CAMI Education links:
Maths Literacy NQF Level 2

MATHS LITERACY – NQF Level 2		
CONTENT	LEARNING OUTCOME	CAMI LINKS
1.1 Use numbers correctly when working with problems in personal and familiar contexts	• Use elementary activities to recognize and practically illustrate the use of different numbers in everyday life situations - Natural numbers - Whole numbers - Positive and negative numbers - Fractions - Decimals - Percentages	
	• Arrange the following numbers in descending and ascending order - Natural numbers - Whole numbers - Positive and negative numbers	**4.1.2.5** **4.1.2.6** **4.1.2.7**
	• Estimate and anticipate answers using the following numbers - Natural numbers - Whole numbers - Positive numbers - Fractions - Decimals – money values - Percentages • Confirm estimations by comparing actual and estimated values	**1.7.2.1** **1.7.2.2** **1.7.2.3** **2.3.5.5** **2.3.5.6** **2.3.5.8** **2.3.5.9**
	• Round off numbers (round up, down and off) according to the requirements of the context. NOTE: including recurring decimals	**2.3.3.1** **2.3.3.2** **2.3.3.3** **2.3.3.4**
	• Apply addition and multiplication facts (distributive, associative properties, priority of operations) to simplify calculations where possible and useful NOTE: BODMAS may be used	**1.7.7.3** **1.7.7.5** **1.7.7.6**
	• Express, write and convert time in different notations: - am/pm (analogue) - 24 hour clock (digital)	**9.2.1.4** **9.2.1.7** **9.2.1.8**

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		9.5.1.9
1.2 **Use an appropriate calculator to perform calculations and solve problems in personal and familiar contexts**	• recognize and practice the use of the following functions and characters on an appropriate calculator: - Addition - Subtraction - Multiplication and division - Percentages - Squares - Cubes - Memory - "clear" and "clear all" keys - Separators - Decimal signs • Use a calculator to perform the following calculations on fractions: - Addition, subtraction, multiplication and division - Conversion from fractions to decimals - Conversion from fractions to percentages RANGE: proper and improper fractions and mixed numbers used in problems for example: $\frac{1}{2};\frac{1}{4};\frac{3}{4};\frac{1}{3};\frac{2}{3};\frac{1}{10};\frac{1}{100};1\frac{1}{2};\frac{7}{5};ect.$ • Use a calculator to perform the following calculations on decimals: - addition, subtraction, multiplication division, squares and cubes - conversion from decimals to fractions - conversion from decimals to percentages • Use a calculator to perform the following calculations on percentages: - addition, subtraction, multiplication, division	**1.7.5.3** **1.7.5.4** **1.7.5.5** **1.7.5.6** **1.7.5.7** **1.7.5.8** **2.4.1.1** **2.4.1.2** **2.4.3.4** **2.4.6.1** **2.4.6.2** **1.8.3.1** **1.8.3.2** **1.8.3.3**

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	- conversion from percentages to decimals - conversions from percentages to fractions • Perform conversions using known relationships for the following: - distance: mm – cm – m – km - volume/capacity: ml – l – kl - mass: mg – g – kg – t - time: seconds – minutes – hours – day NOTE: conversion between units of area and volume is excluded in Level 2 e.g. cm^2 to m^2, cm^3 to m^3, etc. • Read, record and perform calculations involving time values for the following: - time values from watches, clocks and stopwatches - time values in different formats;: ❖ time of day formats (e.g. 8 o'clock, 8:00 am, 8:00 pm,20:00) ❖ elapsed time (e.g. amount of time passed from 8:35 to 9:27) - Calendars showing days, weeks and months - Timetables drawn up for studies, lessons, exams and television NOTE: Practical applications must be used e.g. students complete simple tasks to calculate the time to arrive in time at the college or at a party, drawing up a timetable for studies before the exam, plan time to complete homework and studies before watching a TV program.	**9.1.2.3** **9.1.2.4** **9.1.2.5** **9.1.2.6** **9.2.1.4** **9.2.1.7** **9.2.1.8** **9.2.3.3** **9.2.3.4** **9.2.4.1** **9.2.4.2** **9.2.4.3**
1.3 **Solve problems in personal and familiar contexts**	• Perform calculations involving ratios in personal and familiar contexts: - equivalent of ratios/simplifying of ratios, ex. 1 : 50 = 2 : 100	**2.6.1.1** **2.6.1.2** **2.6.1.3** **2.6.1.4**

	- Convert between different forms of a ratio. Ex. If the scale of a map is 1:100 000 then 1cm measures on the map equals 1km (10 000 cm) in actual distance	**2.6.1.5** **2.6.2.1** **2.6.2.2** **2.6.2.3**
	- Divide or share an amount in a given ratio. Ex. If 1litre of cold milk is divided between two students in the ratio 2:3, how many ml of cold milk will each student receive?	
	- Determine missing numbers in a ratio. Ex. Of a party pack of sweets consists of a mixture of toffees, chocolates and lollipops in the ratio of 6:4:1, how many toffees and lollipops must be placed in a party pack containing twelve chocolates?	
	• Determine rates from given values and solve problems including:	
	- conversion rate, e.g. grams to kilograms	
	- consumption rates, e.g., kilometers per litre	
	- distance, time and speed rates e.g. kilometers per hour, cost rates e.g. rand per kilogram	
	• Perform calculations to demonstrate the difference in cost when buying in bulk versus buying per unit to select the most appropriate option	
	• Solve problems using percentages:	
	- Calculate a percentage of a value. Ex. If 14% discount is offered on a R500 play station game, how much discount will you receive?	**2.4.5.1** **2.4.5.2**
	- Decrease and increase a value by a percentage Ex. If a litre of petrol that costs R9,20 increases in price by 7%, what will the new price of the petrol be?	**10.6.2.3** **10.6.2.4** **2.4.6.1** **2.4.6.2**
	- Express a part of a whole as a	

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	percentage Ex. Is a student scores a mark of 14/35 for a test, what percentage was scored for the test?	
2.1 **Acquire the correct vocabulary of space, shape and orientation**	• Recognize and identify the following: - shape: square, rectangle, triangle, circle - Space: block, cube, rectangular prism, cylinder - Attributes: length, breadth, height, side, base, perimeter, diagonal area, angle, centre, radius, diameter, circumference, volume, perpendicular, height, parallel lines	**8.1.1.2** **8.1.1.3** **8.1.2.1** **8.5.1.1** **8.5.1.2**
2.2 **Perform space, shape and orientation calculations correctly to solve problems in personal and familiar contexts**	• Estimate anticipated measurements based on a sense or "feel" for the following: - length - weight - volume/capacity - temperature • Select and use the following measurement instruments correctly: - ruler - measuring tape - measuring scale - measuring jugs and cups - thermometer • Confirm estimations by comparing actual and estimated values • Determine the length of the hypotenuse of a right-angled triangle using the Theorem of Pythagoras • Use given formulae and calculate the following: (use appropriate conversions and rounding off) - Perimeter / circumference: square, rectangle, triangle, circle	**9.1.1.2** **9.1.1.3** **9.1.1.4** **9.1.3.3** **9.5.1.4** **9.1.4** **7.1.1.1** **9.3.1.6** **9.3.4.1** **9.3.4.2**

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	- Area: square, rectangle, triangle, circle	9.3.2.2 9.3.2.2 9.3.5.1 9.3.4.4
	- Volume: cube, rectangular prism, cylinder NOTE: The following excluded in L2: ❖ Manipulation of formulae ❖ Conversion between units of area and volume	9.5.2.1 9.5.2.2 9.5.3.1
2.3 **Read, interpret and use representations to make sense of and solve problems in personal and familiar contexts**	• Recognize the following concepts when reading and interpreting maps, plans and diagrams and to solve related problems: - grid (columns and rows) - maps - floor/layout plan - scale - scale drawing - diagram - co-ordinates/grid references - compass directions - distance (using scales) - directional indicators (left, right, along, straight, up and down, horizontal, vertical) • Recognize symbols and notations used on plans, ex. The symbol for a window is a double line, the symbol for a door is a vertical line attached to a quarter circle indicating the swing direction of the door. • Use a given scale on a plan and/or map (where the measurements are known) to calculate actual length and distance • Calculate map and/or plan measurements according to a given scale • Use different maps (taking into	9.6.1.1 9.6.1.2 2.7.1.1 9.6.1.3 9.6.2.2 9.6.2.3 9.6.2.4 9.6.2.5 9.6.2.6

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<table>
<tr>
<td></td>
<td>account the scale of the map where applicable) to determine a specific location and the distance between two positions:

- A map showing the seating plan and/or layout for a classroom

- A map showing the layout of the buildings and/or sports fields at a college

- A map showing the layout of the stores in a shopping centre

- A seating plan for a cinema and sports field

• Use the top view of layout, floor and seating plans, to determine the following:

- The actual lengths/dimensions of objects shown on plans using measurement and a given scale (number of bar scale)

- Positions of the objects

• Read manuals and brochures provided to recognize and interpret instructions and/or assembly diagrams, containing words and/or pictures, to do the following:

- Identify the parts and objects

- Explain in everyday language what the instructions mean and/or represent

- Assemble an object according to the instructions

Ex. Electric plugs / plastic models, etc.</td>
<td>Class activity</td>
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<tr>
<td>**2.4**
Use physical and diagrammatic representations to investigate problems and/or illustrate</td>
<td>• Make 2D scale cut outs (nets) of the top view of 3D objects

• Build or draw diagrams of 3D scale models of objects from 2D plans (nets) of the objects to visualize the objects (e.g. build a model of a house from its plans)</td>
<td>Class activity</td>
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solutions in personal and familiar contexts		
3.1 Manage finances with confidence in a personal and/or familiar context	• Recognize financial concepts related to personal finances, methods of financing and financial control RANGE: income, expense, fixed income, variable income, fixed expense, variable expense, salary, gross salary, net salary, wage, gifts, pocket money, commission, rent, maintenance, government grants, entertainment cost, budget, debit card, credit card, bank fees,/ service fees / transaction fees, saving account, cheque accounts, cheque book, deposit, balance, stokvel, investments, retirement annuities, pension funds, PAYE, UIF, interest, simple interest, compound interest (annual calculations principle amount, interest rate, hire purchase agreement • Distinguish between sources of fixed, variable and occasional income: - Salaries and wages, commission - Gifts and pocket money - Bursaries - Loans - Money from savings accounts - Interest received - Inheritance - Grants - Rent received - Child support maintenance • Distinguish between fixed, variable and occasional expenses - Living expenses (food, hair cut, entertainment, clothing, transport cost, child support maintenance, occasional/unforeseen expenses) - Accounts to pay (monthly rent, electricity & water, telephone & cell phone)	10.6.1.1 10.6.1.2 10.6.1.3 10.6.1.6 10.6.1.9 Maths Lit Menu: 3.2.4 10.6.3.2 Maths Lit Menu: 3.1.1.2 3.1.1.3

	- Fees payable (school fees, and fees) - Insurance (car, household and medical fund) - Personal taxes - Loan repayment / credit card repayments, store account payments - Money transfer to a savings account • Explain the following: - The advantages and disadvantages of keeping money either in cash or in a bank account - The importance of saving money for unforeseen payments or expenses • Draw up a projected personal and household plan/cash flow forecast based on expected income and expenditure Ex. A monthly budget/plan for a trip/holiday, personal projects e.g. dinner party, purchasing a cell phone, television or furniture • Draw up a projected personal and household plan/budget/cash flow forecast based on expected income and expenditure Ex. A monthly budget/plan for a trip / holiday, personal projects e.g. dinner party, purchasing a cell phone, television or furniture • Identify and explain variances between actual and projected figures • Provide possible corrective methods of financial control	Class activity Class activity
3.2 Read and interpret information presented in financial	• Read and interpret documents (till slips, cash invoices, credit invoices0 provided to identify and / select appropriate information: - Date and number of document - Buyer and seller	Maths Lit Menu: 3.1.1.2

documents	- Amounts recorded:	
	❖ Amount of purchase/transaction	
	❖ Total amount rendered	
	❖ VAT amount	
	❖ VAT is inclusive/exclusive	
	❖ Change received/paid out	
	• Read and interpret from given statements of accounts (e.g. clothing account) the following:	
	- date / time period	
	- Opening balance at the beginning of the month	
	- Closing balance at the end of the month	
	- Distinguish between and explain credit and debit entries on a statement	
	- The minimum payment due/installment required on the account	
	- Credit available / amount for which purchases can still be made	
	- Credit limit	
	- Amount overdue/in arrear	
	- Club/membership fees	
	• Read and interpret a pay slip to identify the following:	
	- Gross salary	
	- Nett salary	
	- Deductions for the following:	
	❖ Income tax/PAYE	
	❖ Medical fund/aid	
	❖ Pension fund	
	❖ UIF	
	❖ Other deductions – e.g. funeral plan, insurance, annuities	
	• Differentiate between a VAT "inclusive" value and a value "excluding" VAT	
	• Investigate through calculation how the final price has been determined	

	by adding VAT to a price excluding VAT
	• Investigate through calculation the amount of, for example, 14% VAT that has been added to a VAT "inclusive" price
	NOTE: The following methods may be used for calculations of Vat:
	   ❖ Dividing the VAT "inclusive" value by 1,14
	   ❖ Identifying the VAT "inclusive" as being 114% and working out the "value excluding VAT" as 100%	

3.3 **Read and interpret financial information regarding banking in a personal/familiar context**	• Investigate the following type of bank accounts for personal use: - Savings account - Cheque/current account – using a cheque book and/or a debit card - Credit card account • Read and interpret banking material (e.g. bank statements and fees brochures) to make sense of the following terminology: - branch and branch code - opening and closing balance - debit entries - credit entries - stop order - debit order - bank charges/transaction fees - ATM - EFT (electronic funds transfer) - Interest - Deposit - Withdrawal • Read and interpret or calculate from given bank statements and ATM statements the following: - opening balance at the beginning of	

	the month - closing balance at the end of the month - credit and debit entries - credit/balance available on an account - the influence of credit and debit entries on the bank balance - bank charges / fees and the influence thereof on the bank balance • Investigate which transactions contribute most significantly to bank charges on a bank statement • Distinguish between valid and stale cheques • Compare bank charges / service fees for different bank accounts from given fee tables and formulae	
3.4 **Apply tariff systems in personal and familiar context**	• Investigate the following tariff systems: - telephone tariffs - transport tariffs • Calculate how much a particular taxi, bus, train or plane trip will cost using given transport tariffs from scenarios, time tables and brochures • Calculate cost using given telephone tariffs from scenarios and brochures	**Maths Lit Menu:** **3.1.2.1** **3.1.2.2** **3.1.2.3**
4.1 **Identify relationships and complete patterns to solve problems in personal and familiar contexts**	• Describe features of patterns and/or relationships in words including the following: - dependent and independent variables - direct/linear and indirect/inverse proportions - increasing and/or decreasing relationships Ex. Consider a cell phone contract where the cost of talking on the phone is	**3.2.5.2** **3.2.5.4** **3.2.6.4** **3.2.6.5** **2.6.3.1** **2.6.3.2** **2.6.3.3** **2.6.3.4**

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	R1,50 per minute. In this scenario, cost is dependent on the amount of time spent talking on the cell phone; also, the relationship between the cost and talk time is an increasing relationship, with cost increasing at a fixed rate of R1,50 per minute. • Use numerical information to establish a specific pattern Patterns include: - Constant difference patterns (arithmetic progression) e.g. the cost of a number of items - Constant ratio patterns (geometric progression) e.g. fixed deposit bank account with a fixe interest rate - Patterns associated with inverse and direct proportion relationships • Use a range of techniques to determine missing and/or additional terms in a pattern, including: - the relation between consecutive terms - the formulae provided for calculations • Construct patterns from given formulae and represent these patterns in a table • Identify and extend numerical patterns arising from formula	4.1.3.1 4.1.1.7 4.1.3.5
4.2 **Move between different representations of relationships in familiar and personal contexts**	• Move between representations of relationships as follows: - complete a table of values by reading values from a graph - complete a table of values from given formulae and/or descriptions of relationships • Draw graphs of one relationship on a system of axes by: - plotting points from a given table of	6.1.5 6.1.6 6.2.1

	values	6.2.3
	- plotting points from values calculated using given equations	6.2.5
	- constructing axes with an appropriate scale chosen for both the vertical and horizontal axes	
	- labeling the vertical and horizontal axes and the graph appropriately	
	• Identify and distinguish between the dependent and independent variables	
	• Identify and select the following information when working with relationships represented in tables, equations, graphs and formulae:	
	- dependent variables for given independent variables	
	- independent variables for given dependent variables	
	• Describe relationships represented in tables and/or graphs for:	
	- direct/linear relationships	
	- indirect/inverse relationships	
	• Use formulae supplied to determine:	
	- the value of the dependent variable for given value(s) of the independent variable using substitution	
5.1 Collect and organize data to answer questions in personal and familiar context	• Describe key concepts relating to information/data collection and handling: RANGE: Research question, population, target and sample population, survey, questionnaire, tally, bias/subjectivity, reliability of information, sample size, interview, observation, misrepresentation NOTE: Examples of data relating to the personal lives of students and/or to issues that are familiar may be:	

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| | | - Data on electricity consumption of various appliances in a household
- Data on telephone call time and duration
- Test and examination results
- Sports results
- Height and weight data of students in a class
- Institutional statistics (e.g. number of students per level; number of male and female students)

• Investigate the way in which data has been collected, organized, summarized and represented to reveal possible sources of errors/bias or misrepresentation.
• Students should ask questions about:
- the size of a sample
- the representivity of the sample
- the methods used for collecting data
- the neutrality of the data collected process
- whether the data collected was fact or opinion
- the way in which the data was sorted and/or grouped
- the sizes of groups used in grouping the data
- the range (spread) of the data and what it says about the data
• Develop a set of questions that requires a single set of data
• Justify the use of an appropriate instrument for collecting a single set of data. Instruments include:
- observation
- interview
- questionnaire/survey | Class activity

Class activity |

	NOTE: Consider the following when selecting an appropriate instrument: - the advantages and disadvantages of each instrument - the selection of a representative sample from a population - the impact of the choice of sample on the reliability of the data collected • Organize data restricted to one category only using tally and frequency tables (e.g. sort data relating to the heights of the students in a class according to height only) • Group data using intervals (e.g. it is often appropriate to group test scores in the mark intervals "0 – 29","30 – 39", etc.)	10.1.1.4
5.2 **Represent and interpret given data in various forms in personal and familiar contexts**	• Arrange singles sets of collected data to calculate the following measures of central tendency and spread: - mean - median - mode - range • interpret the calculated or given measures of central tendency and select the preferred answer most suitable/appropriate to the situation • Represent single sets of collected data using: - tables - pie charts - histograms - single bar graphs - line and broken line graphs • Read and critically interpret data from representations (i.e. tables, pie charts, histograms, single bar graphs	10.3.1.4 10.1.4.1 10.1.4.2 10.1.2.4 10.1.2.5 10.1.3.1

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	and line and broken line graphs) containing data in order to answer questions relating to the data • Recognize how the choice of representation affects the impressions created and conclusion(s) that can be drawn	