



COURSE OUTLINE
MATHEMATICS FOUNDATIONS – YEAR 11 2022
UNIT 1 AND UNIT 2



Term	Week	Topic and key teaching points	Syllabus content	Context	Assessment
1	1-3	Whole numbers and money	<p>Numbers</p> <p>1.1.1 identify and describe the purpose of whole numbers in various texts and media from everyday life</p> <p>The numeration system</p> <p>1.1.2 use place value to understand the meaning and magnitude of whole numbers into the millions</p> <p>1.1.3 apply place value to read, write, say and compare whole numbers into the millions</p> <p>1.1.4 read, write, say and compare amounts of money, recognising that the decimal point in money separates whole dollars from part dollars; for example, \$1.50, \$3.99 and \$1013</p> <p>1.1.5 recognise and use patterns in the number system</p> <p>1.1.6 understand and use simple negative numbers on a number line (whole numbers and money)</p> <p>1.1.7 determine and explain whether the magnitude of a number is reasonable within everyday contexts</p>	<ul style="list-style-type: none"> • use categories, such as numbers as quantity, numbers as labels (football jumpers, postcodes), numbers to show order • group and order numbers from a collection of brochures or newspaper cuttings into tens, hundreds, thousands, tens of thousands, hundreds of thousands and millions • read and compare population figures: class, school, suburb, city, state and national • read and compare the increasing value of items in catalogues or advertisements; for example, food, household appliances, hardware, furniture, cars, houses • demonstrate the repetitive nature of our number system i.e. ones, tens, hundreds, ones of thousands, tens of thousands, hundreds of thousands, ones of millions, tens of millions, hundreds of millions 	<p>Response Item 1 – Week 3 5%</p>
1	4-6	Data, graphs and tables	<p>1.5.1 identify and describe the purpose of simple tables and graphs, involving whole numbers, in everyday contexts</p> <p>1.5.2 describe the purpose of the key features, conventions and symbols of tables and graphs</p>	<ul style="list-style-type: none"> • discuss the common use of graphs and tables to represent data and information from everyday life and work 	<p>Practical Application 1 – Week 5 10%</p> <p>Response Item 2 – Week 6 5%</p>



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			<p>found in various texts and media from everyday life and work</p> <p>1.5.3 read and interpret information from a range of simple data displays from real life contexts (involving whole numbers), including lists, one and two-way tables, column/bar and line graphs, venn and arrow/network diagrams</p> <p>1.5.4 collect and record data in one-way and two-way tables</p> <p>1.5.5 construct vertical and horizontal column/bar graphs and line graphs (including both measurement and frequency graphs), using simple scales labelled with whole numbers</p> <p>1.5.6 determine whether interpretations from tables and graphs are reasonable for the context</p> <p>1.5.7 communicate information and conclusions from graphs and tables consistent with the language of the context</p>	<ul style="list-style-type: none"> • discuss the key features, conventions and symbols of graphs on utility invoices and tables in a hardware catalogue • interpret the information from a table in a hardware catalogue; graphs on utility invoices; a diagram showing flight paths • collect and record data in simple one-way and two-way tables which the student could use to help make decisions in their personal life; for example, dosage and frequency information for two or more medications • construct graphs using data from the growth of plants over time, daily temperature, or hours of casual work per week for a group of students • discuss answers to questions about the information in a feed chart which is based on the weight of a pet, or a graph showing road accident statistics, • using language such as, “My dog is more than 12 months old and weighs between 10 and 15kg, so his feed should not exceed 235g per day” 	
1	7-9	Time	<p>1.4.1 identify and describe the tools and units commonly used to measure time</p> <p>1.4.2 determine whether an estimate or an accurate time measurement is needed in everyday situations</p>	<ul style="list-style-type: none"> • discuss situations such as getting to work on time, TV programs, calendars, timetables • discuss the level of accuracy required for travel, cooking a meal, paying bills, timing a fitness exercise, administering medication to a pet 	Response Item 3 – Week 9 5%



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			<p>1.4.3 choose which tool and/or unit is appropriate for measuring or stating a time in common everyday contexts</p> <p>1.4.4 develop and use a sense of duration of standard time units: seconds, minutes, hours, days, weeks and months to estimate and compare time</p> <p>1.4.5 read and use digital and analogue watches, clocks (12-hour time only), and stopwatches</p> <p>1.4.6 read and use various forms of calendars and timetables</p> <p>1.4.7 compare units of time to say how long events take, or to order events in time</p> <p>1.4.8 understand and use the relationship between</p> <ul style="list-style-type: none"> • seconds and minutes • minutes and hours • hours and days • days, weeks and months <p>1.4.9 read, write and interpret commonly used expressions of time located in various texts and media</p> <p>1.4.10 use addition and subtraction to solve simple problems involving elapsed time in situations involving calendars and timetables with one type of time unit</p> <p>1.4.11 determine whether an answer is reasonable, given the context of the problem</p> <p>1.4.12 communicate information (oral and written) about time using language and symbols consistent with the context</p>	<ul style="list-style-type: none"> • choose a timing device/instrument for situations, such as fitness routines, cooking, bus and train timetables • use a clock, watch or stopwatch to measure short time periods; use timetables, TV programs and calendars for a sense of time in minutes and hours, days, weeks and months • use a clock for cooking, and a stopwatch for fitness programs • use a calendar for the next due payment. Read and use bus and train timetables to get to work • produce a timeline for planning an event, prepare a program in table form for administering a pet’s medication or treatment over a number of weeks • discuss situations, such as minutes and seconds for sporting records; hours and days for casual work or administering medication; days, weeks and months for planning for a future event • read 07-12-2013 and compare the different ways the same date is represented (by country or software package) • use a calendar to work out how much time before the next repayment; calculate the elapsed time between 1.50 pm and 2.15 pm; use a timeline for planning an event
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				<ul style="list-style-type: none"> • determine whether the time planned for catching a train or bus, and the duration of the trip, is reasonable to meet a deadline, or for the time available • communicate instructions on prescriptions; for example, “take two tablets twice a day for three days”, or “take 3mL three times a day,.” or “The next payment is due in three weeks’ time on the 07-12- 2013.” 	
2	1-4	Addition and subtraction with whole numbers and money	<p>1.2.1 determine whether an estimation or an accurate answer is needed in everyday situations</p> <p>1.2.2 choose when it is appropriate to use addition or subtraction to solve a range of everyday problems; for example, combining quantities, comparing the difference</p> <p>1.2.3 understand and use the inverse relationship between addition and subtraction to assist in calculations</p> <p>1.2.4 understand, recall, use and extend basic addition and subtraction facts to facilitate mental calculation</p> <p>1.2.5 apply place value, partitioning and basic facts to mentally solve everyday problems involving addition and subtraction, with simple whole numbers, using informal jottings to keep track if required</p> <p>1.2.6 use a calculator/spreadsheet efficiently and appropriately when more complex (unfriendly) numbers or tasks are involved</p>	<ul style="list-style-type: none"> • discuss the meaning of negative numbers that represent real-life situations; for example, above and below sea level, debits and credits • consider the cost of familiar items; number of people expected to attend different sporting or entertainment events • determine whether an exact amount or an estimation is required when shopping • choose the operation for calculations involved in shopping • demonstrate part-part-whole models for total money, money spent and change • discuss strategies, such as, if $6 + 6 = 12$, then $6 + 7 = 13$, and $60 + 70 = 130$ • discuss the of use partitioning and counting forwards by tens in shopping; for example, $\\$56 + \\27 is 56, 66, 76, add 4 to 	Response Item 4 – Week 4 5%



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2	5-7	Length, mass and capacity	<p>1.2.7 use estimation strategies, including rounding, when an accurate answer is not required</p> <p>1.2.8 determine whether an answer is reasonable by using estimation and the context of the problem</p> <p>1.2.9 communicate solutions (oral and written), using language and symbols consistent with the context</p>	<p>make 80, add 3 to make a total of \$83, or 50 and 20 is 70 and 6 + 7 is 13, so total is \$83</p> <ul style="list-style-type: none"> • use calculators when larger whole numbers or money amounts are involved, or spreadsheets when setting up a budget • use rounding to estimate \$90 is about the amount needed to purchase a \$47.95 toaster and a \$39.99 kettle • estimate amounts of \$50 and \$40 to decide that \$87.95 is the correct amount to pay for items which cost \$47.95 and \$39.99 • write a money amount as \$325.40 and say as “three hundred and twenty five dollars and forty cents” 	
			<p>1.3.1 identify and discuss situations which involve using length, mass and capacity measures</p> <p>1.3.2 determine whether an estimate or an accurate length, mass or capacity measurement is needed in everyday situations</p> <p>1.3.3 choose appropriate measuring tools to solve everyday problems involving length, mass and capacity</p> <p>1.3.4 use informal units of length, mass and capacity, (for example, hand span, stride, cups) to estimate, measure and compare the size of everyday things</p> <p>1.3.5 develop and use a sense of size of commonly used standard length, mass and</p>	<ul style="list-style-type: none"> • discuss measurement involved in gardening and landscaping • consider the level of accuracy required when setting up or maintaining a vegetable garden • choose tools for measuring the dimensions of a large garden area, dry or liquid ingredients • estimate the length of a garden or lawn using a stride, and lawn fertiliser using a cup or other container • group and compare items which are a variety of common lengths, weights and capacities 	<p>Practical Application 2 – Week 5 10%</p> <p>Response Item 5 – Week 7 5%</p>

			<p>capacity units; for example, 1 cm, 1 m, 500 mL, 1L, 500 gm, 1 kg to estimate in familiar situations</p> <p>1.3.6 understand standard units are divided into sub-units and recall commonly used relationships, such as 1cm = 10 mm; 1 m = 100 cm =1000 mm; 1L = 1000 ml; 1 kg = 1000 gm</p> <p>1.3.7 choose which standard length, mass or capacity unit is appropriate for everyday contexts</p> <p>1.3.8 use a variety of simple calibrated scales to measure and compare length, mass and capacity to the nearest whole number</p> <p>1.3.9 add and subtract whole number length (including perimeter), mass and capacity measures, to solve everyday measurement problems</p> <p>1.3.10 determine whether an answer is reasonable by using estimation and the context of the problem</p> <p>1.3.11 communicate solutions (oral and written) consistent with the language of the context</p>	<ul style="list-style-type: none"> • discuss the of use 1000 mm = 1 m when building an outdoor area, 100 cm = 1 m for textiles, 1000 mL = 1L for liquid ingredients • use millimetres (mm) for construction, metres (m) and/or centimetres (cm) for fabric lengths, millilitres for fertiliser concentrate • choose from a range of rulers, tape measures, kitchen and weight scales, measuring cups and beakers/jugs • determine the total length of garden edging, the difference in weight between two brands of fertiliser, the total amount of water and concentrate in a mix of liquid fertiliser • consider the accuracy and correct use of measurement tools • use millimetres to state the dimensions of a construction, and millilitres for a concentrate 	
2 3	8-10 1-2	Understanding fractions and decimals	<p>2.1.1 identify and describe the purpose of fractions in various texts and media from everyday life and work</p> <p>2.1.2 identify and describe the purpose of decimals in various texts and media from everyday life and work</p>	<ul style="list-style-type: none"> • discuss references in recipes, sport, such as quarter and half time, tools or fittings for plumbing or electrical applications • discuss the use of decimals in money, interest rates, sporting scores, such as gymnastics or diving, measurement of dimensions 	Response Item 6 – Week 2 5%



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			<p>2.1.3 read, write and count with fractions, including unit and common non-unit</p> <p>2.1.4 understand the meaning and magnitude of commonly used fractions, and compare and order them</p> <p>2.1.5 understand the link between unit fractions and division; for example, finding $\frac{1}{4}$ of a quantity is the same as dividing by 4</p> <p>2.1.6 use readily visualised equivalent fractions to compare and order the size of fractions</p> <p>2.1.7 extend whole number place value to the right of the units place to understand decimal numbers as between consecutive whole numbers</p> <p>2.1.8 use place value to understand the meaning and magnitude of commonly used decimal numbers</p> <p>2.1.9 use patterns in the number system to read, write, count with and order familiar decimal numbers in everyday contexts involving money and measurements</p> <p>2.1.10 recognise that fractions and decimals are used to name the same quantity in different ways</p> <p>2.1.11 make connections between commonly used fractions and decimals to name the same quantity in different ways</p> <p>2.1.12 determine and explain whether the magnitude of a fraction or decimal is reasonable within everyday contexts</p>	<ul style="list-style-type: none">• work with fractions such as $\frac{1}{2}$, $\frac{1}{3}$ and $\frac{1}{4}$, in contexts such as cooking and partial hours in time sheetspartition a variety of objects, regions, lengths, capacity/volume, mass, time, and money, into two or more equal parts, naming and labelling the parts with unit fractions ($\frac{1}{2}$, $\frac{1}{4}$, $\frac{1}{3}$, $\frac{1}{5}$, $\frac{1}{10}$, ...) and common non-unit fractions ($\frac{2}{5}$, $\frac{2}{3}$, $\frac{3}{4}$, $\frac{3}{10}$...)• show that $\frac{1}{4}$ of one quantity or object may be more than $\frac{1}{3}$ of a different quantity or object; compare different sized unit fractions in relation to the same whole; for example, a length of fabric or a quantity of an ingredient• use division of a collection, object or shape by 2,3,4,5 and 10 to demonstrate $\frac{1}{2}$, $\frac{1}{3}$, $\frac{1}{4}$, $\frac{1}{5}$ and $\frac{1}{10}$• use objects, regions, lengths, capacity/volume, mass, time, and money to model, compare and represent the equivalence of fractions with related denominators by redividing the whole; for example, $\frac{1}{2}$, $\frac{2}{4}$, $\frac{4}{8}$, $\frac{50}{100}$, or $\frac{1}{5}$, $\frac{2}{10}$, $\frac{20}{100}$• demonstrate the connection between common fractions, such as when halving a recipe; for example, half of a half cup quantity is a quarter of a cup	
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				<ul style="list-style-type: none"> • use objects, collections, grids and lines to show that 1 can be divided into ten parts with each called 0.1, and each of these parts can be divided into ten parts which we call 0.01 • use collections, grids and lines to partition into decimal parts; consider the meaning of decimal quantities on price labels and docketts; for example, deli meat, fruit and vegetables • read 1.05 on a calculator as one dollar and five cents, read 1.05 m and 1.5 m, saying, “One point zero five metres and one point five metres”, knowing that 1.5 m is larger than 1.05 m • identify instances in the media, catalogues or brochures where fractions and decimals are interchangeable • use objects, diagrams, collections, and measuring scales to demonstrate the connection between decimals and fractions, such as $\frac{1}{10}$ and 0.1, $\frac{1}{2}$ and 0.5, $\frac{1}{4}$ and 0.25 • discuss the reasonableness of estimated fractional and decimal amounts, such as $\frac{1}{3}$ cup in cooking, or 0.4 m in garden measurements 	
3	3-6	Multiplication and division with whole numbers and money	2.2.1 determine whether an estimation or an exact answer is needed in everyday situations 2.2.2 choose when it is appropriate to use multiplication or division to solve a range of	<ul style="list-style-type: none"> • discuss situations such as the total pay for the hours worked, or the total length of wood required for building bookshelves 	Practical Application 3 – Week 3 10%



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			<p>everyday problems; for example, repeated equal groups, arrays, area, volume and simple rates</p> <p>2.2.3 understand and use the inverse relationship between multiplication and division to assist in mental calculation</p> <p>2.2.4 understand, recall, use and extend basic multiplication and division facts to facilitate mental calculation</p> <p>2.2.5 use mental calculation strategies, with informal jottings to keep track if required, to solve everyday problems involving multiplication and division, with simple whole numbers</p> <p>2.2.6 use a calculator/spreadsheet efficiently and appropriately when more complex (unfriendly) numbers or tasks are involved</p> <p>2.2.7 use estimation strategies, including rounding, when an exact answer is not required</p> <p>2.2.8 interpret remainders resulting from division in relation to the context</p> <p>2.2.9 determine whether an answer is reasonable by using estimation and the context of the problem</p> <p>2.2.10 communicate solutions (oral and written) using language and symbols consistent with the context</p>	<ul style="list-style-type: none">• present repeated group situations and ask students to choose which operation to use; for example, if there are 8 lamingtons per box, how many:<ul style="list-style-type: none">• lamingtons in 12 boxes?• boxes are needed for 56 lamingtons?• use arrays, such as when planting seedlings, to demonstrate that if, for example, 56 seedlings are represented as 7 rows of 8, $56 \div 8$ must mean there are 7 rows of seedlings, with 8 in each row• use an array to show that 12×7 is 10×7 plus 2×7 when applying a rate of \$7/hour for 12 hours• calculate the total length of fencing that is 320×4 by writing 1200, then 80, and mentally adding; calculate the cost for each item, given the price of several items; for example, \$3.50 for 5 items• record the number of hours of casual work over the week or fortnight and use a calculator or spreadsheet to determine the expected gross pay• determine an approximate amount of money required for purchasing multiples of items from a catalogue, such as when catering for a barbecue for a group of friends	<p>Response Item 7 – Week 6 5%</p>
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				<ul style="list-style-type: none"> • discuss situations such as the number of cars needed to transport 17 people, 4 cars not 3 cars and two people left over • discuss and describe the solution to a practical problem such as, “11.8 m of timber to build the bookshelves. The cost of wood is \$15/metre, so the total cost is \$15 x 12 = \$180.” 	
3	7-8	Metric relationships	<p>2.3.1 identify and describe the purpose of commonly used metric units within various everyday contexts</p> <p>2.3.2 use prefix names of measurement units to work out the relationship with the base units: metre, gram and litre. For example: milli means a thousandth, kilo means times by a thousand</p> <p>2.3.3 link decimal place value and the prefix names of metric units to read, write, compare and order length, mass and capacity measurement</p> <p>2.3.4 use place value understanding to convert from one unit to another; that is, 250 mm = 25</p> <p>2.3.5 use relationships between decimals and fractions to convert from one unit to another; for example, 1500 mm is 1.5 m because 1000 = 1 metre and 500 is half a metre. (Note: perimeter, area and volume all use length measures</p> <p>2.3.6 communicate measurements using units appropriate to the context</p>	<ul style="list-style-type: none"> • identify instances in the media, catalogues or brochures where metric units occur • categorise and discuss the names of known standard units to explore relationships in metric measures. For example, how are kilometres and metres similar to kilograms and grams? • explore the measurements on a variety of items and labels which involve prefixes of centimetres and metres, grams and kilograms, or millilitres and litres, and compare and order them • use rulers and measuring tapes to show that if 1 centimetre is 10 millimetres, then 6 cm is 60 mm, and if one metre is 100 centimetres, then 50 cm is 500 mm; use measuring jugs and cups to show if 1 litre is 1000 mL, then 4 litres is 4000 mL • demonstrate how, for a 250 mL cup measure, four cups make a litre, and therefore 1 cup is 1/4 of a litre, which is 0.25 litre, so 250 mL is 0.25 of a litre 	Response Item 8 – Week 8 5%



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				<ul style="list-style-type: none"> • discuss and write appropriate units for a variety of measurement situations, such as purchasing timber where no units are mentioned but are assumed 	
3 4	9-10 1	Perimeter, area and volume	<p>2.4.1 identify and describe the purpose of perimeter, area and volume measures in everyday life and</p> <p>2.4.2 determine whether an estimate or an accurate perimeter, area and volume measurement is needed in everyday situations</p> <p>2.4.3 calculate perimeter by adding length measurements and connect this to the</p> <p>2.4.4 measure area (including irregular shapes) by counting squares, and volume by counting cubes</p> <p>2.4.5 connect the idea of counting squares for area with the formula of $A = l \times w$</p> <p>2.4.6 connect the idea of counting cubes for volume with the formula of $V = h \times l \times w$</p> <p>2.4.7 use perimeter and area formula for shapes based on rectangles, and volume formula for shapes based on rectangular</p> <p>2.4.8 develop and use a sense of size of commonly used standard area and volume units; for example</p> <p>2.4.9 estimate perimeter, area and volume in practical situations using familiar standard units and rounding</p> <p>2.4.10 choose which standard perimeter, area or volume unit is appropriate for the context</p>	<ul style="list-style-type: none"> • discuss situations such as floor coverings, land area, landscape supplies, rainwater tanks, applying fertiliser • discuss the level of accuracy needed in situations such as landscaping and house painting • measure and add the dimensions of a rectangular and non-rectangular garden bed to determine the amount of concrete edging or fencing required • use one square metre units to measure areas of large rectangular and non-rectangular shapes; for example, a floor space, recognising that a 1 m square can be cut and rearranged; rearrange a number of cubes or boxes and discuss the volume (space taken up) which results from the different arrangements • discuss strategies to count the number of square units in area calculations involved in floor coverings, painting walls or gardening • discuss strategies such as visualising repeated layers of stacked cartons • use situations such as the amount of edging for a rectangular garden, area of brick paving and lawn, load capacity of a trailer 	<p>Practical Application 4 – Week 9 10%</p> <p>Response Item 9 – Week 1 5%</p>



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			<p>2.4.11 determine whether an answer is reasonable for the context of the problem</p> <p>2.4.12 communicate solutions (oral and written), using language and symbols consistent with the context</p>	<ul style="list-style-type: none"> • estimate a square centimetre, square metre, cubic centimetre and a cubic metre within the classroom. Verify using rulers or measuring tapes • estimate and verify the perimeter of a swimming pool for fencing; the area of a path for bricking paving; and the volume of a tank • discuss the reasonableness of an estimate or calculation result for the perimeter of a swimming pool for fencing; the area of a path for bricking paving; and the volume of a rectangular tank • discuss the reasonableness of an estimate or calculation result for the perimeter of a swimming pool for fencing; the area of a path for bricking paving; and the volume of a rectangular tank 	
4	2-5	The probability of everyday events	<p>2.5.1 identify and describe situations which involve the element of chance in everyday life and work</p> <p>2.5.2 describe the likelihood of everyday chance events using terms such as certain, likely, equally likely, fifty/fifty, impossible</p> <p>2.5.3 compare and order chance events from least likely to most likely, providing reasoning from personal experience or based on data</p> <p>2.5.4 recognise and use the element of chance to make decisions in everyday life and work</p> <p>2.5.5 explain decisions (oral and written) based on likelihood of events</p>	<ul style="list-style-type: none"> • identify and discuss situations such as games, weather, sport, Lotto, raffles, gender • discuss likelihood in relation to weather, selection for a sports team or a committee, a lottery or raffle, how often a six is thrown on a die • discuss the predictability of the weather based on collected data. For example, temperature or rainfall • use rainfall/temperature data to give advice on the best time to hold an outdoor 	<p>Practical Application 5 – Week 4 10%</p> <p>Response Item 10 – Week 5 5%</p>



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				event; conduct a footy tipping competition and discuss the outcomes after each round <ul style="list-style-type: none">• make reference to likelihood to justify the decision made for the best time to hold an outdoor event; or choices made in a football tipping contest	
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