calculation and/or measurement</li><li>• Estimate unknowns as necessary to solve problems</li><li>• Use the following functions on a basic calculator:<ul style="list-style-type: none"><li>- addition, subtraction, multiplication, division</li><li>- percentage</li></ul></li></ul>	<b>1.7.1.1</b> <b>1.7.1.2</b> <b>1.7.1.3</b> <b>1.7.1.6</b> <b>1.7.1.7</b> <b>1.7.7.3</b> <b>1.7.7.5</b> <b>1.7.7.6</b> <b>1.7.5.4</b> <b>1.7.5.6</b> <b>1.7.5.7</b> <b>1.7.5.8</b>



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	<ul style="list-style-type: none"> <li>- memory</li> <li>- “clear” and “clear all” keys</li> <li>• Solve problems that involve ratio / proportion (linear and inverse) and/or rate and/or percentage</li> </ul>	<p><b>3.8.7.3</b> <b>3.8.7.4</b></p>
<p style="text-align: center;"><b>1.3</b> <b>Identify and use appropriate measuring tools and techniques to solve problems in the workplace</b></p>	<ul style="list-style-type: none"> <li>• Estimate anticipated measurements where possible based on a sense/feel for different dimensions (i.e. have a feel of dimensions in relation to common objects)</li> <li>• Select and use appropriate measuring instruments:             <ul style="list-style-type: none"> <li>- ruler, measuring tape, trundle wheel and venire scales</li> <li>- scales</li> <li>- measuring jugs, cups, measuring cylinders, burettes and pipettes</li> <li>- thermometer</li> <li>- watch or stopwatch</li> <li>- other measuring instruments appropriate to the context / qualification</li> </ul> </li> <li>• Read meters and dials on instruments, tools and machines</li> <li>• Set prescribed dial settings on instruments, tools and machines</li> <li>• Calculate the following measurements using formulae as necessary             <ul style="list-style-type: none"> <li>- AREA: rectangle, triangle, circle and other shapes that can be decomposed into rectangles, triangles and circles</li> <li>- VOLUME: rectangular prisms, cylinders and other objects that can be decomposed into rectangular prisms and cylinders</li> <li>- TIME: elapsed time, calculations involving time zones</li> <li>- DISTANCE: (using scale) and</li> </ul> </li> </ul>	<p><b>9.1.1.3</b> <b>9.1.1.4</b> <b>9.1.3.3</b> <b>9.5.1.4</b> <b>9.1.4</b></p> <p style="text-align: center;"><b>Class activity</b></p> <p><b>9.3.2.6</b> <b>9.3.2.7</b> <b>9.3.5.1</b> <b>9.3.4.4</b> <b>9.5.2.1</b> <b>9.5.2.2</b> <b>9.5.2.3</b> <b>9.5.2.4</b> <b>9.5.3.2</b> <b>9.5.3.3</b> <b>9.5.3.4</b></p>



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	<p>direction</p> <ul style="list-style-type: none"> <li>- Other dimensions appropriate to the context / qualification using formulae supplied</li> <li>• Report the solution with a number of decimal places and in units appropriate to the problem</li> <li>• Calculate indirect measurements from information available</li> <li>• Perform conversions using known relationships between: <ul style="list-style-type: none"> <li>- mm – cm – m – km</li> <li>- ml – l</li> <li>- g – kg – ton</li> <li>- sec – min – hours - days</li> </ul> </li> <li>• Use conversion tables (supplied) to perform conversions appropriate to the context / qualification</li> <li>• Calculate values using rates including: <ul style="list-style-type: none"> <li>- conversion rate e.g. grams to kilograms</li> <li>- consumption rates: e.g. km per litre</li> <li>- Distance, time, speed rates e.g. km/h</li> <li>- Cost rates e.g. ml of tint per ml of peroxide</li> <li>- Other rates appropriate to the context / qualification</li> </ul> </li> <li>• Determine rate from given values / relationships</li> </ul>	<p><b>9.1.2.6</b> <b>9.1.3.4</b> <b>9.2.2.10</b></p>
<p><b>2.1</b> <b>Identify and extend patterns for different relationships in the workplace</b></p>	<ul style="list-style-type: none"> <li>• Investigate and extend numerical and geometrical patterns and trends in data <ul style="list-style-type: none"> <li>- constant difference patterns (arithmetic progression) e.g. the cost of a number of items</li> <li>- constant ratio patterns (geometrical progression) e.g. fixed deposit bank account with a fix interest rate</li> </ul> </li> </ul>	



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	<ul style="list-style-type: none"><li>- patterns associated with inverse and direct proportion relationships</li><li>- situations in which there is no mathematical relationship between the independent and dependent variable but in which a trend can be identified e.g. height vs age for children</li><li>• Use both the relationship between consecutive terms and the relationship between the term's position and its value to find missing / additional terms in a pattern</li><li>• Interpolate and extrapolate to estimate and predict values based on trends evident in situations</li><li>• Describe patterns in words (spoken and written) and through algebraic descriptions of them (formulae)</li><li>• Describe trends in words that include:<ul style="list-style-type: none"><li>- increasing and / or decreasing critical values</li><li>- maximum and minimum values, and</li><li>- discreet and / or continuous</li></ul></li><li>• Generate numerical and geometrical patterns from descriptions given in words (instructions) and formulae</li></ul>	<p><b>4.1.6.3</b></p> <p><b>4.1.7.8</b></p>
<p><b>2.2</b> <b>Identify and use information from different representations of relationships to solve problems in the workplace</b></p>	<ul style="list-style-type: none"><li>• Identify and select information including:<ul style="list-style-type: none"><li>- dependent variables for given independent variables</li><li>- independent variables for given dependent variable</li><li>- critical points including zeros</li><li>- intervals over which the relationship values increase and/or</li></ul></li></ul>	



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	<p style="text-align: center;">decrease</p> <p>from the following representations of relationships:</p> <ul style="list-style-type: none"> <li>- tables</li> <li>- graphs</li> <li>- formulae and equations</li> </ul> <ul style="list-style-type: none"> <li>• Use formulae supplied to:             <ul style="list-style-type: none"> <li>- determine dependent variable for given independent variables</li> <li>- determine independent variables for given dependent variables</li> </ul> </li> </ul> <p>by performing appropriate operations including:</p> <ul style="list-style-type: none"> <li>- basic arithmetic operations</li> <li>- calculations with exponents, square and cube roots</li> <li>- solving equations</li> </ul> <ul style="list-style-type: none"> <li>• Determine formulae and / or equations to describe relationships where these exist, including:             <ul style="list-style-type: none"> <li>- constant relationships</li> <li>- linear relationships</li> <li>- inverse proportion relationships</li> </ul> </li> </ul>	<p style="text-align: right;"><b>6.2.1</b></p> <p style="text-align: right;"><b>6.1.3</b> <b>4.1.3.5</b></p> <p style="text-align: right;"><b>4.1.3.3</b> <b>4.1.3.4</b> <b>4.1.3.6</b></p>
<p style="text-align: center;"><b>2.3</b></p> <p><b>Translate between different representations of relationships found in the workplace</b></p>	<p>Translate between representations of relationships as follows:</p> <ul style="list-style-type: none"> <li>• complete a table of values by reading values from graphs</li> <li>• complete a table of values for formulae and / or descriptions of relationships</li> <li>• plot a graph from the values in a table of values</li> <li>• match formulae / equations to graphs and / or tables of values of the relationship based on features and / or trends</li> </ul> <p>Choose and develop a representation from among:</p>	<p style="text-align: right;"><b>6.2.5</b> <b>6.2.3</b></p>



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	<ul style="list-style-type: none"> <li>• tables</li> <li>• graphs</li> <li>• formulae and equations</li> </ul> <p>that most effectively communicates and / or illustrates a result or finding</p>	
<p><b>3.1</b> <b>Manage finances with confidence in personal and/or familiar context as well as finances associated with workplace based job descriptions</b></p>	<ul style="list-style-type: none"> <li>• Identify, record and manage sources of income related to workplace based job description: RANGE: Sources of income include: <ul style="list-style-type: none"> <li>- sales / services</li> <li>- rental</li> <li>- donations / grants</li> </ul> </li> <li>• Account for how / where income is kept (bank account, cash)</li> <li>• Categorize sources of income as fixed / variable</li> <li>• Maintain records of income according to requirements of workplace (e.g. receipts, petty cash vouchers. Invoices)</li> <li>• List and manage expenses related to workplace based job description RANGE: Expenses include <ul style="list-style-type: none"> <li>- Salary / wages / commission</li> <li>- Running expenses</li> <li>- Raw materials / stock / products</li> <li>- Investments / savings</li> </ul> </li> <li>• Understand the importance of saving for future / occasional expenses. Expenses are categorized as fixed and variable.</li> <li>• Maintain records of expenses according to requirements of workplace (e.g. receipts , petty cash vouchers, invoices)</li> <li>• Develop and maintain income / expenditure statements</li> <li>• Develop budgets based on previous income / expenditure statements</li> <li>• Develop budgets for new projects and / or activities (e.g. new</li> </ul>	



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	<p>product / service)</p> <ul style="list-style-type: none"> <li>• Explain variations between budgeted and actual income / expenditure</li> </ul>	
<p><b>3.2</b> <b>Read, interpret and act on financial information presented in documents in a personal, workplace based and familiar context</b></p>	<p>Identify balance on a statement and distinguish between credit and debit. Identify the following:</p> <ul style="list-style-type: none"> <li>• Income / credit and/or expenses/debit</li> <li>• Balance</li> <li>• Beneficiaries / recipients</li> <li>• Payments due</li> <li>• Date / time period</li> <li>• Rates / times</li> <li>• Costs</li> <li>• Payment options</li> </ul> <p>Select and interpret information from documents. RANGE: Ex. Analyze which transactions contribute most significantly to bank charges on a bank statement. Documents include:</p> <ul style="list-style-type: none"> <li>• Cheques</li> <li>• Withdrawal / deposit slips</li> <li>• Other documents related to personal finance (e.g. account application forms)</li> <li>• Receipts / petty cash vouchers</li> <li>• Invoice / statements</li> </ul> <p>Make and justify decisions taken to solve problems using information from financial documents. RANG: The time of day for making a phone call is influenced by the different rates at different times of day. Make decisions that are affordable, cost and / or time efficient.</p> <p>Consider the benefits of buying in bulk vs. buying individually.</p>	<p><b>Maths Lit Menu:</b> <b>3.1.1.1</b> <b>3.1.1.2</b> <b>3.1.1.3</b></p>



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<p style="text-align: center;"><b>4.1</b></p> <p><b>Use and apply the vocabulary of space, shape and representations of the physical world appropriate to the workplace</b></p>	<p>Know and use correctly the vocabulary of space, shape and orientation. RANGE: Vocabulary should include the following:</p> <ul style="list-style-type: none"> <li>• SPACE: block, rectangular prism, pyramid, cone, cylinder, sphere, cube, prism, base</li> <li>• SHAPE: rectangle, triangle, square, circle</li> <li>• ATTRIBUTES: length, breadth, height, side, perimeter, diagonal, area, volume, angle, radius, diameter, circumference, volume, perpendicular, parallel, scale, column, row, co-ordinates / grid references, weight (mass)</li> <li>• REPRESENTATION: grid, map, plan, scale drawing, diagram</li> <li>• TIME: 24 hour / 12 hour clocks and conversions</li> </ul>	<p><b>8.1.1.3</b> <b>8.1.2.2</b> <b>8.1.2.3</b></p> <p><b>9.6.1.1</b> <b>9.6.1.2</b></p>
<p style="text-align: center;"><b>4.2</b></p> <p><b>Performs space, shape and orientation calculations correctly to solve problems in workplace based contexts</b></p>	<p>Calculate the following with appropriate conversions and rounding (see Numbers)</p> <ul style="list-style-type: none"> <li>• AREA: rectangle, triangle, circle and other shapes that can be decomposed into rectangles, triangles and circles</li> <li>• VOLUME: rectangular prisms, cylinders and other objects that can be decomposed into rectangular prisms and cylinders</li> <li>• TIME:</li> <li>• Elapsed time, calculations involving time zones</li> <li>• DISTANCE: (using scale) and direction</li> </ul>	<p><b>9.3.2.7</b> <b>9.3.5.1</b> <b>9.3.5.2</b> <b>9.3.4.5</b></p> <p><b>9.5.2.2</b> <b>9.5.2.3</b> <b>9.5.3.2</b> <b>9.5.3.3</b> <b>9.5.3.4</b> <b>9.5.3.5</b></p>
<p style="text-align: center;"><b>4.3</b></p> <p><b>Read, interpret and use representations to make sense of</b></p>	<p>Use maps (e.g. road maps and route maps for buses and trains etc.) to determine;</p> <ul style="list-style-type: none"> <li>• Location</li> <li>• Distance between two or more</li> </ul>	<p><b>Class activity</b></p>





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<p><b>and solve problems in workplace based contexts</b></p>	<ul style="list-style-type: none"> <li>• positions using the scale of the map</li> <li>• Routes to get from one position to another</li> </ul> <p>Use plans (e.g. house and building plans) to determine:</p> <ul style="list-style-type: none"> <li>• Dimensions</li> <li>• Positions</li> <li>• Quantities of materials needed</li> </ul> <p>use diagrams (e.g. assembly, packing and stacking diagrams) to:</p> <ul style="list-style-type: none"> <li>• Identify parts and objects</li> <li>• Follow instructions</li> </ul> <p>Plan trips choosing the shortest and/or fastest and / or most appropriate routes for a given mode of transport using maps.</p> <p>Sequence activities to complete a task (e.g. make a dress, build a building, move contents of a house / office) using plans and / or diagrams.</p>	
<p><b>4.4</b> <b>Make physical and diagrammatic representations to investigate problems and / or illustrate solutions in workplace based contexts</b></p>	<ul style="list-style-type: none"> <li>• Make 2D and/or 3D scale models of 3D objects to investigate packing problems (e.g. arranging furniture in a room, arranging items in a box)</li> <li>• Make 3D scale models of objects from 2D plans (e.g. make a model of a building from its plan, make a model of a product from its diagram)</li> <li>• Make rough sketches of objects and/or areas in order to make scale drawings (e.g. rough maps and plans)</li> <li>• Make maps, plans and diagrams to scale from rough sketches and/or objects</li> <li>• Make flow diagrams to illustrate proposed sequences of activities</li> </ul>	<p><b>9.5.1.3</b></p> <p><b>Class activity</b></p> <p><b>Class activity</b></p> <p><b>Class activity</b></p> <p><b>Class activity</b></p>



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<p><b>5.1 Collect and organize information in order to answer questions in workplace based contexts</b></p>	<ul style="list-style-type: none"><li>• Develop sets of questions for collecting information, being aware that the way in which the questions are posed will influence the responses.</li><li>• Compile and use an information collection tool (e.g. survey, questionnaire, tally list).</li><li>• Select appropriate samples from the population for collecting data, in awareness of the impact that sample choice has on the information gained.</li><li>• Organize information using tables and/or grouping as appropriate, being aware of the impact that the data group has.</li><li>• Summarize information by calculating the mean, median and mode of both ungrouped and grouped information as appropriate; being aware of how the choice of summary statistic will impact on the answer to the question.</li><li>• Represent information using tables, pie charts, bar graphs, line and broken line graphs as appropriate to the information collected, in awareness of the manner in which the choice of representation impacts on the impression it creates.</li><li>• Use summarized and/or represented information to develop and substantiate answers to the questions that led to the information collection.</li><li>• Use summarized and/or represented information to show that different interpretations are</li></ul>	
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	possible.	
<b>5.2</b> <b>Critically interpret information presented (and misrepresented) in various forms in workplace based contexts</b>	<ul style="list-style-type: none"><li>• Read and select information from tables and graphs in order to answer questions.</li><li>• Identify trends from the information presented in graphs and tables</li><li>• Correctly interpret the meaning of the following:<ul style="list-style-type: none"><li>- Mean</li><li>- Median</li><li>- Mode</li></ul></li><li>• With reference to both ungrouped and grouped information as appropriate</li><li>• Critique the choice of representation and/or statistic(s) in terms their impact on the impression created and conclusion(s) drawn</li></ul>	<b>10.3.1.4</b> <b>10.3.5.1</b> <b>10.1.1.4</b>
<b>5.3</b> <b>Interpret the implications of expressions of likelihood in personal and workplace based contexts</b>	<ul style="list-style-type: none"><li>• Differentiate between independent and dependent events</li><li>• Differentiate between expressions of likelihood based on evidence (theoretical / empirical likelihood /probability) and expressions of likelihood based on the properties of the situation (theoretical likelihood / probability)</li><li>• Explain the implications of expressions of likelihood found in text</li></ul>	<b>10.2.6</b>