Maths Trek

NSW Syllabus Match

Stage 2

NSW Syllabus Edition

Refer to the tables to see how the Maths Trek NSW Syllabus Edition topics match the NSW Mathematics Syllabus for Stage 2.

Stage 2A Syllabus Match | Maths Trek 3

Working mathematically

Outcome MAO-WM-01 is comprehensively covered in the Maths Trek program. Students develop mathematical understanding, fluency, reasoning and problem-solving skills as they work through the sequence of topics, revision, investigations, problem-solving strategies and practice problems.

A student:
- develops understanding and fluency in mathematics through exploring and connecting mathematical concepts, choosing and applying mathematical techniques to solve problems, and communicating their thinking and reasoning coherently and clearly MAO-WM-01

Number and algebra

Mathematical concept	Outcomes	Content	Topics			
Representing numbers using place value A	A student: - develops understanding and fluency in mathematics through exploring and connecting mathematical concepts, choosing and applying mathematical techniques to solve problems, and communicating their thinking and reasoning coherently and clearly MAO-WM-01 - applies an understanding of place value and the role of zero to represent numbers to at least tens of thousands MA2-RN-01 - represents and compares decimals up to 2 decimal places using place value MA2-RN-02	**Whole numbers: Read, represent and order numbers to thousands**				
		• Group physical or virtual objects to show the structure of tens, hundreds and a thousand	**2.3**	Place value to thousands		
		• Regroup numbers flexibly, recognising one thousand as 10 hundreds and one hundred as 10 tens or 100 ones	**1.3**	Regrouping numbers	**3.1**	Expanded notation
		• Compare and describe the relative size of numbers by positioning numbers on a number line (Reasons about quantity)	**3.3**	Comparing numbers		
		• Count forwards and backwards by tens and hundreds on and off the decade	**3.2**	Counting on and back by 1, 10, 100		
		• Represent numbers up to and including thousands using physical or virtual manipulatives, words, numerals, diagrams and digital displays	**1.3** **2.3**	Regrouping numbers Place value to thousands	**3.1**	Expanded notation
		• Read and order numbers of up to at least 4 digits	**3.3** **14.3**	Comparing numbers Ordering numbers	**15.3**	Comparing and ordering numbers
		• Identify the number before and after a number with an internal zero digit	**3.2**	Counting on and back by 1, 10, 100		
		Whole numbers: Apply place value to partition and regroup numbers up to 4 digits				
		• Record numbers using standard place value form	**1.3** **2.3**	Regrouping numbers Place value to thousands	**3.1**	Expanded notation
		• Partition numbers of up to 4 digits in non-standard forms (Reasons about quantity)	**1.3**	Regrouping numbers		

Stage 2A Syllabus Match

Maths Trek 3

Number and algebra

Mathematical concept	Outcomes	Content	Topics			
Additive relations A	A student: • develops understanding and fluency in mathematics through exploring and connecting mathematical concepts, choosing and applying mathematical techniques to solve problems, and communicating their thinking and reasoning coherently and clearly MAO-WM-01 • selects and uses mental and written strategies for addition and subtraction involving 2- and 3-digit numbers MA2-AR-01 • completes number sentences involving addition and subtraction by finding missing values MA2-AR-02	**Use the principle of equality**				
		• Recognise equal differences and record them in number sentences	**2.2**	Subtraction strategies		
		• Use the equals sign to mean 'the same as', rather than to perform an operation	**11.3**	Equivalent number sentences		
		• Apply the associative property of addition to forming multiples of 10 (Reasons about relations)	**10.2**	Turnarounds and friendly pairs		
		Recognise and explain the connection between addition and subtraction				
		• Use number relation principles to solve related problems (Reasons about relations)	**1.2**	Fact families for addition and subtraction		
		• Demonstrate how addition and subtraction are inverse operations	**1.2**	Fact families for addition and subtraction	**21.3**	Inverse operations
		• Use the complement principle of addition and subtraction (Reasons about relations)	**14.1**	Addition with bar models	**14.2**	Subtraction with bar models
		• Explain and check solutions to problems, including by using the inverse operation	**21.3**	Inverse operations		
		Select strategies flexibly to solve addition and subtraction problems of up to 3 digits				
		• Apply known mental strategies that use partitioning to add and subtract, such as bridging the decades	**4.2** **4.3** **19.2**	Addition with partitioning Subtraction with partitioning Addition with place value	**19.3** **28.2**	Subtraction with place value Addition and subtraction
		• Use the compensation strategy to add and subtract (Reasons about relations)	**2.1**	Addition strategies	**2.2**	Subtraction strategies
		• Apply the levelling and constant difference strategies (Reasons about relations)	**2.2**	Subtraction strategies		
		• Represent solutions to addition and subtraction problems, including word problems, using an empty number line or bar model	**10.3** **11.1**	Number sentences and word problems Solving problems with bar models	**14.1** **14.2**	Addition with bar models Subtraction with bar models
		• Compare and evaluate strategies used to solve addition and subtraction problems, reasoning which strategy may be most efficient	**2.1**	Addition strategies	**2.2**	Subtraction strategies

Stage 2A Syllabus Match

Maths Trek 3

Number and algebra

Mathematical concept	Outcomes	Content	Topics			
Additive relations A cont.		**Represent money values in multiple ways**				
		• Recognise the relationship between dollars and cents	**21.2**	Dollars and cents		
		• Represent equivalent amounts of money using different denominations	**21.1**	Equivalent values of money		
		• Perform calculations with money, including finding change	**21.2**	Dollars and cents		
Multiplicative relations A	A student: • develops understanding and fluency in mathematics through exploring and connecting mathematical concepts, choosing and applying mathematical techniques to solve problems, and communicating their thinking and reasoning coherently and clearly MAO-WM-01 • represents and uses the structure of multiplicative relations to 10 × 10 to solve problems MA2-MR-01 • completes number sentences involving multiplication and division by finding missing values MA2-MR-02	**Generate and describe patterns**				
		• Model, describe and record patterns of multiples	**16.1** **16.2**	Number patterns Multiples 2, 4, 5, 10	**16.3**	Multiples and repeated addition
		• Create and continue a variety of number patterns that increase or decrease by a constant amount	**16.1** **16.2**	Number patterns Multiples 2, 4, 5, 10	**16.3**	Multiples and repeated addition
		• Recognise the significance of the final digit of a whole number in determining whether a given number is even or odd (Reasons about relations)	**4.1**	Odd and even numbers		
		• Recognise the connection between even numbers and the multiplication facts for 2 (Reasons about relations)	**17.1**	Multiplication facts 2, 4		
		• Investigate the result of multiplying by one and zero (Reasons about relations)	**17.1**	Multiplication facts 2, 4	**17.2**	Multiplication facts 5, 10
		Use arrays to establish multiplication facts from multiples of 2 and 4, 5 and 10				
		• Create and represent multiplicative structure, using the term multiples when connecting grouping to arrays	**17.1** **17.2**	Multiplication facts 2, 4 Multiplication facts 5, 10	**28.1**	Fact families for multiplication and division
		• Use the array structure to coordinate the number of groups with the number in each group	**17.1** **17.2**	Multiplication facts 2, 4 Multiplication facts 5, 10	**28.1**	Fact families for multiplication and division
		• Record the first 10 multiples formed by counting by twos, fours, fives and tens	**16.2**	Multiples 2, 4, 5, 10	**16.3**	Multiples and repeated addition
		• Relate *doubling* to multiplication facts for multiples of 2	**17.1**	Multiplication facts 2, 4		
		• Recognise that doubling is multiplying by 2 and *halving* is dividing by 2 (Reasons about relations)	**24.1**	Division facts 2, 4		
		• Recognise the relationship between one multiple and its double (Reasons about relations)	**16.3**	Multiples and repeated addition		
		• Model square numbers and record in numerical and diagrammatic form	**17.3**	Square numbers		

Stage 2A Syllabus Match

Maths Trek 3

Number and algebra

Mathematical concept	Outcomes	Content	Topics	
Multiplicative relations A cont.		**Recall multiplication facts of 2 and 4, 5 and 10 and related division facts**		
		• Recognise and use the symbols for multiplied by (×), divided by (÷) and equals (=)	**17.1** Multiplication facts 2, 4 **17.2** Multiplication facts 5, 10 **24.1** Division facts 2, 4	**24.2** Division facts 5, 10 **24.3** Division problem-solving
		• Link multiplication and division fact families using arrays	**28.1** Fact families for multiplication and division	
		• Generate multiplication fact families for multiples of 2 and 4, 5 and 10	**28.1** Fact families for multiplication and division	
		• Model and apply the commutative property of multiplication	**28.1** Fact families for multiplication and division	
		Represent and solve problems involving multiplication fact families		
		• Describe multiplication problems using *for each* and *times as many*	**20.3** Multiplication problem-solving	
		• Find the total of partially covered arrays	**28.1** Fact families for multiplication and division	
		• Apply the inverse relationship of multiplication and division (Reasons about relations)	**24.3** Division problem-solving	
Partitioned fractions A	A student: • develops understanding and fluency in mathematics through exploring and connecting mathematical concepts, choosing and applying mathematical techniques to solve problems, and communicating their thinking and reasoning coherently and clearly MAO-WM-01 • represents and compares halves, quarters, thirds and fifths as lengths on a number line and their related fractions formed by halving (eighths, sixths and tenths) MA2-PF-01	**Create fractional parts of a length using techniques other than repeated halving**		
		• Make thirds of a length	**29.3** Fractions as part of a whole	
		• Create fifths of a length	**29.3** Fractions as part of a whole	
		Model and represent unit fractions, and their multiples, to a complete whole on a number line		
		• Model fractions with fraction strips and diagrams for halves, quarters, eighths, thirds	**29.3** Fractions as part of a whole	**30.1** Fractions on a number line
		• Describe fraction families formed by dividing the whole into the same total number of equal parts as having the same denominator	**30.1** Fractions on a number line	
		• Determine the complementary fractional part needed to complete one whole (halves, quarters, eighths, thirds) (Reasons about relations)	**30.1** Fractions on a number line	
		• Recreate the whole unit from a fractional part ($\frac{1}{2}$, $\frac{1}{4}$, $\frac{1}{3}$ and $\frac{1}{8}$) (Reversible reasoning)	**29.3** Fractions as part of a whole	**30.1** Fractions on a number line

Stage 2A Syllabus Match

Maths Trek 3

Measurement and space

Mathematical concept	Outcomes	Content	Topics	
Geometric measure A	A student: • develops understanding and fluency in mathematics through exploring and connecting mathematical concepts, choosing and applying mathematical techniques to solve problems, and communicating their thinking and reasoning coherently and clearly MAO-WM-01 • uses grid maps and directional language to locate positions and follow routes MA2-GM-01 • measures and estimates lengths in metres, centimetres and millimetres MA2-GM-02 • identifies angles and classifies them by comparing to a right angle MA2-GM-03	**Position: Interpret movement on a map**		
		• Orient a map to determine directions to travel	**32.1** Maps and plans	
		• Use given directions to follow routes on land and Aboriginal maps without a grid reference system (Reasons about spatial structure)	**32.3** Maps and directions	
		• Describe a route taken on a map using landmarks and directional language	**32.1** Maps and plans	**32.3** Maps and directions
		Position: Locate positions on grid maps		
		• Locate positions by coordinating horizontal and vertical references	**32.2** Grid references	**32.3** Maps and directions
		• Use the array (row and column) structure of grid maps to locate position, horizontal before vertical	**32.2** Grid references	**32.3** Maps and directions
		Length: Measure and compare objects using metres, centimetres and millimetres		
		• Measure and record lengths and distances using a combination of metres and centimetres	**8.3** Measuring with metres and centimetres	
		• Estimate lengths and distances using known lengths as benchmarks, in metres and centimetres and check by measuring	**8.1** Measuring with metres	**8.2** Measuring with centimetres
		• Compare and order lengths and distances using metres and centimetres	**8.1** Measuring with metres	**8.3** Measuring with metres and centimetres
		• Recognise the need for a formal unit smaller than the centimetre to measure length	**23.2** Measuring with millimetres	
		• Identify that there are 10 millimetres in one centimetre	**23.2** Measuring with millimetres	
		• Use the millimetre as a unit to measure lengths with a ruler	**23.2** Measuring with millimetres	
		• Record lengths using the abbreviation for millimetres (mm)	**23.2** Measuring with millimetres	
		Angles: Identify angles as measures of turn		
		• Identify angles with 2 arms in practical situations	**25.2** Angles	
		• Identify the arms and vertex of an angle	**25.2** Angles	
		• Recognise an angle as the amount of turning between 2 arms	**25.2** Angles	

Stage 2A Syllabus Match   **Maths Trek 3**

Measurement and space

Mathematical concept	Outcomes	Content	Topics
Geometric measure A cont.		• Compare angles and explain that the length of the arms does not affect the size of the angle (Reasons about spatial relations)	**25.2** Angles
		• Use the term *right angle* to describe a quarter-turn in a range of orientations (Reasons about spatial orientation)	**30.3** Right angles
Two-dimensional spatial structure A	A student: • develops understanding and fluency in mathematics through exploring and connecting mathematical concepts, choosing and applying mathematical techniques to solve problems, and communicating their thinking and reasoning coherently and clearly MAO-WM-01 • compares two-dimensional shapes and describes their features MA2-2DS-01 • performs transformations by combining and splitting two-dimensional shapes MA2-2DS-02 • estimates, measures and compares areas using square centimetres and square metres MA2-2DS-03	**2D shapes: Compare and describe features of two-dimensional shapes**	
		• Describe and compare two-dimensional shapes, including parallelograms, rectangles, rhombuses, squares, trapeziums and kites	**20.2** Quadrilaterals
		• Identify and describe polygons that have parallel sides and those that do not	**20.2** Quadrilaterals
		• Identify quadrilaterals that have all sides equal in length	**20.2** Quadrilaterals
		• Identify right angles in shapes	**20.2** Quadrilaterals
		• Group quadrilaterals using one or more attributes	**20.2** Quadrilaterals
		2D shapes: Transform shapes by reflecting, translating and rotating	
		• Identify lines of symmetry in pictures, artefacts, designs and the environment	**19.1** Line symmetry
		• Draw lines of symmetry on given shapes and identify quadrilaterals that do not have lines of symmetry	**20.2** Quadrilaterals
		• Create and record tessellating designs by reflecting, translating and rotating triangles	**30.2** Tessellation
		• Apply and describe amounts of rotation including half-turns, quarter-turns and three-quarter-turns when creating designs	**30.2** Tessellation
		Area: Use square centimetres to measure and estimate the areas of rectangles	
		• Create the array structure of area using squares (1 cm × 1 cm) in rows and columns	**12.3** Area with square centimetres
		• Recognise that area can be measured in square centimetres	**12.3** Area with square centimetres
		• Discuss strategies to estimate area in square centimetres	**12.3** Area with square centimetres
		• Explain how the grid structure of rows and columns helps to find the area (Reasons about spatial structure)	**12.3** Area with square centimetres

Stage 2A Syllabus Match

Maths Trek 3

Measurement and space

Mathematical concept	Outcomes	Content	Topics	
Two-dimensional spatial structure A cont.		• Estimate and measure the areas of squares and rectangles (within the range of 100 square centimetres)	**12.3** Area with square centimetres	
		• Record area in square centimetres using numerals and words	**12.3** Area with square centimetres	
		• Use efficient strategies for counting large numbers of square centimetres	**12.3** Area with square centimetres	
		Area: Use square metres to measure and estimate the areas of rectangles		
		• Recognise the need for a formal unit larger than the square centimetre to measure area	**12.2** Area with square metres	
		• Construct a square metre and use it to measure the areas of large squares and rectangles	**12.2** Area with square metres	
		• Recognise that an area of one square metre need not be a square (Reasons about spatial structure)	**12.2** Area with square metres	
		• Record areas in square metres using numerals and words	**12.2** Area with square metres	
		• Estimate the areas of squares and rectangles in square metres	**12.2** Area with square metres	
Three-dimensional spatial structure A	A student: • develops understanding and fluency in mathematics through exploring and connecting mathematical concepts, choosing and applying mathematical techniques to solve problems, and communicating their thinking and reasoning coherently and clearly MAO-WM-01 • makes and sketches models and nets of three-dimensional objects including prisms and pyramids MA2-3DS-01 • estimates, measures and compares capacities (internal volumes) using litres, millilitres and volumes using cubic centimetres MA2-3DS-02	3D objects: Make models of three-dimensional objects to compare and describe key features		
		• Identify the differences between prisms (including cubes), pyramids and cylinders	**26.1** Pyramids and prisms	**26.2** Nets of 3D objects
		• Construct models of prisms, pyramids and cylinders using physical or virtual manipulatives, identifying their features	**26.1** Pyramids and prisms	**26.2** Nets of 3D objects
		• Deconstruct everyday packages that are prisms (including cubes) to create nets	**26.2** Nets of 3D objects	
		• Investigate the variety of nets that can be used to create a particular prism	**26.2** Nets of 3D objects	
		Volume: Measure and order containers using litres		
		• Recognise the need for formal units to measure capacity (internal volume) accurately	**15.2** Measuring with litres	
		• Use the litre as a unit to measure capacities (internal volumes) to the nearest litre	**15.2** Measuring with litres	
		• Relate the litre to familiar everyday containers	**15.2** Measuring with litres	
		• Recognise that one-litre containers can be a variety of shapes (Reasons about spatial structure)	**15.2** Measuring with litres	

Stage 2A Syllabus Match

Maths Trek 3

Measurement and space

Mathematical concept	Outcomes	Content	Topics	
Three-dimensional spatial structure A cont.		• Record capacities (internal volumes) using the abbreviation for litres (L)	**15.2** Measuring with litres	
		• Estimate the capacity (internal volume) of a container in litres and check by measuring	**15.2** Measuring with litres	
		Volume: Compare objects using familiar metric units of volume		
		• Construct rectangular prisms using cubic-centimetre blocks and describe the volumes in terms of layers	**25.3** Connecting cubes	
		• Record volumes using numerals and words	**25.3** Connecting cubes	
		• Compare the volumes of 2 or more objects made from cubic-centimetre blocks	**25.3** Connecting cubes	
Non-spatial measure A	A student: • develops understanding and fluency in mathematics through exploring and connecting mathematical concepts, choosing and applying mathematical techniques to solve problems, and communicating their thinking and reasoning coherently and clearly MAO-WM-01 • estimates, measures and compares the masses of objects using kilograms and grams MA2-NSM-01 • represents and interprets analog and digital time in hours, minutes and seconds MA2-NSM-02	**Mass: Compare objects using the kilogram**		
		• Recognise the need for a formal unit to measure mass	**12.1** Measuring with kilograms	
		• Identify familiar objects that have a mass of about one kilogram	**12.1** Measuring with kilograms	
		• Record masses using the abbreviation for kilograms (kg)	**12.1** Measuring with kilograms	
		• Find objects that have an estimated mass of *more than*, *less than* and *about the same as* one kilogram and check by comparing to a 1 kg mass	**12.1** Measuring with kilograms	
		Time: Represent and read analog time		
		• Use minutes to describe the duration of events	**29.1** Seconds, minutes, hours	**29.2** Duration of time
		• Identify 30 minutes as being a half-hour and 60 minutes as an hour	**29.2** Duration of time	
		• Connect the quarter-hour to 15 minutes	**23.3** Time to the nearest minute	**29.2** Duration of time
		• Recognise that the position of the numerals on an analog timepiece often represents 2 different values	**23.3** Time to the nearest minute	**29.2** Duration of time
		• Recognise that 5-minute intervals (corresponding to the hour markers) are used as benchmarks to read time on an analog clock	**7.1** Time past the hour	**15.1** Time to the hour
		• Read time as past the hour to half-past and then towards the hour	**7.1** Time past the hour	**15.1** Time to the hour
		• Read analog clocks to the minute	**23.3** Time to the nearest minute	

Stage 2A Syllabus Match

Maths Trek 3

Statistics and probability

Mathematical concept	Outcomes	Content	Topics	
Data A	A student: • develops understanding and fluency in mathematics through exploring and connecting mathematical concepts, choosing and applying mathematical techniques to solve problems, and communicating their thinking and reasoning coherently and clearly MAO-WM-01 • collects discrete data and constructs graphs using a given scale MA2-DATA-01 • interprets data in tables, dot plots and column graphs MA2-DATA-02	**Collect discrete data**		
		• Pose questions about a matter of interest to obtain information that can be recorded in categories	**6.1** Collecting and organising data	
		• Collect data from identified sources	**6.1** Collecting and organising data	
		• Predict and create a list of categories for efficient data collection in relation to a matter of interest	**INV** How do I measure up?*	
		Organise and display data using tables and graphs		
		• Create a list or table to organise the data	**6.1** Collecting and organising data	**INV** How do I measure up?*
		• Construct column graphs (with scale intervals of 1) and dot plots using relevant software where appropriate	**7.2** Column graphs **10.1** Dot plots	**28.3** Column graphs
		• Mark equal spaces (intervals) on axes, name and label axes and choose appropriate titles for column graphs	**7.2** Column graphs	**28.3** Column graphs
		Interpret and compare data		
		• Describe and interpret information presented in tally tables and column graphs	**6.2** Predicting possible outcomes **6.3** Predicting possible outcomes with spinners	**7.3** Interpreting graphs **28.3** Column graphs
		• Investigate how data is interpreted to make decisions	**6.2** Predicting possible outcomes **6.3** Predicting possible outcomes with spinners	**7.3** Interpreting graphs **28.3** Column graphs
		• Represent the same dataset using more than one type of display and compare the displays (Statistical reasoning)	**11.2** Comparing graphs	
Chance A	A student: • develops understanding and fluency in mathematics through exploring and connecting mathematical concepts, choosing and applying mathematical techniques to solve problems, and communicating their thinking and reasoning coherently and clearly MAO-WM-01 • records and compares the results of chance experiments MA2-CHAN-01	**Identify possible outcomes from chance experiments**		
		• Use the term *outcome* to describe any possible result of a chance experiment	**6.2** Predicting possible outcomes	**6.3** Predicting possible outcomes with spinners
		• Record all possible outcomes in a chance experiment where the outcomes are equally likely	**6.2** Predicting possible outcomes	**6.3** Predicting possible outcomes with spinners
		• Record all possible combinations in a chance situation where the outcomes are equally likely	**26.3** Possible combinations	
		• Predict the number of times each outcome might occur in a chance experiment involving a set number of trials (Probabilistic reasoning)	**6.2** Predicting possible outcomes	**6.3** Predicting possible outcomes with spinners
		• Conduct experiments and compare the predicted and actual results where the outcomes are equally likely	**6.2** Predicting possible outcomes	**6.3** Predicting possible outcomes with spinners

* Where required, investigations and problem-solving units are listed in addition to the topics to fully cover the Syllabus Content.

Stage 2B Syllabus Match
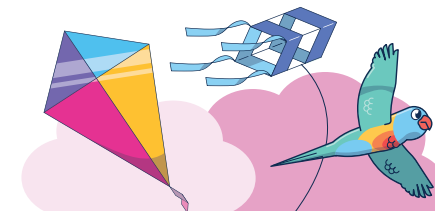
Maths Trek 4

Working mathematically

Outcome MAO-WM-01 is comprehensively covered in the Maths Trek program. Students develop mathematical understanding, fluency, reasoning and problem-solving skills as they work through the sequence of topics, revision, investigations, problem-solving strategies and practice problems.

A student:
- develops understanding and fluency in mathematics through exploring and connecting mathematical concepts, choosing and applying mathematical techniques to solve problems, and communicating their thinking and reasoning coherently and clearly MAO-WM-01

Number and algebra

Mathematical concept	Outcomes	Content	Topics	
Representing numbers using place value B	A student: • develops understanding and fluency in mathematics through exploring and connecting mathematical concepts, choosing and applying mathematical techniques to solve problems, and communicating their thinking and reasoning coherently and clearly MAO-WM-01 • applies an understanding of place value and the role of zero to represent numbers to at least tens of thousands MA2-RN-01 • represents and compares decimals up to 2 decimal places using place value MA2-RN-02	**Whole numbers: Order numbers in the thousands**		
		• Arrange numbers in the thousands in ascending and descending order	**16.3** Comparing and ordering numbers	
		• Recognise and describe how rearranging digits changes the size of a number (Reasons about relations)	**16.3** Comparing and ordering numbers	
		• Identify the nearest thousand, 10 thousand or 100 thousand to numbers	**8.2** Rounding to ten thousands	
		Whole numbers: Apply place value to partition, regroup and rename numbers up to 6 digits		
		• Name thousands using the place value grouping of ones, tens and hundreds of thousands	**1.2** Place value to ten thousands **3.1** Place value and expanded notation	**10.2** Place value and expanded notation **19.3** Place value to hundred thousands
		• Use place value to expand the number notation	**3.1** Place value and expanded notation	**10.2** Place value and expanded notation
		• Partition numbers of up to 6 digits in non-standard forms	**10.2** Place value and expanded notation	
		Whole numbers: Recognise and represent numbers that are 10, 100 or 1000 times as large		
		• Recognise the number of tens, hundreds or thousands in a number	**1.2** Place value to ten thousands	**19.3** Place value to hundred thousands
		• Describe how making a number 10, 100 or 1000 times as large changes the place value of digits	**2.3** Multiplication by 10	**16.2** Multiplying and dividing by 10, 100, 1000

Stage 2B Syllabus Match

Maths Trek 4

Number and algebra

Mathematical concept	Outcomes	Content	Topics		
Representing numbers using place value B cont.		**Decimals: Extend the application of the place value system from whole numbers to tenths and hundredths**			
		• Divide a length representing one whole into 10 equal parts and label the divisions using decimal notation	**11.2** Tenths on a number line		
		• Use the decimal point as a marker to identify the position of the ones digit when expressing tenths as decimals	**11.1** Place value to tenths	**11.2** Tenths on a number line	
		• Recognise that 10-tenths is recorded as 1.0 and regroup when using decimal notation	**11.2** Tenths on a number line		
		• Represent and compare tenths as decimals using linear representations (Reasons about relations)	**11.2** Tenths on a number line		
		• Subdivide tenths into 10 equal parts and record hundredths using place value	**24.3** Hundredths on a number line		
		• Express decimals as both tenths and hundredths	**24.2** Place value to hundredths		
		• Locate and order decimals representing tenths and hundredths on a number line, describing their relative size	**24.3** Hundredths on a number line		
		• Interpret zero digits at the end of a decimal	**24.2** Place value to hundredths		
		• Distinguish between the role of zero in various positions	**24.3** Hundredths on a number line		
		Decimals: Make connections between fractions and decimal notation			
		• Record equivalent measurements using decimals	**28.2** Connecting fractions and decimals		
		• Connect fraction strips showing tenths to a number line marked in hundredths	**28.2** Connecting fractions and decimals		
		• Compare and order decimals of up to 2 decimal places	**24.3** Hundredths on a number line	**28.2** Connecting fractions and decimals	
		• Make connections between fractions and decimal notation for key benchmark values (Reasons about relations)	**28.2** Connecting fractions and decimals		

Stage 2B Syllabus Match

Maths Trek 4

Number and algebra

Mathematical concept	Outcomes	Content	Topics			
Additive relations B	A student: • develops understanding and fluency in mathematics through exploring and connecting mathematical concepts, choosing and applying mathematical techniques to solve problems, and communicating their thinking and reasoning coherently and clearly MAO-WM-01 • selects and uses mental and written strategies for addition and subtraction involving 2- and 3-digit numbers MA2-AR-01 • completes number sentences involving addition and subtraction by finding missing values MA2-AR-02	**Partition, rearrange and regroup numbers to at least 1000 to solve additive problems**				
		• Use quantity values and non-standard partitioning to solve addition and subtraction problems	**23.1** Turnarounds and friendly pairs			
		• Model addition with and without regrouping and record the method used	**1.3** Addition **15.2** Addition		**19.1** Addition **28.1** Addition and subtraction	
		• Model subtraction with and without regrouping and record the method used	**2.1** Subtraction **15.3** Subtraction		**19.2** Subtraction **28.1** Addition and subtraction	
		• Use an algorithm with understanding to record addition and subtraction calculations, where efficient, involving 3-digit numbers	**15.2** Addition **15.3** Subtraction **19.1** Addition		**19.2** Subtraction **28.1** Addition and subtraction	
		• Recognise how hundreds are exchanged in subtraction algorithms requiring regrouping	**15.3** Subtraction **19.2** Subtraction		**28.1** Addition and subtraction	
		• Recognise when mental strategies would be more efficient than a vertical algorithm for subtraction (Reasons about relations)	**19.2** Subtraction			
		• Solve subtraction questions with missing digits given the difference (Reasons about relations)	**15.3** Subtraction			
		Apply addition and subtraction to familiar contexts, including money and budgeting				
		• Use estimation to check the validity of solutions to addition and subtraction problems, including those involving money	**6.3** Budgets		**17.1** Estimation strategies	
		• Reflect on a chosen strategy for solving a problem, considering whether it can be improved	**19.1** Addition			
		• Interpret problems involving money as requiring either addition or subtraction	**6.2** Calculating with money		**6.3** Budgets	
		Complete number sentences involving additive relations to find unknown quantities				
		• Calculate missing numbers by completing number sentences involving addition and subtraction (Algebraic reasoning)	**26.3** Inverse operations			
		• Find the missing number in an equivalent number sentence involving operations of addition or subtraction on both sides of the equals sign (Algebraic reasoning)	**15.1** Equivalent number sentences			
		• Create word problems that correspond to given addition and subtraction number sentences	**19.1** Addition		**19.2** Subtraction	

Stage 2B Syllabus Match

Maths Trek 4

Number and algebra

Mathematical concept	Outcomes	Content	Topics			
Multiplicative relations B	A student: • develops understanding and fluency in mathematics through exploring and connecting mathematical concepts, choosing and applying mathematical techniques to solve problems, and communicating their thinking and reasoning coherently and clearly MAO-WM-01 • represents and uses the structure of multiplicative relations to 10 × 10 to solve problems MA2-MR-01 • completes number sentences involving multiplication and division by finding missing values MA2-MR-02	**Investigate number sequences involving related multiples**				
		• Generate number patterns using related multiples	**2.2**	Multiples		
		• Investigate number patterns involving related multiples	**2.2**	Multiples		
		Use known number facts and strategies				
		• Apply the known strategy of doubling to connect multiples of 3 to 6 and 4 to 8 (Reasons about relations)	**3.2**	Multiplication facts 2, 4, 8, 5, 10	**3.3**	Multiplication facts 3, 6, 9
		• Use known facts to find unknown multiples (Reasons about relations)	**3.2**	Multiplication facts 2, 4, 8, 5, 10	**3.3**	Multiplication facts 3, 6, 9
		Use the structure of the area model to represent multiplication and division				
		• Create and represent multiplicative structure, moving from arrays to partially covered area models	**4.3**	Modelling multiplication with arrays	**10.1**	Factors
					25.3	Modelling division with area
		Use number properties to find related multiplication facts				
		• Use the commutative property of multiplication	**3.2**	Multiplication facts 2, 4, 8, 5, 10	**4.3**	Modelling multiplication with arrays
			3.3	Multiplication facts 3, 6, 9	**10.1**	Factors
		• Use the associative property within multiplication to regroup the factors (Reasons about structure)	**4.3**	Modelling multiplication with arrays		
		• Use flexible partitioning within multiplication (Reasons about relations)	**4.3**	Modelling multiplication with arrays		
		• Generate and recall multiplication fact families up to 10 x 10	**3.2**	Multiplication facts 2, 4, 8, 5, 10	**25.2**	Division facts 3, 6, 9
			3.3	Multiplication facts 3, 6, 9	**28.3**	Fact families for multiplication and division
			25.1	Division facts 2, 4, 8, 5, 10		
		Operate with multiples of 10				
		• Use multiplication facts with multiples of 10 to multiply a one-digit number by a multiple of 10	**2.3**	Multiplication by 10		
		• Use place value to rename groups of 10 to multiply	**2.3**	Multiplication by 10		
		• Apply the commutative and associative properties to multiply by multiples of 10	**30.1**	Turnarounds and friendly pairs		

Stage 2B Syllabus Match

Maths Trek 4

Number and algebra

Mathematical concept	Outcomes	Content	Topics	
Multiplicative relations B cont.		**Represent and solve word problems with number sentences involving multiplication or division**		
		• Use the equals sign to record equivalent number relationships involving multiplication (Reasons about relations)	**15.1** Equivalent number sentences	
		• Complete number sentences involving multiplication and division by calculating missing numbers (Reasons about relations)	**26.3** Inverse operations	
		• Represent and solve multiplication and division (both sharing and grouping) word problems using number sentences	**6.1** Multiplication problem-solving **23.3** Multiplication using the area model **25.3** Modelling division with area	**26.1** Division problem-solving **26.2** Multiplication using the area model
Partitioned fractions B	A student: • develops understanding and fluency in mathematics through exploring and connecting mathematical concepts, choosing and applying mathematical techniques to solve problems, and communicating their thinking and reasoning coherently and clearly MAO-WM-01 • represents and compares halves, quarters, thirds and fifths as lengths on a number line and their related fractions formed by halving (eighths, sixths and tenths) MA2-PF-01	**Model equivalent fractions as lengths**		
		• Represent the equivalence of fractions with related denominators as lengths, using concrete materials, diagrams and number lines	**21.1** Equivalent fractions	
		• Recognise the need to have equal wholes to compare partitioned fractions (Reasoning about relations)	**21.1** Equivalent fractions	
		• Represent fractions with the same-size whole to make valid comparisons (denominators of 2, 4 and 8; 3 and 6; 5 and 10)	**21.1** Equivalent fractions	
		Represent fractional quantities equal to and greater than one		
		• Rename 2 halves, 3 thirds, 4 quarters, 5 fifths, 6 sixths, 8 eighths and 10 tenths as one whole	**23.2** Mixed numerals	
		• Regroup fractional parts beyond one	**23.2** Mixed numerals	
		• Represent totals of halves, thirds, quarters and fifths that extend beyond one	**20.3** Fractions on a number line	**23.2** Mixed numerals
		• Determine the relative location of one-quarter and one-half when a number line extends beyond one	**20.3** Fractions on a number line	

Stage 2B Syllabus Match — Maths Trek 4

Measurement and space

Mathematical concept	Outcomes	Content	Topics	
Geometric measure B	A student: • develops understanding and fluency in mathematics through exploring and connecting mathematical concepts, choosing and applying mathematical techniques to solve problems, and communicating their thinking and reasoning coherently and clearly MAO-WM-01 • uses grid maps and directional language to locate positions and follow routes MA2-GM-01 • measures and estimates lengths in metres, centimetres and millimetres MA2-GM-02 • identifies angles and classifies them by comparing to a right angle MA2-GM-03	**Position: Create and interpret grid maps**		
		• Create simple maps and plans from an aerial view, labelling grid references	**17.2** Grid references	
		• Identify and mark locations on maps and plans, given their grid references	**17.2** Grid references	
		Position: Use directional language and describe routes with grid maps		
		• Use a given grid map and compass directions (N, S, E, W) to plan, describe and show a route from one location to another	**17.3** Maps, pathways and directions	
		• Use natural resources or landmarks to identify north, south, east, west	**17.3** Maps, pathways and directions	
		• Relate compass directions to amounts of turn	**17.3** Maps, pathways and directions	
		• Describe a return journey between 2 locations on a grid map (Reasons about spatial orientation)	**17.3** Maps, pathways and directions	
		Length: Use scaled instruments to measure and compare lengths		
		• Select and use an appropriate scaled instrument to measure lengths and distances	**11.3** Measuring perimeter **29.2** Measuring with millimetres	**29.3** Millimetres, centimetres and metres
		• Select and use an appropriate unit to estimate, measure and compare lengths and distances	**11.3** Measuring perimeter **29.2** Measuring with millimetres	**29.3** Millimetres, centimetres and metres
		• Recognise the features of a three-dimensional object associated with length that can be measured	**29.2** Measuring with millimetres	**29.3** Millimetres, centimetres and metres
		• Use the term *perimeter* to describe the distance around the boundary	**11.3** Measuring perimeter	**12.1** Calculating perimeter
		• Estimate and measure the perimeters of quadrilaterals	**12.1** Calculating perimeter	
		• Convert between metres and centimetres, and between centimetres and millimetres	**29.2** Measuring with millimetres	**29.3** Millimetres, centimetres and metres
		• Record lengths and distances using decimal notation to 2 decimal places	**29.3** Millimetres, centimetres and metres	

Stage 2B Syllabus Match | Maths Trek 4

Measurement and space

Mathematical concept	Outcomes	Content	Topics	
Geometric measure B cont.		**Angles: Compare angles to a right angle**		
		• Compare angles to a right angle using an informal means	**21.2** Angles	
		• Recognise and describe angles as *less than*, *equal to*, *about the same as* or *greater than* a right angle	**21.2** Angles	
		• Describe angles in comparison to quarter-turns as acute, right, obtuse, straight, reflex or a revolution	**21.2** Angles	
		• Identify the arms and vertex of an angle where one arm is visible and the other arm is invisible	**21.2** Angles	
Two-dimensional spatial structure B	A student: • develops understanding and fluency in mathematics through exploring and connecting mathematical concepts, choosing and applying mathematical techniques to solve problems, and communicating their thinking and reasoning coherently and clearly MAO-WM-01 • compares two-dimensional shapes and describes their features MA2-2DS-01 • performs transformations by combining and splitting two-dimensional shapes MA2-2DS-02 • estimates, measures and compares areas using square centimetres and square metres MA2-2DS-03	**2D shapes: Create two-dimensional shapes that result from combining and splitting common shapes**		
		• Combine common two-dimensional shapes, including quadrilaterals, to form other common shapes or designs	**30.2** Combining shapes	
		• Split a given shape into 2 or more common shapes and describe the result	**30.2** Combining shapes	
		• Record the arrangements of common shapes used to create other shapes	**30.2** Combining shapes	
		2D shapes: Create symmetrical patterns and shapes		
		• Create and record tessellating designs by reflecting, translating and rotating triangles or quadrilaterals	**21.3** Tessellation	
		• Apply and describe amounts of rotation, including half-turns, quarter-turns and three-quarter-turns, when creating designs	**10.3** Symmetrical patterns	**21.3** Tessellation
		Area: Measure the areas of shapes using the grid structure		
		• Measure the areas of rectangles and right-angled triangles using a square-centimetre grid overlay	**12.2** Area	**12.3** Area of irregular shapes
		• Estimate the areas of shapes found in the environment using efficient strategies (non-count-by-one) with a grid overlay	**12.3** Area of irregular shapes	
		• Recognise that rectangles with different side lengths can have the same area	**12.2** Area	
		Area: Compare surfaces using familiar metric units of area		
		• Estimate before measuring to determine the larger of 2 rectangular areas in square centimetres	**12.2** Area	
		• Estimate before measuring to determine the larger of 2 rectangular areas in square metres	**12.2** Area	

Stage 2B Syllabus Match

Maths Trek 4

Measurement and space

Mathematical concept	Outcomes	Content	Topics			
Three-dimensional spatial structure B	A student: • develops understanding and fluency in mathematics through exploring and connecting mathematical concepts, choosing and applying mathematical techniques to solve problems, and communicating their thinking and reasoning coherently and clearly MAO-WM-01 • makes and sketches models and nets of three-dimensional objects including prisms and pyramids MA2-3DS-01 • estimates, measures and compares capacities (internal volumes) using litres, millilitres and volumes using cubic centimetres MA2-3DS-02	**3D objects: Connect three-dimensional objects and two-dimensional representations**				
		• Identify features of prisms and pyramids (faces, vertices and edges) and cylinders (curved/flat surfaces and boundaries) from images	**4.1**	Drawing pyramids and prisms	**14.3**	Views of 3D objects
		• Create sketches of rectangular prisms and pyramids, showing depth	**4.1**	Drawing pyramids and prisms		
		• Create sketches of three-dimensional objects from different views, including top, front and side views (Reasons about spatial relations)	**14.3**	Views of 3D objects		
		• Draw different views on isometric grids of an object constructed from connecting cubes	**14.3**	Views of 3D objects		
		• Interpret given drawings to make models of three-dimensional objects using connecting cubes (Reasons about spatial visualisation)	**14.3**	Views of 3D objects		
		Volume: Use scaled instruments to measure and compare capacities (internal volumes)				
		• Recognise the need for a formal unit smaller than the litre to measure capacity (internal volume)	**7.1**	Measuring with litres and millilitres		
		• Use a scaled instrument to relate 1000 millilitres to one litre	**7.1** **7.2**	Measuring with litres and millilitres Reading graduated scales	**7.3**	Converting litres and millilitres
		• Relate benchmark values to familiar everyday containers	**7.1**	Measuring with litres and millilitres		
		• Calibrate a container by marking 100 mL increments to measure capacity (internal volume) to the nearest 100 mL	**7.1**	Measuring with litres and millilitres		
		• Record capacity (internal volume) using the abbreviation for millilitres (mL) and litres (L)	**7.1**	Measuring with litres and millilitres		
		• Compare and order the capacities (internal volumes) of 2 or more containers measured in millilitres	**7.1**	Measuring with litres and millilitres		
		• Estimate the capacity (internal volume) of a container to common benchmark values, such as 250 mL, and check by measuring	**7.1**	Measuring with litres and millilitres		

Stage 2B Syllabus Match   **Maths Trek 4**

Measurement and space

Mathematical concept	Outcomes	Content	Topics		
Non-spatial measure B	A student: • develops understanding and fluency in mathematics through exploring and connecting mathematical concepts, choosing and applying mathematical techniques to solve problems, and communicating their thinking and reasoning coherently and clearly MAO-WM-01 • estimates, measures and compares the masses of objects using kilograms and grams MA2-NSM-01 • represents and interprets analog and digital time in hours, minutes and seconds MA2-NSM-02	**Mass: Use scaled instruments to measure and compare masses**			
		• Recognise the need for a formal unit smaller than the kilogram	**8.1** Measuring with grams		
		• Use a scaled instrument to relate 1000 grams to one kilogram	**7.2** Reading graduated scales **8.1** Measuring with grams	**8.3**	Measuring with kilograms and grams
		• Identify familiar objects that could be measured in grams	**8.1** Measuring with grams		
		• Measure and record mass in grams (g) using a scaled instrument	**8.1** Measuring with grams		
		• Compare 2 or more objects by mass measured in kilograms and grams using a set of scales	**8.3** Measuring with kilograms and grams		
		• Interpret commonly used fractions of a kilogram, including $\frac{1}{2}, \frac{1}{4}, \frac{3}{4}$, and relate these to the number of grams	**8.3** Measuring with kilograms and grams		
		• Record masses greater than a kilogram using kilograms and grams	**8.3** Measuring with kilograms and grams		
		Time: Represent and interpret digital time displays			
		• Identify situations where duration is measured in seconds	**30.3** Converting units of time		
		• Read or set the time on digital devices to the minute or second, recognising there are 60 seconds in one minute	**32.3** Time to the nearest minute		
		• Recognise that the hour is read first in a digital display	**32.3** Time to the nearest minute		
		• Determine the time remaining until the next hour on a digital clock	**32.2** Reading and interpreting timetables	**32.3**	Time to the nearest minute
		Time: Use am and pm notation			
		• Record times using the colon notation with am and pm to distinguish between morning and evening	**32.1** Time (am and pm)		
		• Relate the terms *midday* or *noon* and *midnight* to am and pm	**32.1** Time (am and pm)		
		• Relate analog notation to digital notation for time	**32.1** Time (am and pm)	**32.3**	Time to the nearest minute

Stage 2B Syllabus Match

Maths Trek 4

Statistics and probability

Mathematical concept	Outcomes	Content	Topics	
Data B	A student: • develops understanding and fluency in mathematics through exploring and connecting mathematical concepts, choosing and applying mathematical techniques to solve problems, and communicating their thinking and reasoning coherently and clearly MAO-WM-01 • collects discrete data and constructs graphs using a given scale MA2-DATA-01 • interprets data in tables, dot plots and column graphs MA2-DATA-02	**Select and trial methods for data collection**		
		• Create a survey and related recording sheet, considering the appropriate organisation of categories for data collection	**4.2** Collecting and organising data	
		• Refine survey questions as necessary after a small trial	**4.2** Collecting and organising data	
		• Conduct a survey or make observations to collect categorical or numerical data	**4.2** Collecting and organising data	
		• Compare the effectiveness of different methods of collecting and recording data	**4.2** Collecting and organising data	
		Construct and interpret data displays with many-to-one scales		
		• Use a given many-to-one scale to represent discrete data in column graphs	**20.1** Column graphs	
		• Use data in a spreadsheet to create column graphs with units on vertical axes that are in multiples	**20.1** Column graphs	
		• Interpret and evaluate the effectiveness of various data displays found in media and in factual texts where displays represent data using a scale of many-to-one	**16.1** Dot plots	**20.2** Comparing graphs
Chance B	A student: • develops understanding and fluency in mathematics through exploring and connecting mathematical concepts, choosing and applying mathematical techniques to solve problems, and communicating their thinking and reasoning coherently and clearly MAO-WM-01 • records and compares the results of chance experiments MA2-CHAN-01	**Describe the likelihood of outcomes of chance events**		
		• Use the terms *equally likely*, *likely* and *unlikely* to describe the chance of everyday events occurring	**14.1** Describing possible outcomes	**24.1** Predicting possible outcomes
		• Compare the likelihood of obtaining particular outcomes in a simple chance experiment by predicting, conducting the experiment and comparing the results with the prediction	**24.1** Predicting possible outcomes	
		Identify when events are affected by previous events		
		• Identify and discuss events where the chance of one event occurring will not be affected by the occurrence of the other	**14.2** Dependent and independent events	
		• Compare events where the chance of one event occurring is affected by the occurrence of the other (Reasons about relations)	**14.2** Dependent and independent events	