| GRADE 12_CAPS Curriculum | | |
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| **Numbers and calculations with numbers** | | |
| | Number concepts to be used in the context of:<br>• Finance – personal, household, business, workplace, national and global finance.<br>• Measurement – complex tasks in familiar contexts and unfamiliar context.<br>• Maps, plans and other representations of the physical world →maps and plans of possibly unfamiliar contexts and/or complex structures.<br>• Data handling →data related to the personal lives of learners, wider social issues and national/global issues.<br>• Probability →games with coins and dice, weather predictions, tests where there is the chance of inaccurate results, cosmetic and other products. | |
| **Interpreting answers** | • Check the appropriateness of a solution by comparing it to the estimated solution.<br>• Modify the solution as required by the context of the problem.<br>• Round numbers up, down or off depending on the requirements of the context.<br>• Determine the most appropriate units in which to express the answer.<br>• Rework a problem if the initial conditions change.<br>• Recognize that an error in measurement or a small change in rounding can make a large difference to an answer. | |

# CAMI Mathematics Literacy CAPS

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| **Communication** | • Communicate solutions using appropriate terminology, symbols and units.<br>• Clearly state workings and methods used for solving a problem.<br>• Justify comparisons and opinions with calculations or with information provided in the context. | |
| **Number formats and conversions** | Number formats:<br>• Decimal comma, thousands separator, positive and negative numbers as directional indicators: numbers in word format.<br>• Number conventions (e.g. different numbering conventions used in cricket or in flat numbering systems). | |
| **Operations using numbers and calculator skills** | • Estimate anticipated solutions to calculations.<br>• Addition, subtraction, multiplication and division of whole numbers and decimals.<br>• Multiplication and division by 10, 100 and 1 000 without the use of a calculator.<br>• Order of operations (BODMAS) and brackets.<br>• Addition and multiplication facts (distributive and associative properties).<br>• Squaring, cubing, square rooting.<br>• Operations using fractions.<br>Know and use the different functions on a basic calculator.<br>- + / - / ×/ ÷<br>- %<br>- Memory (M+, M-, MRC)<br>- Clear ( C ) | **1.1.1.1 tot 1.1.1.4**<br>**1.1.2.1 tot**<br>**1.1.2.3**<br>**1.1.3.1 tot**<br>**1.1.3.3**<br>**1.1.4**<br>**1.1.5**<br>**1.1.6**<br>**1.1.7.1**<br>**1.1.7.2**<br>**1.1.7.3**<br>**1.1.8.1**<br>**1.1.9** |

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| | - Clear all (CE) | |
| **Rounding** | Round values in the following way:<br>• Off (to a specific number)<br>• Off to the nearest 5<br>• Up<br>• down | **1.2** |
| **Ratios** | Perform the following calculations involving ratios:<br>• Convert between different forms of ratio.<br>• Determine missing numbers in a ratio.<br>• Divide or share an amount in a given ratio.<br>Perform calculations with an understanding of:<br>• Different formats for expressing ratios e.g. 1:50 and/or $\frac{1}{50}$<br>• Why no units are included in a ratio.<br>• Equivalent ratios (e.g. 1:50 = 2:100)<br>• How to write in unit form (e.g. 3:8 can be written as 1:2.667) | **1.3.1**<br>**1.3.2**<br>**1.3.3** |
| **Proportion** | Perform calculations involving:<br>• Direct proportion<br>• Indirect proportion | **1.4.1 to 1.4.5** |
| **Rates** | Calculate the following types of rates:<br>• Cost rates<br>• Consumption rates<br>• Distance, time and speed rates<br>• More complex rates | **1.5.1**<br>**1.5.2**<br>**1.5.3**<br>**1.5.4**<br>**1.5.5** |
| **Percentages** | Perform the following percentage calculations:<br>• Calculate a percentage of a value.<br>• Increase value by a percentage.<br>• Decrease a value by a percentage. | **1.6.1**<br>**1.6.2**<br>**1.6.3**<br>**1.6.4**<br>**1.6.5** |

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| | • Express a part of a whole as a percentage.<br>• Determine percentage increase and/or decrease.<br>• Determine the original value when given a value to which a percentage has been added or subtracted.<br>An understanding of:<br>• The equivalence of the different forms.<br>• How to move interchangeably from fractions to percentage.<br>• How to convert from percentages to decimals with the use of a calculator. | **1.6.6**<br>**1.6.7** |
| **Patterns, relationships and representation** | | |
| | Contexts:<br>• Constant, linear, inverse proportion, exponential (compound growth) and other non-linear relationships appropriate to contexts as specified in the topics Finance, Measurement, Maps, plans and other representations of the physical world, Data handling and Probability<br>• Two or more relationships in a table or on a set of axes. | |
| **Making sense of graphs that tell a story** | Work with a variety of graphs found in newspapers, magazines and other resources.<br>Recognize and describe the meaning of different points on the graph:<br>• The point where the graph cross the vertical and horizontal axes<br>• Maximum and minimum points on the graph<br>• The point where different graphs | |

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| **Patterns and relationships** | • Constant or fixed relationships<br>• Constant differences between terms<br>• Inverse proportion between terms<br>• Constant ratio between terms<br>• Relations containing a combination of the above<br>Describe features of patterns and/or relationships as:<br>• Independent and dependant variables<br>• Discrete and/or continuous variables<br>• Increasing and/or decreasing relationships<br>• Critical values including maximum, minimum and zero values<br>Techniques to determine missing terms:<br>• Relationship between consecutive terms<br>• Relationship between the term's p[position and its value<br>• Formulae provided for calculations | |
| **Representations of relationships in tables, equations and graphs** | Understand the following relationships:<br>• Tables, formulae and graphs can be used for different representation of the same relationship.<br>• How to move between representations of relationships including:<br>- completing a table of value from a graph<br>- plotting a graph from the values in a table<br>- using a given formula and/or description of a relationship to construct a table of values<br>- matching formulae/equations to graph and/or tables of values of the relationship based on features | |

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| | and/or trends<br>• Identify and distinguish between:<br>- the dependent and independent variables<br>- discrete and/or continuous variables<br>• Identify:<br>- dependent variable values for given independent variable values<br>- independent variable values for given dependent variable values<br>• Identify independent variable values associated with the critical points of the dependent variable value including:<br>- zero values<br>- maximum / minimum values<br>• Determine formulae and/or equations to describe relationships represented in tables and/or graphs:<br>- constant (fixed) relationships<br>- linear relationships<br>- inverse proportion relationships<br>In working with equations of relationships:<br>• substitution<br>• solving by means of:<br>- trial and improvement<br>- simple algebraic manipulation<br>In working with graphs of relationships:<br>• drawing graphs:<br>- plotting points from a table constructed from a given equation<br>- constructing axes with appropriate scale chosen for both vertical and horizontal<br>- labeling the vertical and horizontal axes and the chart appropriately<br>• Interpret graphs<br>• Identify the independent variable values for which two relationships | |

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| | have the same dependent variable value.<br>Choose and develop the most effective representation (including tables, graphs and/or equations) for solving a problem. | |
| **Working with two or more relationships and/or representations** | In situations involving representation of two or more relationships on the same set of axes:<br>• Identify the values of the dependent variable for which two or more relationships are equal.<br>Solve financial and other problems including:<br>• Comparing different tariff systems.<br>• Determining break-even values for a business.<br>• Comparing different banking options.<br>Focus on:<br>• Difference in the rates of change between the dependent and independent variable values.<br>• Differences in the steepness of graphs representing the relationship.<br>• Differences in the constant values in equations and graphs representing the relationship.<br>• The use of the following terms in relation to specific dependent/independent variable values:<br>- less than<br>- equal to<br>- greater than<br>- more than<br>- between<br>• Making decisions based on a comparison of the representations and explaining solutions by referring to specific dependent and independent variable values. | |

| Finance | | |
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| | Contexts include those that deal with personal, household, workplace, business, national and global finance, and more complex financial scenarios.<br>Examples;<br>• "Tax pocket guide" issued by SARS<br>• Buying a car or a house<br>• Student loan<br>• Pension fund or retirement annuity<br>• Funeral policy<br>• Inflation data graphs<br>• Financial documents for provincial and national government<br>• Financial documents for a large business | |
| **Financial documents** | Work with the following financial documents:<br>• Household bills<br>• Shopping documents<br>• Banking documents<br>• Household budgets<br>• Documents relating to workplace and small business finance, including:<br>- pay slips<br>- budgets<br>- quotations<br>- invoices<br>- receipts<br>- travel allowance/claim forms<br>- banking documents<br>• Documents relating to national/global and more complex financial topics, including:<br>- tax forms<br>- loan documentation like agreements stating loan conditions and statements from banks and other loan institutions | |

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| **Tariff systems** | Work with the following tariff system:<br>• municipal tariffs<br>• telephone tariffs<br>• transport tariffs<br>Calculate costs using given tariffs and/or formulae.<br>Draw and interpret graphs of various tariffs systems.<br>Compare two or more options for a tariff system to determine the most appropriate option for individuals with particular needs by:<br>• Performing calculations<br>• Drawing graphs to represent the different options and interpreting the points of intersection and other regions on the graphs in relation to the context. | |
| **Income, expenditure, profit/loss, income-and-expenditure statements and budgets** | Personal expenditure:<br>• Living expenses<br>• Accounts<br>• Telephone<br>• Fees<br>• Insurance<br>• Personal taxes<br>• Loan repayments<br>• Savings<br>Business and/or workplace expenditure:<br>• Salaries, wages and commission<br>• Running expenses<br>• Investments and savings<br>• Taxes<br>• Expenditure for larger organizations | |
| **Cost price and selling price** | • Determine the cost for production and/or cost price of an item or service, with an understanding of the difference between these two.<br>• Decide on an appropriate selling price for an item and/or service | |

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| | based on an expected percentage profit.<br>Investigate the running of a small business with consideration of the following:<br>• Income-and-expenditure statements<br>• Budgets<br>• Break-even analysis<br>• The cost of production, cost price and selling price of an item or service rendered | |
| **Break-even analyses** | Determine break-even values using the following methods:<br>• Drawing two or more graphs on a set of axes and reading off the points of intersection of the graphs.<br>• Trial and improvement through substitution into two or more equations representing the scenario and/or graphs.<br>Understand the following components of break-even analyses:<br>• The break-even point is always made up of two values.<br>• The relevance/meaning of the break-even values is determined by the context in which the break-even occurs. | |
| **Interest** | Work with various banking and other financial documents.<br>Distinguish between:<br>- interest rate<br>- values<br>- interest values<br>Investigate through calculations how interest values are calculated using interest rate values.<br>Perform calculations involving simple and compound interest.<br>Investigate the following:<br>• Loan agreements between family | |

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| | members where repayments are made only once.<br>• Investments in fixed deposit accounts where the money is deposited and withdrawn from one account only once.<br>• Bank accounts with a changing balance.<br>• Hire purchase agreements and loans where payment is made monthly<br>• Other investments where fixed deposits is made every month | |
| **Banking, loans and investments (banking)** | Investigate the following types of bank accounts:<br>• saving accounts<br>• cheque / current accounts<br>• fixed deposit account<br>• credit account (with a credit card) and debit account (with a debit card)<br>• Compare bank charges of different banks using tariff tables, given formulae and drawn graphs to assess the suitability of different accounts for individuals.<br>• Investigate the advantages and disadvantages of the different types of accounts regarding access to money, bank charges and interest rates.<br>• Investigate the implications of late payments on a credit card account.<br>• Investigate the different ways in which interest is calculated on different types of accounts.<br>Investigate the following types of loan and investment scenarios:<br>• Informal loan agreements between family members.<br>• Investments in fixed deposit | |

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| | accounts where the money is deposited and withdrawn from the account only once.<br>• Hire-purchase agreements.<br>• Loans from banks and micro-lenders where is a monthly repayments<br>• Investments where there is a monthly deposit, including:<br>- stokvel<br>- retirement annuities<br>- pension fund<br>- funeral plans | |
| **Inflation** | Investigate changes in the prices of goods and/or services.<br>Recognize that:<br>• Inflation is a measure of the change in the purchase power of money over time.<br>• Inflation represents the average increase in the price of a variety of goods and services over time.<br>Investigate the impact of inflation on:<br>• Purchasing power<br>• The value of an item over time<br>• The value of money in the bank account and/or investment.<br>Interpret and analyze graphs showing changes in the inflation rate over time and understand that a decreasing graph does not necessarily indicate negative inflation.<br>Evaluate situations involving proposed price increases. | |
| **Taxation** | Work with UIF in the context of pay slips.<br>Documents:<br>• Pay slips<br>• Tables containing income tax brackets and income tax formulae<br>• Tax deduction tables issued by SARS | |

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| | • IRP5 forms<br>• Personal income tax form<br>• Tax rebate<br>Terminology:<br>• Gross income<br>• Taxable deductions<br>• Non-taxable deductions<br>• Taxable income<br>• Personal income tax<br>• Net pay | |
| **Exchange rate** | Estimate the value of a currency in relation to other currencies.<br>Recognize the meaning of the terms:<br>• Strong<br>• Weak<br>Develop an understanding of the "buying power" of a currency in a particular country.<br>Plan trips to include:<br>• A travel budget<br>• Maps and distance tables to organize the travel routes<br>• Bus, train, airplane and taxi timetables and fare tables<br>• Calendars<br>Plan trips, to include:<br>• A travel budget<br>• Maps and distance tables to organize travel routes<br>• Bus, train, airplane and taxi timetables and fare tables<br>• Calendars | |
| **Measurement** | | |
| | Complex projects involving measurement concepts integrated with content/skills from other topics in both familiar and unfamiliar contexts.<br>Projects must involve integration of content and/or skills from other topics.<br>Examples: | |

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| | • Using plans for a RDP house to determine quantities and cost of materials for the house.<br>• Investigating the number and cost of the tiles needed to tile a floor, taking into consideration the space for grouting between the tiles and cut tiles.<br>• Calculating actual housing density for a suburb, settlement or township and critiquing municipal housing density policies in terms of the findings of this project.<br>• Investigating the size of a dam needed to service a village based on the number of people living in the village, requirements, and data on the annual rainfall in the area. | |
| **Conversions** | For all calculations involving measurement:<br>• convert:<br>- the metric system:<br>mm – cm – m – km<br>ml – l<br>g – kg – ton<br>- time:<br>Sec – min – hours – days<br>• covert units of measurement using given conversion factors and/or tables:<br>- for cooking conversions:<br>spoons – ml<br>cups – ml<br>• Between different systems, including:<br>- metric to imperial units<br>• Solid to liquid conversions, including:<br>- g and/or kg to ml and/or liters<br>- $cm^2$ and $m^2$ to liters<br>- $mm^3$, $cm^3$ and $m^3$ to ml and liters | |

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| | • Temperature (from°Celsius to °Fahrenheit) using the formulae:<br>- °F = (1.8 × °C) + 32°<br>- °C = (°F – 32°) ÷ 1.8 | |
| **Measuring length and distance** | Measuring instruments, including:<br>• "rule of thumb" methods<br>• Rulers, measuring tapes, trundle wheels<br>• Odometers<br>• Scales<br>Estimate lengths and/or measure lengths of objects accurately to complete tasks<br>Estimate distances and/or measure distances accurately between objects/positions in space using appropriate maps and scales.<br>Calculate:<br>• Cost of products<br>• Values using a formula involving length<br>• Perimeter, area and volume<br>• The cost associated with travelling a certain distance<br>• The time taken to complete a journey<br>• Speed (distance travelled in terms of time taken) | |
| **Measuring mass (weights)** | Measuring instruments, including:<br>• Bathroom scales<br>• Kitchen scales<br>• Electronic scales for weighing large objects<br>• Measure out quantities to complete a task.<br>• Monitor and manage mass (weight)<br>• Use recorded mass data together with recorded length, calculated Body Mass Index values and determine weight status for adults.<br>• Use the BMI chart and appropriate | |

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| | growth charts to monitor growth patterns in children<br>• Calculate the cost of a certain amount of a product.<br>• Calculate the values using formula involving mass (weight). | |
| **Measuring volume** | Measuring instruments, including:<br>• Measuring spoons and cups<br>• Jugs, bottles and/or canisters<br>• Buckets and wheelbarrows<br>• Measure out quantities to complete a task.<br>• Monitor quantities.<br>• Calculate values using a formula involving volume.<br>• Consumption rates. | |
| **Measuring temperature** | Measure, monitor and interpret temperature using instruments, including:<br>• Thermometer<br>• Temperature dials and indicators<br>• Weather reports<br>• Convert temperature values from degrees Celsius (°C) to degrees Fahrenheit (°F). | |
| **Calculating perimeter, area and volume** | • Direct measurement (perimeter using rulers, area using grids and volume using measuring jugs).<br>• Calculation for each of the following:<br>- rectangles, triangles and circles<br>- rectangular prisms and cylinders using known formulae<br>• Making choices regarding cost and/or quantities and/or material used in order to complete a project within the budget | |
| **Time** | Read, record and perform calculations involving time values, including: | |

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| | • Time value expressed and/or recorded on clocks, watches and stopwatches.<br>• Time values expressed in the following formats:<br>- time of day formats<br>- time recording formats<br>• Converting between different units of time:<br>- seconds – minutes – hours<br>- days – weeks –months<br>• Calculating elapsed time involving different time formats.<br>• Calendars showing days, weeks and months.<br>• Time tables including:<br>- study time tables and television time tables<br>- lesson / exam timetables<br>- transport timetables<br>- Calculate speed (distance in terms of time taken).<br>• Determining departure/arrival and/or start/end times from timetables<br>• Preparing budgets for the trip by making use of relevant maps, timetables and fare tables, vehicle operating cost tables from the AA and other travel resources | |
| **Maps, plans and other representations of the physical world** | | |
| | Maps and plans of possibly unfamiliar contexts and/or complex structures and models of packaging containers and buildings.<br><br>Maps and plans of possibly unfamiliar contexts and/or complex structures.<br><br>Build 3D scale models of packaging containers and buildings to explore what | |

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| | the final product will look like.<br><br>Draw 2D scale pictures of 3D buildings and packaging containers. | |
| **Scales** | • Number scales expressed in the form 1:500<br>• Bar scales expressed in the form<br>  <br>0m 10m 20m<br>• Understand the advantages and disadvantages of each scale<br>• Calculate actual length and distance when map and/or plan measurements are known<br>• Calculate map and/or plan measurements when actual lengths and distances are known using a given scale<br>• Determine the most appropriate scale in which to draw/construct a map, plan and/or model | |
| **Maps** | Work with the following maps:<br>• Map showing the seating plan and/or layout of a classroom.<br>• Map showing the layout of the buildings and/or sports fields at the school.<br>• Map showing the layout of the stores in a shopping centre.<br>• Seating plans for cinemas and a sport stadium.<br>• Street maps with and without a grid reference system<br>• National and provincial road and rail maps<br>• Strip charts showing distances on a portion of road<br>• Elevation maps<br>• Residential or housing estate maps<br>• Work with a combination of maps | |

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| | showing different perspectives and scales to navigate the route to a destination<br>Interpret the following compass directions:<br>• "North", "South", "West", "East"<br>• "North-east", North-west", South-east", "South-west" | |
| **Plans** | Use instruction/assembly diagrams:<br>• Plugs<br>• Plastic models<br>• Unassembled wooden furniture units<br>• Cell-phones<br>• Electrical appliances<br>• Children's toys including Lego-type kits | |
| **Plans (floor, elevation and design plans)** | • Understand the symbols and notation used on plans.<br>• Describe what is being represented on the plans.<br>• Analyze the layout of the structure shown on the plan.<br>• Determine actual lengths of objects shown on plans.<br>• Determine quantities of materials needed by using the plans.<br>Understand the terms:<br>• "North elevation"<br>• "South elevation"<br>• "East elevation"<br>• "West elevation"<br>and the relevance of compass directions in the construction of buildings. | |
| **Models** | Build 3-D scale models of packaging containers to investigate packaging arrangements.<br><br>Draw 2-D scale picture of 3-D packaging | |

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| | containers. | |
| **Data handling** | | |
| | Type of data:<br>• Multiple sets of data containing multiple categories<br>• Complex values for which estimation may be necessary to determine values on graphs and in tables<br>• Data related to national and global issues | |
| **Developing questions** | • Develop a question or set of questions that requires the collection of two sets of data.<br>• Recognize that the ways questions are phrased can impact on the findings of the investigation. | |
| **Collecting data** | Form/instrument for collecting a single set of data:<br>• Observation<br>• Interview<br>• Questionnaire or survey | |
| **Classifying and organizing data** | Classify collected data as:<br>• Categorical data (e.g. male / female)<br>• Numerical data, further classified as discrete data<br>Sort numerical data according to one category.<br>Organize collected data using:<br>• Tallies<br>• Frequency tables | |
| **Summarizing Data** | • Mean<br>• Median<br>• Mode<br>• Range<br>• Quartiles and inter-quartile range | |

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| | values<br>• Percentiles<br>Understanding the following:<br>• The function / purpose of the measures of central tendency and / or spread<br>• Measure of central tendency refers to "average".<br>• The role and impact of outliers<br>• The strengths and limitations of each type of measurement of central tendency. | |
| **Representing data** | Represent two sets of collected data:<br>• Pie charts<br>• Histograms<br>• Single bar graphs<br>• Line and broken line graphs<br>• Multiple bar graphs and compound/vertical stack graphs<br>• Scatter plot graphs<br>• Box-and-whisker plots | |
| **Interpreting and analyzing data** | Read and select data from representations (that is, tables and graphs).<br>Identify and describe trends/patterns in data presented in tables/graphs.<br>Investigation:<br>• Use percentages to represent data values an a table or graph<br>• Use actual values to represent data values in a table or graph<br>Ask question on:<br>• Sample size<br>• Representivity of the sample<br>• Methods used for collecting data<br>• The neutrality of the data collection process<br>• Whether the data collected was fact or opinion<br>• The way in which data was sorted and/or grouped | |

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| | • The sizes of the groups used in grouping the data<br>• Type of measure used to determine the average of the data<br>• The spread(range) of the data and what the spread suggests about the data<br>Compare different representations of multiple sets of data and explain differences.<br>Investigate situations in which summarized and/or represented data is interpreted in different ways.<br>Develop opposing arguments using the same summarized and/or represented data. | |
| **Probability** | | |
| | Explore probability in scenarios involving:<br>• Games using coins and dice<br>• Weather predictions<br>• Tests where there is the chance of inaccurate results<br>• Cosmetic and other products making statements regarding probability<br>• Lottery and other gambling games<br>• Risk assessments<br>• Newspaper articles containing references to probability | |
| **Expressions of probability** | Work with situations involving probability, including:<br>• Games that make use of coins and dice<br>• Weather predictions<br>• Tests where there is the chance of inaccurate results<br>• Products making statements regarding probability<br>• Tables and graphs containing data and statistics | |

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| | • National lotteries<br>• Gambling scenarios<br>• Risk assessments<br>• Newspaper articles that refer to "likelihood", "chance" and/or "probability" | |
| **Prediction** | Work with situations involving probability, including:<br>• Games that make use of coins and dice<br>• Weather predictions<br>• Tests where there is the chance of inaccurate results<br>• Products making statements regarding probability<br>• Tables and graphs containing data and statistics<br>• National lotteries<br>• Gambling scenarios<br>• Risk assessments<br>• Newspaper articles that refer to "likelihood", "chance" and/or "probability" | |
| **Representation for determining possible outcomes** | Work with situations involving probability, including:<br>• Games that make use of coins and dice<br>• Weather predictions<br>• Tests where there is the chance of inaccurate results<br>• Products making statements regarding probability<br>• Tables and graphs containing data and statistics<br>• National lotteries<br>• Gambling scenarios<br>• Risk assessments<br>• Newspaper articles that refer to "likelihood", "chance" and/or "probability" | |

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