NSW Syllabus Match

Stage 3

NSW Syllabus Edition

09/25

Refer to the tables to see how the Maths Trek NSW Syllabus Edition topics match the NSW Mathematics Syllabus for Stage 3.

Stage 3A Syllabus Match — Maths Trek 5

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
Represents numbers 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 the properties of numbers MA3-RN-01 • compares and orders decimals up to 3 decimal places MA3-RN-02 • determines percentages of quantities, and finds equivalent fractions and decimals for benchmark percentage values MA3-RN-03	**Whole numbers: Recognise, represent and order numbers in the millions**	
		• Name millions using the place value grouping of ones, tens and hundreds	**2.1** Place value to millions; **10.1** Place value beyond millions
		• Arrange numbers in the millions in ascending and descending order using place value	**2.1** Place value to millions; **10.1** Place value beyond millions
		• Round numbers to a specified place value	**3.1** Rounding to hundred thousands; **28.2** Rounding using a target digit strategy
		Whole numbers: Apply place value to partition, regroup and rename numbers to 1 billion	
		• Recognise 1000 thousands is 1 million and 1000 millions is 1 billion	**29.2** Place value to billions
		• Regroup numbers in different forms (Reasons about quantity)	**29.1** Place value and expanded notation
		• Partition numbers to 1 billion in non-standard forms	**29.1** Place value and expanded notation
		Decimals and percentages: Recognise that the place value system can be extended beyond hundredths	
		• Express thousandths as decimals	**7.2** Place value to thousandths
		• Interpret decimal notation for thousandths	**25.3** Measuring with litres and millilitres
		• Indicate the place value of digits in decimal numbers of up to 3 decimal places	**7.2** Place value to thousandths; **7.3** Rounding decimals
		• Use place value to partition decimals	**7.2** Place value to thousandths

ISBN 978 1 74135 328 0

Stage 3A Syllabus Match

Maths Trek 5

Number and algebra

Mathematical concept	Outcomes	Content	Topics
Represents numbers A cont.		**Decimals and percentages: Compare, order and represent decimals**	
		• Compare and order decimal numbers of up to 3 decimal places	**21.3** Comparing decimals
		• Interpret zero digit(s) at the end of a decimal	**21.3** Comparing decimals
		• Compare the place value of digits by determining numbers that are 10 or 100 times the original decimal number as well as $\frac{1}{10}$ or $\frac{1}{100}$ times the original decimal numbers	**19.3** Multiply decimals by 10 or 100
		• Approximate the size of decimals	**7.3** Rounding decimals
		• Place decimal numbers of up to 3 decimal places on a number line	**7.2** Place value to thousandths
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 applies appropriate strategies to solve addition and subtraction problems MA3-AR-01	**Apply efficient mental and written strategies to solve addition and subtraction problems**	
		• Solve word problems, including multistep problems	**14.3** Multi-step problems – add and subtract
		• Apply known strategies such as levelling, addition for subtraction, using constant difference, and bridging (Reasons about relations)	**14.2** Subtraction with zeros
		• Use place value to add or subtract 3 or more numbers with different numbers of digits	**2.2** Addition **2.3** Subtraction **14.1** Addition **14.2** Subtraction with zeros
		• Determine when it would be more efficient to use a calculator to add numbers	**14.1** Addition
		• Identify efficient and inefficient multidigit subtraction strategies	**14.2** Subtraction with zeros
		Use estimation and place value understanding to determine the reasonableness of solutions	
		• Round numbers appropriately when obtaining estimates to numerical calculations	**3.1** Rounding to hundred thousands **28.2** Rounding using a target digit strategy
		• Use place value understanding to check for errors in calculations	**3.2** Estimation strategies **28.3** Estimation strategies
		• Use estimation to check the reasonableness of solutions to addition and subtraction calculations	**3.2** Estimation strategies **28.3** Estimation strategies

ISBN 978 1 74135 328 0

Stage 3A Syllabus Match — Maths Trek 5

Number and algebra

Mathematical concept	Outcomes	Content	Topics
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 • selects and applies appropriate strategies to solve multiplication and division problems MA3-MR-01 • constructs and completes number sentences involving multiplicative relations, applying the order of operations to calculations MA3-MR-02	**Determine products and factors**	
		• Use the term product to describe the result of multiplying 2 or more numbers	**1.2** Fact families for multiplication and division
		• Model different ways to show a whole number as a product (Reasons about structure)	**17.1** Factors
		• Determine factors for a given whole number	**17.1** Factors
		• Determine whether a number is prime, composite or neither (0 or 1)	**17.2** Prime and composite numbers
		Use partitioning and place value to multiply 2-, 3- and 4-digit numbers by one-digit numbers	
		• Use mental strategies to multiply one-digit numbers by 10, 100, 1000 and their multiples	**1.2** Fact families for multiplication and division
		• Estimate the product of 2 numbers (one-digit by 2- or 3-digit numbers) using multiples of 10 or 100	**3.2** Estimation strategies; **28.3** Estimation strategies
		• Use informal written strategies such as the area model to solve multiplication and division problems	**6.3** Multiplication using the area model; **8.2** Multiplication using split and multiply
		• Use the distributive property with the area model to partition numbers in representing multiplication problems	**6.3** Multiplication using the area model; **8.2** Multiplication using split and multiply
		• Use the distributive property with partial products to solve problems by multiplying the hundreds, then the tens and then the ones	**7.1** Multiplication using the area model
		• Record the product of multiplying by a one-digit number using a formal algorithm	**10.2** Multiplication – 3 digits × 1 digit; **24.2** Multiplication by tens and hundreds
		Select and apply mental and written strategies to multiply 2- and 3-digit numbers by 2-digit numbers	
		• Factorise numbers to aid mental multiplication	**17.1** Factors
		• Extend the area model to represent 2-digit by 2-digit multiplication	**24.3** Multiplication using the area model
		• Use a multiplication algorithm with understanding (Reasons about relations)	**24.2** Multiplication by tens and hundreds; **25.1** Multiplication – 3 digits × 2 digits
		• Solve multiplication word problems	**24.1** Multiplication; **25.1** Multiplication – 3 digits × 2 digits

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Stage 3A Syllabus Match — Maths Trek 5

Number and algebra

Mathematical concept	Outcomes	Content	Topics	
Multiplicative relations A cont.		**Represent and solve division problems with whole number remainders**		
		• Model division, including where the answer involves a remainder, using materials or diagrams	**1.3** Modelling division **19.2** Division with remainders	**23.3** Division with remainders
		• Record remainders in words to division problems	**19.2** Division with remainders	
		• Use known multiplication fact families to solve division problems for which answers may include a remainder	**15.2** Division	**15.3** Division
		• Use the term *quotient* to describe the result of a division calculation	**1.2** Fact families for multiplication and division	**15.2** Division **15.3** Division
		• Show the connection between division and multiplication involving the divisor and quotient	**15.2** Division	**19.2** Division with remainders
		Select and apply strategies to divide a number with 3 or more digits by a one-digit divisor		
		• Estimate the result of dividing by a one-digit divisor	**3.2** Estimation strategies	**28.3** Estimation strategies
		• Use knowledge of multiples to partition as appropriate and divide	**15.2** Division **15.3** Division **17.3** Division	**19.2** Division with remainders **23.3** Division with remainders
		• Apply and record appropriate strategies to solve division word problems	**1.3** Modelling division **17.3** Division	**23.3** Division with remainders
		• Use and interpret remainders in solutions to division problems	**15.2** Division **15.3** Division	**19.2** Division with remainders **23.3** Division with remainders
		• Use digital technologies to divide whole numbers by one- and 2-digit divisors	**20.1** Comparing and ordering fractions	
		Use estimation and rounding to check the reasonableness of answers to calculations		
		• Use estimation to check the reasonableness of answers to multiplication and division calculations	**3.2** Estimation strategies	**28.3** Estimation strategies

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Stage 3A Syllabus Match — Maths Trek 5

Number and algebra

Mathematical concept	Outcomes	Content	Topics
Representing quantity 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 • compares and orders fractions with denominators of 2, 3, 4, 5, 6, 8 and 10 MA3-RQF-01 • determines $\frac{1}{2}$, $\frac{1}{4}$, $\frac{1}{5}$ and $\frac{1}{10}$ of measures and quantities MA3-RQF-02	**Recognise the role of the number 1 as representing the whole**	
		• Compare halves and quarters of different sized wholes	**21.2** Subtracting fractions from one whole
		• Justify the need for fractions to refer to the number 1 as the common whole (Reasons about quantity)	**21.2** Subtracting fractions from one whole
		Compare and order common unit fractions	
		• Compare unit fractions as numbers to the benchmark value $\frac{1}{2}$	**20.1** Comparing and ordering fractions
		• Compare and order unit fractions with denominators of 2, 3, 4, 5, 6, 8 and 10 by placing them on a number line	**20.1** Comparing and ordering fractions
		Solve problems involving addition and subtraction of fractions with the same denominator	
		• Represent the sum of fractions with the same denominator, recreating the whole, where the result may exceed one	**20.3** Adding and subtracting fractions **21.1** Adding fractions
		• Find the difference between fractions with the same denominator and interpret the answer	**20.3** Adding and subtracting fractions
		• Solve word problems that involve fractions with the same denominator	**21.1** Adding fractions
		• Use diagrams, objects and mental strategies to subtract a unit fraction from any whole number including 1 (the complement principle)	**21.2** Subtracting fractions from one whole

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Stage 3A Syllabus Match — Maths Trek 5

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 • locates and describes points on a coordinate plane MA3-GM-01 • selects and uses the appropriate unit and device to measure lengths and distances including perimeters MA3-GM-02 • measures and constructs angles, and identifies the relationships between angles on a straight line and angles at a point MA3-GM-03	**Position: Explore the Cartesian coordinate system**	
		• Recognise that the grid-map reference system gives the area of a location and the number plane identifies a specific point	4.3 Coordinates and directions 19.1 Coordinates to locate position
		• Identify that in the coordinate system the lines are numbered, not the spaces	4.3 Coordinates and directions 19.1 Coordinates to locate position
		• Identify the point of intersection of the 2 axes as the origin, having coordinates (0, 0)	19.1 Coordinates to locate position
		• Plot and label points, given coordinates, on the number plane in the first quadrant, describing the horizontal position first, followed by the vertical position	4.3 Coordinates and directions 19.1 Coordinates to locate position
		• Identify and record the coordinates of given points on the number plane in the first quadrant	4.3 Coordinates and directions 19.1 Coordinates to locate position
		Length: Use metres and kilometres for length and distances	
		• Recognise the need for a formal unit longer than the metre for measuring distance	15.1 Measuring with kilometres
		• Measure 100 metres and recognise that 10 times 100 metres is one kilometre, ie 1000 metres = 1 kilometre	15.1 Measuring with kilometres 25.2 Choosing units of measurement
		• Estimate lengths and distances using an appropriate unit	15.1 Measuring with kilometres
		• Record distances using the abbreviation for kilometres (km)	15.1 Measuring with kilometres
		• Use a variety of measuring devices to measure lengths and distances in different contexts	INV Radical renovation*
		Length: Measure lengths to find perimeters	
		• Use efficient strategies to calculate the perimeter of a large rectangular area in metres	11.1 Perimeter of rectangles
		• Calculate perimeters of common two-dimensional shapes, including squares, rectangles and triangles	10.3 Calculating perimeter 11.1 Perimeter of rectangles
		• Determine which side lengths are needed to find the perimeter of a shape (Reasons about relations)	10.3 Calculating perimeter 11.1 Perimeter of rectangles
		• Recognise that rectangles with the same perimeter may have different dimensions (Spatial reasoning)	11.3 Perimeter and dimensions

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Stage 3A Syllabus Match — Maths Trek 5

Measurement and space

Mathematical concept	Outcomes	Content	Topics	
Geometric measure A cont.		**Angles: Estimate, measure and compare angles using degrees**		
		• Identify the arms and vertex of an angle where both arms are invisible, such as for rotations	**23.1** Classifying angles	
		• Explain how a protractor is formed and used to measure an angle	**23.2** Measuring angles 0° to 180°	**28.1** Measuring angles 0° to 360°
		• Estimate and describe the size of angles using known angles as benchmarks (Reasons about mental rotation)	**23.1** Classifying angles	
		• Record angle measurements using the symbol for degrees (°)	**23.2** Measuring angles 0° to 180°	**28.1** Measuring angles 0° to 360°
		• Measure angles of up to 360° using a protractor	**23.2** Measuring angles 0° to 180°	**28.1** Measuring angles 0° to 360°
		Angles: Use a protractor to measure and identify types of angles		
		• Create angles of up to 360° using a protractor	**23.2** Measuring angles 0° to 180°	**28.1** Measuring angles 0° to 360°
		• Recognise that a right angle is 90°, a straight angle is 180° and an angle of revolution is 360°	**23.1** Classifying angles	
		• Identify and describe angle size in degrees for the classifications acute, obtuse and reflex	**23.1** Classifying angles	**28.1** Measuring angles 0° to 360°
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 • investigates and classifies two-dimensional shapes, including triangles and quadrilaterals based on their properties MA3-2DS-01	**2D shapes: Classify two-dimensional shapes and describe their properties**		
		• Identify and classify triangles as equilateral, isosceles or scalene triangles	**12.2** Classifying triangles	
		• Recognise that triangles and quadrilaterals can be classified in more than one way (Reasons about spatial relations)	**12.2** Classifying triangles	**12.3** Quadrilaterals
		• Compare side and angle properties of triangles and quadrilaterals using measurement and symmetry	**12.2** Classifying triangles	**12.3** Quadrilaterals
		• Investigate the symmetry properties (line and rotational) of quadrilaterals	**12.3** Quadrilaterals	
		• Identify regular and irregular polygons	**29.3** Regular and irregular 2D shapes	

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Stage 3A Syllabus Match — Maths Trek 5

Measurement and space

Mathematical concept	Outcomes	Content	Topics
Two-dimensional spatial structure A cont.	• selects and uses the appropriate unit to calculate areas, including areas of rectangles MA3-2DS-02 • combines, splits and rearranges shapes to determine the area of parallelograms and triangles MA3-2DS-03	**Area: Use hectares and square kilometres as units of measurement for area**	
		• Recognise the need for formal units larger than the square metre	**12.1** Hectares and square kilometres
		• Identify situations where square kilometres and hectares are used for measuring area	**12.1** Hectares and square kilometres
		• Equate one hectare to the area of a square with side lengths of 100 m, ie 10 000 square metres = 1 hectare (ha)	**12.1** Hectares and square kilometres
		• Record areas using square kilometres and hectares	**12.1** Hectares and square kilometres
		Area: Calculate the areas of rectangles using familiar metric units	
		• Recognise the importance of using the same units of length on the sides of rectangles to create 'square units'	**11.2** Area of rectangles
		• Establish the relationship between the lengths, widths and areas of rectangles	**11.2** Area of rectangles
		• Record, using words, the method for finding the area of any rectangle	**11.2** Area of rectangles
		• Calculate areas of rectangles in square centimetres (cm^2), square metres (m^2) and square kilometres (km^2)	**11.2** Area of rectangles; **12.1** Hectares and square kilometres
		• Recognise that rectangles with the same area may have different dimensions	**11.3** Perimeter and dimensions
		• Investigate and compare the areas of rectangles that have the same perimeter	**11.3** Perimeter and dimensions

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Stage 3A Syllabus Match — Maths Trek 5

Measurement and space

Mathematical concept	Outcomes	Content	Topics	
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 • visualises, sketches and constructs three-dimensional objects, including prisms and pyramids, making connections to two-dimensional representations MA3-3DS-01 • selects and uses the appropriate unit to estimate, measure and calculate volumes and capacities MA3-3DS-02	**3D objects: Compare, describe and name prisms and pyramids**		
		• Compare properties of prisms and pyramids	**32.1** Pyramids and prisms	**32.2** Cross-sections
		• Name prisms and pyramids according to the shape of their base	**32.1** Pyramids and prisms	
		3D objects: Connect three-dimensional objects with two-dimensional representations		
		• Visualise and sketch three-dimensional objects from different views, including top, front and side views (Reasons about spatial orientation)	**32.2** Cross-sections	
		• Examine a diagram to determine whether it is or is not the net of a closed 3-dimensional object	**32.3** Nets of objects	
		• Visualise and sketch nets for given three-dimensional objects	**32.3** Nets of objects	
		• Visualise and name prisms and pyramids, given representations of their nets (Reasons about spatial visualisation)	**32.3** Nets of objects	
		Volume: Choose appropriate units of measurement for capacity		
		• Select and use appropriate units to measure the capacities of a variety of containers	**25.2** Choosing units of measurement	**26.1** Displacement with litres and millilitres
		Volume: Use displacement to investigate volumes of irregular solids		
		• Recognise that an object's volume takes up space by observing the change in water level when an object is placed in a container of water	**25.3** Measuring with litres and millilitres	**26.1** Displacement with litres and millilitres
		• Compare the volumes of 2 or more objects by marking the change in water level when each is submerged in a container	**25.3** Measuring with litres and millilitres	**26.1** Displacement with litres and millilitres
		Volume: Connect decimal representations to the metric system		
		• Recognise the equivalence of whole-number and decimal representations of measurements of capacities	**25.3** Measuring with litres and millilitres	
		• Interpret decimal notation for capacities	**25.3** Measuring with litres and millilitres	
		• Record measurements to 3 decimal places	**25.3** Measuring with litres and millilitres	

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Stage 3A Syllabus Match — Maths Trek 5

Measurement and space

Mathematical concept	Outcomes	Content	Topics
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 • selects and uses the appropriate unit and device to measure the masses of objects MA3-NSM-01 • measures and compares duration, using 12- and 24-hour time and am and pm notation MA3-NSM-02	**Mass: Choose appropriate units of measurement for mass**	
		• Identify the appropriate unit and device to measure mass	6.1 Measuring mass
		• Recognise situations where mass would be measured in thousands of kilograms or tonnes (t)	6.2 Measuring with tonnes and kilograms
		Mass: Connect decimal representations to the metric system	
		• Recognise the equivalence of whole-number and decimal representations of measurements of mass	6.1 Measuring mass; 6.2 Measuring with tonnes and kilograms
		• Interpret decimal notation for masses	6.1 Measuring mass; 6.2 Measuring with tonnes and kilograms
		• Measure mass using scales and record using decimal notation of up to 3 decimal places	6.1 Measuring mass
		Time: Compare 12- and 24-hour time systems and convert between them	
		• Recognise that 24-hour time is used to avoid confusion between am and pm	3.3 24-hour time
		• Read time using appropriate 24-hour time language	3.3 24-hour time
		• Convert between 24-hour time and 12-hour time using am or pm notation	3.3 24-hour time; 4.2 Australian time zones
		• Read, interpret and use timetables from real-life situations, involving 12- and 24-hour time	3.3 24-hour time; 4.1 Reading timetables; 4.2 Australian time zones

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Stage 3A Syllabus Match — Maths Trek 5

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 • constructs graphs using many-to-one scales MA3-DATA-01 • interprets data displays, including timelines and line graphs MA3-DATA-02	**Collect categorical and discrete numerical data by observation or survey**	
		• Pose and refine questions to construct a survey to obtain categorical or discrete numerical data about a matter of interest	**8.3** Column graphs **26.2** Categorical and numerical data
		• Collect ordinal or nominal categorical data, and discrete numerical data through observation or by conducting surveys	**8.3** Column graphs **26.2** Categorical and numerical data **26.3** Ordinal data
		Choose and use appropriate tables and graphs	
		• Tabulate collected data with and without the use of digital technologies such as spreadsheets	**8.3** Column graphs **26.3** Ordinal data
		• Recognise which types of data display are appropriate to represent data (Statistical reasoning)	**16.3** Comparing graphs
		• Determine an appropriate scale (horizontal and vertical) to represent the data	**8.3** Column graphs **16.1** Line graphs **16.2** Column graphs
		• Construct column graphs using a many-to-one scale, with and without the use of digital technologies	**8.3** Column graphs **16.2** Column graphs
		• Draw an accurate timeline using an appropriate scale	**8.1** Timelines
		Describe and interpret different datasets in context	
		• Interpret line graphs using the scales on the axes	**16.1** Line graphs
		• Describe and interpret data presented in tables, column graphs and line graphs	**8.3** Column graphs **16.1** Line graphs **16.2** Column graphs
		• Determine the total number of data values represented in column graphs	**8.3** Column graphs

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Stage 3A Syllabus Match — Maths Trek 5

Statistics and probability

Mathematical concept	Outcomes	Content	Topics	
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 • conducts chance experiments and quantifies the probability MA3-CHAN-01	**List outcomes of chance experiments involving equally likely outcomes and represent probabilities**		
		• Use the term *probability* to describe the numerical value that represents the likelihood of an outcome of a chance experiment	**30.1** Measures of probability	**30.2** Comparing probability
		• Recognise that outcomes are described as *equally likely* when any one outcome has the same chance of occurring as any other outcome	**30.2** Comparing probability	
		• Record all outcomes in chance experiments where each outcome is equally likely to occur	**30.3** Fair and unfair outcomes	
		• Represent probabilities of outcomes of chance experiments using fractions	**30.1** Measures of probability **30.2** Comparing probability	**30.3** Fair and unfair outcomes
		• Establish that the total of the probabilities of the outcomes of a chance experiment equals one	**30.1** Measures of probability	**30.2** Comparing probability
		• Discuss the imprecise meaning of commonly used chance words including *possible*, *likely* and *unlikely*	**30.1** Measures of probability	

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

ISBN 978 1 74135 328 0

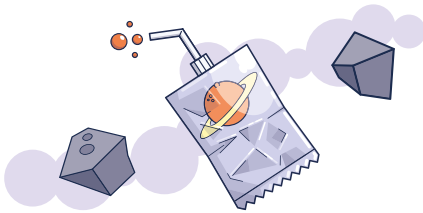
Stage 3B Syllabus Match — Maths Trek 6

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	
Represents numbers 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 the properties of numbers MA3-RN-01 • compares and orders decimals up to 3 decimal places MA3-RN-02 • determines percentages of quantities, and finds equivalent fractions and decimals for benchmark percentage values MA3-RN-03	**Whole numbers: Locate and represent integers on a number line**		
		• Recognise the location of negative whole numbers in relation to zero and place them on a number line	**1.2** Positive and negative numbers	**32.1** Positive and negative numbers
		• Use the term *integers* to describe positive and negative whole numbers and zero	**1.2** Positive and negative numbers	
		• Interpret integers in everyday contexts	**1.2** Positive and negative numbers	**32.1** Positive and negative numbers
		• Recognise that negative whole numbers can result from subtraction (Reasons about quantity)	**1.2** Positive and negative numbers	**32.1** Positive and negative numbers
		Decimals and percentages: Make connections between benchmark fractions, decimals and percentages		
		• Recognise that the symbol % means percent and 100% is the whole amount	**6.1** Percentages **6.2** Renaming fractions as percentages	**20.1** Percentages **20.2** Renaming fractions as percentages
		• Recall commonly used equivalent percentages, decimals and fractions including $\frac{1}{2}$, $\frac{1}{4}$, and $\frac{3}{4}$	**6.1** Percentages **6.2** Renaming fractions as percentages	**20.1** Percentages **20.2** Renaming fractions as percentages
		• Represent common percentages of quantities and lengths as fractions and decimals	**6.1** Percentages	
		• Recognise that 10% is one-tenth of 100% and use this to find 10% of a quantity (Reasons about relations)	**6.1** Percentages **6.2** Renaming fractions as percentages	**20.3** Discount

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Stage 3B Syllabus Match — Maths Trek 6

Number and algebra

Mathematical concept	Outcomes	Content	Topics
Represents numbers B cont.		**Decimals and percentages: Determine percentage discounts of 10%, 25% and 50%**	
		• Equate 10% to dividing by 10, 25% to finding a quarter by dividing by 4, and 50% to finding half	**20.3** Discount
		• Use mental strategies to estimate discounts of 10%, 25% and 50%	**20.3** Discount
		• Calculate the sale price of an item after a discount of 10%, 25% and 50%	**20.3** Discount
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 applies appropriate strategies to solve addition and subtraction problems MA3-AR-01	**Choose and use efficient strategies to solve addition and subtraction problems**	
		• Solve multistep word problems, including problems that require more than one operation	**6.3** Multi-step problems – add and subtract **21.1** Multi-step problems
		• Compare, evaluate and communicate strategies used to solve addition and subtraction problems	**6.3** Multi-step problems – add and subtract **7.1** Estimation strategies
		Applies known strategies to add and subtract decimals	
		• Model the addition and subtraction of decimals up to 3 decimal places using appropriate representations	**16.1** Decimal addition to tenths **16.2** Decimal subtraction to tenths **16.3** Decimal addition to hundredths **17.1** Decimal subtraction to hundredths **25.1** Decimal addition to thousandths **25.2** Decimal subtraction to thousandths
		• Solve word problems involving the addition and subtraction of decimals up to 3 decimal places	**16.1** Decimal addition to tenths **16.2** Decimal subtraction to tenths **16.3** Decimal addition to hundredths **17.1** Decimal subtraction to hundredths **25.1** Decimal addition to thousandths **25.2** Decimal subtraction to thousandths
		• Justify why the strategy used to solve addition and subtraction word problems is appropriate (Reasons about quantity)	**25.4** Problem-solving practice*

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Stage 3B Syllabus Match — Maths Trek 6

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 • selects and applies appropriate strategies to solve multiplication and division problems MA3-MR-01 • constructs and completes number sentences involving multiplicative relations, applying the order of operations to calculations MA3-MR-02	**Select and apply strategies to solve problems involving multiplication and division with whole numbers**	
		• Select and use efficient strategies to multiply whole numbers of up to 4 digits by one- and 2-digit numbers	**3.2** Multiplication **4.1** Investigating patterns **7.1** Estimation strategies
		• Solve word problems involving rates using multiplication and division (Reasons about relations)	**10.2** Modelling to solve problems
		• Determine why different division questions have the same answer (Reasons about relations)	
		Multiply and divide decimals by powers of 10	
		• Use mental strategies to multiply benchmark decimals by single-digit numbers	**25.3** Multiply decimals by 10, 100, 1000
		• Compare the relative place value of digits to multiply and divide a decimal by powers of 10	**25.3** Multiply decimals by 10, 100, 1000
		• Estimate the product of a decimal and a whole number to determine the magnitude of a calculator answer	
		Use equivalent number sentences involving multiplication and division to find unknown quantities	
		• Complete number sentences that involve more than one operation by calculating missing numbers	**14.3** Balancing equations
		• Identify and use inverse operations to assist with the solution of number sentences	**4.3** Inverse operations to check calculations **23.3** Inverse operations to solve problems
		• Recognise that division can be recorded using fractions	**2.1** Fractions as division **2.2** Fractions as division
		Represent and describe number patterns formed by multiples	
		• Use a given geometric pattern involving multiples to create a table of values	**4.2** Patterns in a table of values **28.2** Patterns and rules
		• Describe a pattern formed by multiples in words, in terms of multiplication rather than addition	**4.2** Patterns in a table of values **28.2** Patterns and rules
		• Determine a rule describing the relationship between the bottom number and the top number in a table (Algebraic reasoning)	**4.1** Investigating patterns **4.2** Patterns in a table of values **14.1** Function machines **28.2** Patterns and rules

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Stage 3B Syllabus Match — Maths Trek 6

Number and algebra

Mathematical concept	Outcomes	Content	Topics	
Multiplicative relations B cont.		**Explore the use of brackets and the order of operations to write number sentences**		
		• Recognise the need to agree on the order in which to perform operations	**14.2** Order of operations	**14.3** Balancing equations
		• Use grouping symbols () in number sentences to indicate operations that must be performed first	**14.2** Order of operations	**14.3** Balancing equations
		• Investigate the order of operations using real-life contexts	**14.2** Order of operations	
		• Solve problems involving grouping symbols	**14.2** Order of operations	**14.3** Balancing equations
Representing quantity 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 • compares and orders fractions with denominators of 2, 3, 4, 5, 6, 8 and 10 MA3-RQF-01 • determines $\frac{1}{2}$, $\frac{1}{4}$, $\frac{1}{5}$ and $\frac{1}{10}$ of measures and quantities MA3-RQF-02	**Recognise that a fraction can represent a division**		
		• Identify how the relationship between the number being divided and the divisor is represented in a fraction	**2.1** Fractions as division	**2.2** Fractions as division
		Compare common fractions with related denominators		
		• Order common fractions with related denominators using diagrams and number lines	**1.3** Comparing and ordering fractions	
		• Subdivide the area of a rectangle by both length and width to represent the multiplicative relationship between common fractions	**11.1** Equivalent fractions	
		• Compare and represent fractions with denominators of 2, 4 and 8; 3 and 6; 5 and 10 of a whole shape (area model) and a collection of objects (discrete model)	**1.3** Comparing and ordering fractions	
		• Create equivalent fractions for half in quarters, eighths, sixths and tenths by re-dividing the whole, using diagrams and number lines	**11.1** Equivalent fractions	**15.1** Equivalent fractions
		• Record equivalent fractions using diagrams, words and fraction notation	**11.1** Equivalent fractions	**15.1** Equivalent fractions
		Build up to the whole from a given fractional part		
		• Generate the whole quantity from non-unit fractional parts such as quarters, eighths, thirds, sixths, fifths and tenths (Reversible reasoning)	**15.3** Fractional parts build to the whole	
		Use equivalence to add and subtract fractional quantities		
		• Solve word problems involving adding or subtracting fractional quantities with related denominators	**15.2** Adding and subtracting fractions	**24.1** Adding and subtracting fractions
		• Represent fractional quantities with the same or related denominators to add and subtract fractions (Reasons about relations)	**15.2** Adding and subtracting fractions	**24.1** Adding and subtracting fractions

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Stage 3B Syllabus Match — Maths Trek 6

Number and algebra

Mathematical concept	Outcomes	Content	Topics
Representing quantity fractions B cont.		**Find fractional quantities of whole numbers (halves, quarters, fifths and tenths)**	
		• Calculate quarters and fifths of whole numbers that are multiples of the denominator, using a tape diagram	**2.2** Fractions as division
		• Solve word problems involving a fraction of a quantity	**2.1** Fractions as division **2.2** Fractions as division
		• Find $\frac{1}{2}$, $\frac{1}{4}$, $\frac{1}{5}$ and $\frac{1}{10}$ of collections, expressing remainders as decimals	**2.2** Fractions as division

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 • locates and describes points on a coordinate plane MA3-GM-01 • selects and uses the appropriate unit and device to measure lengths and distances including perimeters MA3-GM-02 • measures and constructs angles, and identifies the relationships between angles on a straight line and angles at a point MA3-GM-03	**Position: Use the 4 quadrants of the coordinate plane**	
		• Plot and label points, given coordinates, in all 4 quadrants of the number plane	**19.1** Coordinates in one quadrant **32.2** Coordinates in four quadrants
		• Identify and record the coordinates of given points on the number plane in all 4 quadrants	**19.1** Coordinates in one quadrant **32.2** Coordinates in four quadrants
		• Describe changes to coordinates when a point is translated or reflected across an axis	**32.3** Transformations with coordinates
		Length: Connect decimal representations to the metric system	
		• Recognise the equivalence of whole-number and decimal representations of measurements of length	**7.2** Metric system of measurement
		• Interpret decimal notation for lengths and distances	**7.2** Metric system of measurement **16.1** Decimal addition to tenths **16.2** Decimal subtraction to tenths
		• Record lengths and distances using decimal notation	**7.2** Metric system of measurement **16.1** Decimal addition to tenths **16.2** Decimal subtraction to tenths
		Length: Convert between common metric units of length	
		• Use decimal place value system to convert between metres and kilometres	**7.2** Metric system of measurement
		• Convert measurements to the same unit to compare lengths and distances	**7.2** Metric system of measurement
		• Explain and use the relationship between the size of a unit and the number of units needed	**7.2** Metric system of measurement

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Stage 3B Syllabus Match — Maths Trek 6

Measurement and space

Mathematical concept	Outcomes	Content	Topics
Geometric measure B cont.		**Length: Solve problems involving the comparison of lengths using appropriate units**	
		• Investigate and compare perimeters of rectangles with the same area	**8.3** Area and perimeter
		• Determine the number of different rectangles that can be formed using whole-number dimensions for a given area (Reasons about spatial structure)	**8.3** Area and perimeter
		• Solve a variety of problems involving length and perimeter, including problems involving different units of length	**7.3** Perimeter of rectangles
		Angles: Investigate angles on a straight line and angles at a point	
		• Recognise right angles, angles on a straight line and angles at a point embedded in diagrams (Reasons about spatial orientation)	**3.1** Properties of angles; **24.2** Properties of shapes
		• Identify the vertex and arms of angles formed by intersecting lines	**3.1** Properties of angles
		Angles: Investigate the relationships formed by the intersection of straight lines	
		• Identify angle types formed by the intersection of straight lines, including right angles (90°), angles on a straight line (add to 180°) and angles at a point that form an angle of revolution (add to 360°)	**24.2** Properties of shapes
		• Recognise that perpendicular lines intersect at right angles (90°)	**3.1** Properties of angles
		• Investigate adjacent angles that form a right angle and establish that they add to 90°	**3.1** Properties of angles
		• Investigate adjacent angles on a straight line and establish that they add to 180°	**3.1** Properties of angles; **24.2** Properties of shapes
		• Investigate angles at a point and establish that they form an angle of revolution and add to 360°	**24.2** Properties of shapes

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Stage 3B Syllabus Match — Maths Trek 6

Measurement and space

Mathematical concept	Outcomes	Content	Topics
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 • investigates and classifies two-dimensional shapes, including triangles and quadrilaterals based on their properties MA3-2DS-01 • selects and uses the appropriate unit to calculate areas, including areas of rectangles MA3-2DS-02 • combines, splits and rearranges shapes to determine the area of parallelograms and triangles MA3-2DS-03	**2D shapes: Dissect two-dimensional shapes and rearrange them using translations, reflections and rotations**	
		• Use the terms *translate*, *reflect* and *rotate* to describe transformations of two-dimensional shapes	**2.3** Rotational symmetry **28.3** Translation, reflection, rotation **30.3** Transformations
		• Dissect and rearrange one shape to make another	**19.2** Area of parallelograms
		• Recognise that translations, reflections or rotations change the position and orientation but not the size of shapes (Reasons about spatial orientation)	**2.3** Rotational symmetry **24.3** Tessellations **28.3** Translation, reflection, rotation **30.3** Transformations
		Area: Find the area of composite figures	
		• Find different ways to calculate the area of a composite L-shape figure	**8.1** Area of rectangles **8.2** Area of composite rectangles
		Area: Calculate the area of a parallelogram using subdivision and rearrangement	
		• Show how to transform a parallelogram into a rectangle to find its area	**19.2** Area of parallelograms
		• Record, using words, a method for finding the area of any parallelogram	**19.2** Area of parallelograms
		Area: Determine the area of a triangle	
		• Investigate the area of a triangle by comparing it to the area of a parallelogram with the same base length and height	**19.3** Area of triangles
		• Establish the relationship between the area of a triangle and the area of a parallelogram formed by duplicating and rotating the triangle	**19.3** Area of triangles
		• Record, using words, a method for finding the area of any triangle	**19.3** Area of triangles

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Stage 3B Syllabus Match — Maths Trek 6

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 • visualises, sketches and constructs three-dimensional objects, including prisms and pyramids, making connections to two-dimensional representations MA3-3DS-01 • selects and uses the appropriate unit to estimate, measure and calculate volumes and capacities MA3-3DS-02	**3D objects: Construct prisms and pyramids**	
		• Create skeletal models of prisms and pyramids	**23.1** Skeletal models of pyramids
		• Construct three-dimensional models of prisms and pyramids, given drawings of different views	**23.1** Skeletal models of pyramids
		Volume: Use cubic metres for measurement of volume	
		• Recognise the need for a formal unit larger than the cubic centimetre	**28.1** Volume with cubic metres
		• Construct and use the cubic metre as a unit to measure larger volumes	**28.1** Volume with cubic metres
		• Estimate and measure volumes in cubic metres	**28.1** Volume with cubic metres
		Volume: Recognise the multiplicative structure for finding volume	
		• Describe the *length*, *width* and *height* of a rectangular prism as the *dimensions* of the prism	**26.3** Volume with cubic centimetres; **28.1** Volume with cubic metres
		• Describe arrangements of cubic-centimetre blocks in terms of layers	**26.3** Volume with cubic centimetres
		• Establish the relationship between the number of cubes in one layer and the number of layers to find the volume of a rectangular prism (Reasons about spatial structure)	**26.3** Volume with cubic centimetres
		Volume: Find the volumes of rectangular prisms in cubic centimetres and cubic metres	
		• Construct rectangular prisms using cubic-centimetre blocks and determine the volumes	**26.3** Volume with cubic centimetres
		• Explain that objects with the same volume may be different shapes (Reasons about spatial structure)	**26.3** Volume with cubic centimetres
		• Record, using words, the method for finding the volumes of rectangular prisms	**28.1** Volume with cubic metres
		• Recognise that rectangular prisms with the same volume may have different dimensions (Reasons about spatial structure)	**26.3** Volume with cubic centimetres
		• Calculate volumes of rectangular prisms in cubic centimetres (cm^3) and cubic metres (m^3)	**26.3** Volume with cubic centimetres; **28.1** Volume with cubic metres

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Stage 3B Syllabus Match — Maths Trek 6

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 • selects and uses the appropriate unit and device to measure the masses of objects MA3-NSM-01 • measures and compares duration, using 12- and 24-hour time and am and pm notation MA3-NSM-02	**Mass: Convert between common metric units of mass**	
		• Convert between kilograms and grams and between kilograms and tonnes	7.2 Metric system of measurement 23.2 Measuring with tonnes and kilograms
		• Solve problems involving different units of mass	7.2 Metric system of measurement 23.2 Measuring with tonnes and kilograms
		Time: Solve problems involving duration, using 12- and 24-hour time	
		• Use start and finish times to calculate the elapsed time of events	10.1 Reading timetables 21.2 Reading and interpreting timetables 21.3 Calculating duration
		• Add and subtract time mentally using bridging strategies	21.3 Calculating duration
		• Round answers to time calculations to the nearest minute or hour	21.3 Calculating duration
		• Represent commonly used time intervals as decimals	10.1 Reading timetables
		• Solve a variety of problems involving duration, including where times are expressed in 12-hour and 24-hour notation	10.1 Reading timetables 21.2 Reading and interpreting timetables

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Stage 3B Syllabus Match — Maths Trek 6

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 • constructs graphs using many-to-one scales MA3-DATA-01 • interprets data displays, including timelines and line graphs MA3-DATA-02	**Interpret and compare a range of data displays**	
		• Interpret side-by-side column graphs for 2 categorical variables	**11.2** Side-by-side column graphs
		• Interpret data on a timeline using the given scale	**10.3** Timelines
		• Interpret and compare different displays in terms of the shape of the distribution, including the range and the most frequent value (mode)	**11.3** Line graphs **12.1** Stacked line graphs **12.2** Mode and range **12.3** Comparing graphs
		Interpret data presented in digital media and elsewhere	
		• Interpret data representations found in digital media and in factual texts	**17.2** Misleading data and graphs **17.3** Causes of bias
		• Identify sources of possible bias in representations of data in the media (Statistical reasoning)	**17.3** Causes of bias
		• Identify misleading representations of data in the media	**17.2** Misleading data and 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 • conducts chance experiments and quantifies the probability MA3-CHAN-01	**Compare observed frequencies of outcomes with expected results**	
		• Use the term *frequency* to describe the number of times a particular outcome occurs in a chance experiment	**29.1** Comparing probability
		• Distinguish between the frequency of an outcome (the number of times it occurs) and the probability of an outcome in a chance experiment	**29.1** Comparing probability **30.2** Fair and unfair outcomes
		• Compare the expected frequencies of outcomes of chance experiments with observed frequencies, including where the outcomes are not equally likely	**29.2** Expected probability **29.3** Observed probability
		• Discuss the fairness of simple games involving chance and the idea of randomness	**30.2** Fair and unfair outcomes
		• Explain why observed frequencies of outcomes in chance experiments may differ from expected frequencies, and how this relates to randomness	**29.2** Expected probability **29.3** Observed probability

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Stage 3B Syllabus Match — Maths Trek 6

Statistics and probability

Mathematical concept	Outcomes	Content	Topics	
Chance B cont.		**Create random generators and describe probabilities using fractions**		
		• Create random generators to follow specified probabilities or proportions	**29.2** Expected probability **29.3** Observed probability	**30.1** Repeated probability experiments
		• Record the outcomes for chance experiments where the outcomes are not equally likely to occur and assign probabilities to the outcomes using fractions (denominators of 2, 3, 4, 5, 6, 8 and 10)	**29.1** Comparing probability **29.2** Expected probability **29.3** Observed probability	**30.1** Repeated probability experiments
		• Use knowledge of benchmark fractions, decimals and percentages to assign probabilities to the likelihood of outcomes	**29.1** Comparing probability **29.2** Expected probability	**29.3** Observed probability
		Conduct chance experiments with both small and large numbers of trials		
		• Assign expected probabilities to outcomes in chance experiments with random generators, including digital simulators, and compare the expected probabilities with the observed probabilities after both small and large numbers of trials	**29.1** Comparing probability **29.2** Expected probability	**30.1** Repeated probability experiments
		• Determine and discuss the differences between the expected probabilities and the observed probabilities after both small and large numbers of trials	**29.3** Observed probability	**30.1** Repeated probability experiments
		• Determine the likely make up of a large collection of objects, by sampling objects and returning them to the collection before the next sample (sampling with replacement)	**29.1** Comparing probability	

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

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