



**COURSE AND ASSESSMENT OUTLINE
MATHEMATICS – YEAR 12 FOUNDATIONS
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**Topics highlighted in yellow will be in the Externally Set Task for Year 12 Foundations 2022

Term	Week	Topic	Syllabus Content and Key Teaching Points	Assessments
1	1-3	The Four Operations: Whole numbers and money; fractions and decimals	<p>The four operations: whole numbers and money</p> <p>Plan to solve real-life problems involving whole numbers and money by deciding whether an accurate answer is required or if an estimate is appropriate, choosing one or more of the four operations and using them in the correct sequence. Use informal jottings, calculator or a spreadsheet, when appropriate, to assist when solving problems. Determine the correct order of operations when solving multi-step problems. Consider whether an answer is reasonable, using estimation, rounding and the context of the problem, and then communicate the solutions, and the processes used to arrive at the solution, with language and symbols consistent with the context.</p> <p>The four operations: whole numbers and money</p> <p>3.1.1 Plan to solve an everyday problem involving whole numbers and/or money by selecting:</p> <ul style="list-style-type: none"> • whether an estimation or accurate answer is needed • the relevant numbers/information • one or more of the four operations • sequence of operations • mental strategies (with jottings if needed), calculator or spreadsheet <p>3.1.2 Understand and use the relationships between the four operations to assist in calculations</p> <p>3.1.3 Choose and use the appropriate operation to efficiently solve a problem on a calculator or spreadsheet</p> <p>3.1.4 Choose and use the appropriate operation and strategy to efficiently solve a problem mentally, using informal jottings to keep track if needed</p> <p>3.1.5 Determine the order of operations when solving problems involving multistep calculations.</p> <p>3.1.6 Use properties of operations to anticipate the effect of operations on numbers</p> <p>3.1.7 Use estimation strategies, including rounding, when an accurate answer is not required.</p>	<p style="text-align: center;">Week 3 Response 1</p>



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			<p>3.1.8 Determine whether an answer is reasonable by using properties of operations, estimation and the context of the problem.</p> <p>3.1.9 Communicate solutions and processes used to reach solutions (oral and written), using language and symbols consistent with the context.</p>	
1	4-6	Percentages linked with fractions and decimals	<p>Percentages linked with fractions and decimals</p> <p>Identify and describe percentages found in texts and the media from everyday life and work and describe their purpose. Read, write, say and use common percentages and make connections between everyday fractions, decimals and percentages to interpret and compare quantities. Use the percentage button on a calculator efficiently when finding the percentage of a quantity and use a spreadsheet to solve percentage problems. Consider whether an answer to a problem involving fractions and decimals is reasonable, using estimation and the context of the problem, and then communicate the solutions with language and symbols consistent with the context.</p> <p>Percentages</p> <p>3.2.1 Identify and describe the purpose of percentages in various texts and media from everyday life and work.</p> <p>3.2.2 recognise that percentages are a special form of fraction used to represent a proportion, and that 100% denotes the 'whole'</p> <p>3.2.3 read, write, use and interpret common percentages; for example, 10%, 50%, 25%, 20%</p> <p>3.2.4 make connections between everyday fractions, decimals and percentages to interpret and compare quantities</p> <p>3.2.5 use the links between percentage, fractions and division to mentally solve simple percentage problems</p> <p>3.2.6 use the % button efficiently on a calculator to work out a percentage of a quantity</p> <p>3.2.7 use a spreadsheet to solve common percentage problems, such as bank interest</p> <p>3.2.8 determine whether an answer to a percentage problem is reasonable by using estimation and the context of the problem</p> <p>3.2.9 communicate solutions (oral and written), using language and symbols consistent with the context</p> <p>3.2.10</p>	<p>Week 5 Response 2</p> <p>Week 6 Practical Application 1</p>



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Term	Week	Topic	Syllabus Content and Key Teaching Points	Assessments
1	7-8	The Four Operations: Whole numbers and money; fractions and decimals	<p>Mental and written strategies using the four operations: fractions and decimals</p> <p>Choose whether to add, subtract, multiply or divide when solving problems involving fractions and decimals. Choose whether an accurate answer or an estimate is appropriate when solving problems involving fractions and decimals. Choose whether to use decimals or simple fraction equivalents when solving problems in practical contexts using informal jottings, calculator or spreadsheet. Solve problems mentally by visualising fractions and using place value and partitioning of decimals. Use properties of operations to anticipate the effect when calculating with fractions and decimals.</p> <p>The four operations with whole numbers and money</p> <p>3.3.1 determine whether an estimation or accurate answer is needed in everyday contexts involving fractions and decimals</p> <p>3.3.2 choose to add, subtract, multiply or divide fractions and decimals to solve a range of everyday problems involving fractions and decimals (division by decimal values using a calculator, calculations with simple fractions to be multiplication of whole number values, for example $\frac{1}{5} \times \\$250$)</p> <p>3.3.3 choose between simple decimals and fraction equivalents to solve problems in practical contexts</p> <p>3.3.4 choose between mental, calculator or spreadsheet to solve problems in practical contexts</p> <p>3.3.5 mentally solve everyday problems with fractions and decimals</p> <ul style="list-style-type: none"> • add and subtract simple fractions mentally by visualising fractional parts and counting • use place value, partitioning and basic facts to mentally add, subtract, multiply and divide simple decimal numbers • use links between everyday fractions and decimals to assist mental calculations 	Week 8 Response 3



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1	9-10	The Four Operations: Whole numbers and money; fractions and decimals	<p>Solving problems involving fractions and decimals</p> <p>Use simple fractions and decimals as a guide when solving problems with a calculator involving more complex numbers. Interpret decimal remainders from division calculations in context. Consider whether an answer to a problem involving fractions and decimals is reasonable, using the properties of the operations, estimation and the context of the problem, and then communicate the solutions with language and symbols consistent with the context.</p> <p>Solving problems involving fractions and decimals</p> <p>3.3.6 use links between everyday fractions and decimals to solve problems with a calculator when more complex numbers are involved.</p> <p>3.3.7 use a spreadsheet to solve everyday problems involving fractions or decimals</p> <p>3.3.8 use properties of operations to anticipate the effect of operations on fractions or decimals</p> <p>3.3.9 use estimation strategies, including rounding, when an accurate answer is not required</p> <p>3.3.10 interpret decimal remainders from division calculations in relation to the context</p> <p>3.3.11 determine whether an answer is reasonable by using properties of operations, estimation and the context of the problem</p> <p>3.3.12 communicate solutions (oral and written), using language and symbols consistent with the context</p>	<p>Week 9 Practical Application 2</p>
2	1	Location, Time, and Temperature	<p>Location</p> <p>Locate and describe the purpose of maps and plans in everyday contexts. Read and interpret both web-based and printed maps and plans referring to labels, symbols, keys, distance, direction, coordinates and whole number scales. Place key features on maps and plans, attending to relative position and proximity. Locate north, south, east and west on simple maps, and in their environment, and be able to locate themselves and others on a simple map. Work out distances, practical routes and directions from one place to another on simple maps. Communicate information, both orally and in writing, about location using appropriate language for the given context.</p> <p>Location</p> <p>3.4.1 Locate and describe the purpose of maps and plans in everyday contexts</p> <p>3.4.2 read and interpret everyday maps and plans, (both printed and web-based) referring to labels, symbols, keys,</p>	



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			<p>distance, direction, coordinates and whole number scales</p> <p>3.4.3 place key features of known locations on maps and plans, attending to relative position and proximity</p> <p>3.4.4 locate north, east, south and west on simple maps and within their environment</p> <p>3.4.5 use simple maps to locate themselves and other items within an environment</p> <p>3.4.6 use a simple map to work out distances, practical routes and directions from one location to another</p> <p>3.4.7 communicate information (oral and written) about location using language and symbols consistent with the context</p>	
2	2	Location, Time and Temperature	<p>Time</p> <p>Understand the importance of naming and recording a time, and work out the time that has elapsed in work and community life. Read and use digital and analogue watches, clocks (including 24-hour) and stopwatches. Use various forms of time to record events; for example, timesheets. Convert between 12- and 24-hour time and read complex timetables and calendars. Compare and order time events, convert between one time unit and another, and solve simple problems involving elapsed time which include different time units. Communicate information, both orally and in writing, about time using language and symbols consistent with context.</p> <p>Time</p> <p>3.4.8 identify and understand the importance of naming and recording a time, and working out how much time has elapsed within work and community life</p> <p>3.4.9 read and use digital and analogue watches, clocks (including 24 hour time), and stopwatches</p> <p>3.4.10 convert between digital and analogue time</p> <p>3.4.11 read and use various forms of more complex calendars and timetables with both 12- and 24-hour time</p> <p>3.4.12 use various written forms of time to record events; for example, timesheets</p> <p>3.4.13 compare and order time events</p> <p>3.4.14 use the relationship between time units to convert one unit to another; for example, $1\frac{1}{2}$ minutes = 90 seconds, $2\frac{1}{4}$ hours = 135 minutes</p> <p>3.4.15 solve simple problems involving elapsed time in situations involving combinations of time units</p> <p>3.4.16 communicate information (oral and written) about time using language and symbols consistent with the context</p>	<p>Week 3 Practical Application 3</p>



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Term	Week	Topic	Syllabus Content and Key Teaching Points	Assessments
2	2 - 4		Externally Set Task – Highlighted in yellow	Weeks 2 - 4 Externally Set Task
2	3-4	Location, Time and Temperature	<p>Temperature</p> <p>Identify and describe tools and units commonly used to measure temperature. Develop a sense of how hot/cold, as compared to the Celsius unit, and use a thermometer to measure and compare temperatures to the nearest degree, using the symbol for degrees (°). Calculate change in temperature and find the difference between maximum and minimum temperature. Communicate information, both orally and in writing, about temperature using language and symbols consistent with context.</p> <p>Temperature</p> <p>3.4.17 identify and describe the tools and units commonly used to measure temperature</p> <p>3.4.18 develop a sense of how hot/cold, as compared to the Celsius unit; for example, today is hot, it must be more than 35°</p> <p>3.4.19 use a thermometer or digital readout; for example, to measure and compare temperatures to the nearest degree Celsius</p> <p>3.4.20 read, write and interpret temperatures to the nearest degree Celsius, using the symbol for degrees (°)</p> <p>3.4.21 calculate changes in temperature, including difference between maximum and minimum temperatures</p> <p>3.4.22 communicate information (oral and written) about temperature using language and symbols consistent with the context</p>	
2	5-7	Space and Design	<p>Space and Design (Recommended 10 lessons)</p> <p>Identify, name, classify and describe common 2D and 3D shapes. Draw simple 2D plans to show placement of object with relation to one another by hand and with computer software. Draw simple 3D objects using isometric, perspective, oblique and exploded drawings by hand and with computer software. Match or construct simple 3D objects from drawings of them. Read and interpret plans, diagrams and simple scale drawings of familiar objects. Identify and estimate common angles. Communicate oral and written information about shape and design using language consistent with the context.</p> <p>Space and Design</p>	Week 7 Response 4



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			<p>3.5.1 identify essential attributes of, and name, common two and three dimensional shapes found in everyday contexts</p> <p>3.5.2 classify and describe familiar 2D and 3D shapes found in the environment, according to their properties and function</p> <p>3.5.3 draw (by hand and with computer software) simple 2D plans to show placement of objects in relation to one another</p> <p>3.5.4 draw (by hand and with computer software) simple 3D objects using isometric, perspective, oblique and exploded drawings</p> <p>3.5.5 match or construct simple 3D objects from various forms of drawings, including front, back and side views or 3D views</p> <p>3.5.6 read and interpret plans, diagrams and simple scale drawings representing familiar real life shapes and Objects</p> <p>3.5.7 identify and estimate common angles; for example, a full turn = 360° and right angles = 90°</p> <p>3.5.8 communicate information (oral and written) about shape and design using language and symbols consistent with the context</p>	<p>Week 9 Practical Application 4</p>



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2	8-10	Rates and Ratios	<p>Rates and Ratios</p> <p>Identify common use of rates and ratios in everyday contexts and determine whether an accurate answer or an estimate is appropriate. Understand what rates are (relationship between two amounts) and use repeated addition, multiplication or division to work out simple rates, either mentally or with a calculator. Compare rates to determine which is the 'better buy' in a particular situation. Determine whether an answer is reasonable in everyday problems involving rates and communicate the solution in language and symbols consistent with the context.</p> <p>Rates and Ratios</p> <p>4.1.1 identify common use of rates, such as km/h, cents/litre, \$/kg or \$/m, \$/h</p> <p>4.1.2 identify common use of ratios in practical situations</p> <p>4.1.3 determine whether an estimation or an accurate answer is needed in everyday contexts involving ratio and rates</p> <p>Rates</p> <p>4.1.4 understand rates as relationships between two amounts in everyday contexts; for example, km/h</p> <p>4.1.5 use repeated addition, multiplication or division to work out simple rates, such as litres per 100 kilometres, either mentally or with a calculator</p> <p>4.1.6 compare rates (such as dollars per kilo) to say which is the better buy</p> <p>4.1.12 determine whether an answer is reasonable in situations involving rates and ratios</p> <p>4.1.13 communicate information (oral and written) about rates and ratio using language and symbols consistent with the context</p>	<p>Week 10 Response 5</p>
3	1-3	Rates and Ratios	<p>Ratios</p> <p>Understand simple ratios as proportional relationships between two or more amounts. Read, write, say and use simple ratios as a fraction, percentage or numbers separated by a colon; that is 3:1, in practical contexts. Use ratios to solve problems in context (read simple scales on maps and plans, make mixtures given directions). Use repeated addition, multiplication or division to increase or decrease amounts in practical situations. Determine whether an answer is reasonable in everyday problems involving ratios and communicate the solution in language and symbols consistent with the context.</p> <p>Ratios</p> <p>4.1.7 understand simple ratios as proportional relationships between two or more amounts</p>	<p>Week 3 Practical Application 5</p>



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			4.1.8 read, write and use simple ratios as fractions, percentages or numbers separated by a colon; that is 3:1, in practical contexts 4.1.9 use ratio to interpret simple scales on maps and plans 4.1.10 use simple ratios to make mixtures according to directions 4.1.11 use repeated addition, multiplication or division to increase or decrease amounts in practical situations involving ratios 4.1.12 determine whether an answer is reasonable in situations involving rates and ratios 4.1.13 communicate information (oral and written) about rates and ratio using language and symbols consistent with the context	
3	4-5	Statistics and Probability	<p>Statistics</p> <p>Identify and describe the use of statistics and various data displays in everyday contexts. Collect and organise familiar data in appropriate tables, charts and graphs. Construct graphs and charts from simple everyday data using spreadsheets. Read and interpret tables and graphs and draw simple inferences beyond the data. Critically evaluate graphs to determine if they are misleading. Understand and use mean, mode and median as averages in straightforward, everyday contexts. Determine whether a prediction or inference is reasonable in statistics contexts. Communicate oral and written information about statistics in language and symbols consistent with the context.</p> <p>Statistics</p> 4.2.2 identify and describe the use of statistics and various data displays in everyday contexts 4.2.8 collect and organise familiar data, choosing an appropriate table, graph or chart to clearly represent the data set 4.2.9 construct graphs and charts from simple everyday data, using a spreadsheet, with simple scales, axes and descriptive labels 4.2.10 read and interpret simple tables and graphs, using reasoning to draw simple inferences from beyond the data 4.2.11 critically evaluate simple graphs for misleading information; for example, scale starting at 50 instead of 0 4.2.12 understand and use three forms of average – mean, mode and median, in straightforward everyday contexts. 4.2.13 determine whether a prediction or inference is reasonable in probability and statistics contexts 4.2.14 communicate information (oral and written) about probability and statistics using language and symbols consistent with the context	<p>Week 4 Response 6</p> <p>Week 5 Response 7</p>



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3	5-6	Statistics and Probability	<p>Probability</p> <p>Identify everyday events in which predictions are made based on probability. Understand that chance is measured on a 0 to 1 scale and be able to place everyday terms for chance on the scale and relate them to fractions, decimals and percentages. Using simple, everyday fractions, decimals and percentages: order outcomes from least likely to most likely and describe, compare and interpret the likelihood of everyday chance events. Predict the likelihood of common everyday events happening, based on past experience or data. Determine whether a prediction or inference is reasonable in probability contexts. Communicate oral and written information about probability in language and symbols consistent with the context.</p> <p>Probability</p> <p>4.2.1 identify everyday events in which predictions are made, based on probability</p> <p>4.2.3 understand that chance is measured on a scale of 0 to 1, with zero meaning impossible and 1 meaning certain to happen</p> <p>4.2.4 place everyday terms for chance (certain, fifty/fifty, likely, impossible) on the 0 to 1 scale and relate them to fractions, decimals and percentages</p> <p>4.2.5 order outcomes from least likely to most likely, using simple fractions, decimals and percentages</p> <p>4.2.6 describe, compare and interpret the likelihood of everyday chance events using routine fractions, decimals and percentages</p> <p>4.2.7 predict the likelihood of familiar everyday events happening, based on past experience or data</p> <p>4.2.13 determine whether a prediction or inference is reasonable in probability and statistics contexts</p> <p>4.2.14 communicate information (oral and written) about probability and statistics using language and symbols consistent with the context</p>	<p>Week 6 Response 8</p>
3	6-7	Application of the Mathematical Thinking Process	<p>Application of the mathematical thinking process in a work context</p> <p>Integrate functional numeracy concepts to solve a problem related to starting a new job. Use the four operations in calculations. Choose the appropriate operation to efficiently determine income and expenses mentally, with a calculator or spreadsheet. Read and interpret maps. Read and use various forms of timetable and work out how to be on time. Work out elapsed time using different time units.</p>	



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			<p>Application of the mathematical thinking process in a work context</p> <p>Numeration 4.3.1 Integrate functional numeracy concepts to solve problems related to personal, work and community contexts 4.3.2 read, write and compare whole numbers, fractions, decimals and percentages</p> <p>Operations 4.3.3 understand and use the relationships between the four operations to assist in calculations 4.3.4 choose the appropriate operation to efficiently solve a problem mentally, with a calculator or spreadsheet</p> <p>Time 4.3.5 tell the time and work out elapsed time using different time units 4.3.6 calculate how to be on time 4.3.7 read and use various forms of timetables</p> <p>Shape and Location 4.3.11 read, interpret and draw various maps and plans</p>				
3	7-9	Application of the Mathematical Thinking Process	<p>Application of the mathematical thinking process in a personal context 4.3.1 Integrate functional numeracy concepts to solve problems related to personal, work and community contexts:</p> <p>Application of the mathematical thinking process in a personal context</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="background-color: #ffffcc;">Numeration 4.3.2 read, write and compare whole numbers, fractions, decimals and percentages</td> </tr> <tr> <td style="background-color: #ffffcc;">Operations 4.3.3 understand and use the relationships between the four operations to assist in calculations 4.3.4 choose the appropriate operation to efficiently solve a problem mentally, with a calculator or spreadsheet</td> </tr> <tr> <td style="background-color: #ffffcc;">Measurement 4.3.2 estimate, measure and calculate length, mass and capacity</td> </tr> </table>	Numeration 4.3.2 read, write and compare whole numbers, fractions, decimals and percentages	Operations 4.3.3 understand and use the relationships between the four operations to assist in calculations 4.3.4 choose the appropriate operation to efficiently solve a problem mentally, with a calculator or spreadsheet	Measurement 4.3.2 estimate, measure and calculate length, mass and capacity	Week 8 Practical Application 6
Numeration 4.3.2 read, write and compare whole numbers, fractions, decimals and percentages							
Operations 4.3.3 understand and use the relationships between the four operations to assist in calculations 4.3.4 choose the appropriate operation to efficiently solve a problem mentally, with a calculator or spreadsheet							
Measurement 4.3.2 estimate, measure and calculate length, mass and capacity							



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			4.3.3 use relationships between metric units to estimate, measure and calculate length, mass, capacity, perimeter, area and volume Shape and location 4.3.11 read, interpret and draw various maps and plans 4.3.12 construct simple 3D objects from plans	
3	9-10	Application of the Mathematical Thinking Process	Application of the mathematical thinking process in a community context 4.3.1 Integrate functional numeracy concepts to solve problems related to personal, work and community contexts: Application of the mathematical thinking process in a community context Numeration 4.3.2 read, write and compare whole numbers, fractions, decimals and percentages Operations 4.3.3 understand and use the relationships between the four operations to assist in calculations 4.3.4 choose the appropriate operation to efficiently solve a problem mentally, with a calculator or spreadsheet 4.3.7 read and use various forms of timetables Statistics and probability 4.3.10 read and interpret various tables, charts and graphs	Week 10 Practical Application 7