

MERBEIN P-10 COLLEGE MATHS SCOPE & SEQUENCE

<u>Year</u>	<u>Number & Algebra</u>	<u>Measurement & Geometry</u>	<u>Statistics & Probability</u>
P	<ul style="list-style-type: none"> • Numbers to 20 • Counting and comparing groups • Ordinal numbers to 10th • Patterns • Addition and Subtraction to and from 10 	<ul style="list-style-type: none"> • Location • Length • 2D and 3D Shapes • Time - Days of the week, O'clock. • Mass • Capacity 	<ul style="list-style-type: none"> • Data collection
1	<ul style="list-style-type: none"> • Numbers to 100 • Skip counting – 2's, 5's, 10's • Addition • Fractions – Whole and half • Number and shape patterns • Money – Recognise and order • Subtraction 	<ul style="list-style-type: none"> • 2D and 3D shapes • Location • Length • Time – Half hour • Mass • Capacity 	<ul style="list-style-type: none"> • Data - Simple graphs
2	<ul style="list-style-type: none"> • Number sequences • Numbers to 1,000 • Addition - Algorithm • Subtraction - Algorithm • Fractions – halves, quarters, eighths • Money - Value • Number patterns • Multiplication • Division 	<ul style="list-style-type: none"> • Length • Transformation 2D shapes • Location - maps • Mass • Time – past and to, months and seasons • Capacity • Area • 3D shapes - features 	<ul style="list-style-type: none"> • Data - Collect, check and classify • Chance

<p style="text-align: center;">3</p>	<p>TERM 1</p> <ul style="list-style-type: none"> Recognise, model, represent and order numbers to at least 10 000 Apply place value to partition, rearrange and regroup numbers to at least 10 000 to assist calculations and solve problems Investigate the conditions required for a number to be odd or even and identify odd and even numbers Describe, continue, and create number patterns resulting from performing addition or subtraction Recognise and explain the connection between addition and subtraction Recall addition facts for single-digit numbers and related subtraction facts to develop increasingly efficient mental strategies for computation <p>TERM 2</p> <ul style="list-style-type: none"> Recall multiplication facts of two, three, five and ten and related division facts Represent and solve problems involving multiplication using efficient mental and written strategies and appropriate digital technologies <p>TERM 3</p> <ul style="list-style-type: none"> Model and represent unit fractions including $\frac{1}{2}$, $\frac{1}{4}$, $\frac{1}{3}$, $\frac{1}{5}$ and their multiples to a complete whole Revision – addition, multiplication, subtraction and division <p>TERM 4 – MONEY MATHS</p> <ul style="list-style-type: none"> Represent money values in multiple ways and count the change required for simple transactions to the nearest five cents Recall addition facts for single-digit numbers and related subtraction facts to develop increasingly efficient mental strategies for computation 	<p>TERM 1</p> <ul style="list-style-type: none"> Tell time to the half hour Describe duration using months, weeks, days and hours <p>TERM 2</p> <ul style="list-style-type: none"> Recognise and classify familiar two dimensional shapes and three-dimensional objects using obvious features <p>TERM 3</p> <ul style="list-style-type: none"> Give and follow directions to familiar locations 	<p>TERM 1</p> <ul style="list-style-type: none"> Conduct chance experiments, identify and describe possible outcomes and recognise variation in results <p>TERM 2</p> <ul style="list-style-type: none"> Identify questions or issues for categorical variables. Identify data sources and plan methods of data collection and recording <p>TERM 3</p> <ul style="list-style-type: none"> Collect data, organise into categories and create displays using lists, tables, picture graphs and simple column graphs, with and without the use of digital technologies Interpret and compare data displays
<p style="text-align: center;">4</p>	<p><u>Number and Place Value</u> Investigate and use the properties of odd and even numbers Recognise, represent and order numbers to at least tens of thousands Investigate number sequences involving multiples of 3, 4, 6, 7, 8, and 9 Develop efficient mental and written strategies and use appropriate digital technologies for multiplication and for division where there is no remainder</p> <p><u>Fractions and Decimals</u> Investigate equivalent fractions used in contexts Count by quarters halves and thirds, including with mixed numerals. Locate and represent these fractions on a number line Recognise that the place value system can be extended to tenths and hundredths. Make connections between fractions and decimal notation</p> <p><u>Money and Financial mathematics</u> Solve problems involving purchases and the calculation of change to the nearest five cents with and without digital technologies</p> <p><u>Patterns and algebra</u> Explore and describe number patterns resulting from performing multiplication Solve word problems by using number sentences involving multiplication or division where there is no remainder</p>	<p><u>Using units of measurement</u> Use scaled instruments to measure and compare lengths, masses, capacities and temperatures Compare objects using familiar metric units of area and volume Convert between units of time Use am and pm notation and solve simple time problems</p> <p><u>Shape</u> Compare the areas of regular and irregular shapes by informal means Compare and describe two dimensional shapes that result from combining and splitting common shapes, with and without the use of digital technologies</p> <p><u>Location and transformation</u> Use simple scales, legends and directions to interpret information contained in basic maps</p> <p><u>Geometric Reasoning</u> Compare angles and classify them as equal to, greater than or less than a right angle</p>	<p><u>Chance</u> Describe possible everyday events and order their chances of occurring Identify everyday events where one cannot happen if the other happens</p> <p><u>Data representation and interpretation</u> Select and trial methods for data collection, including survey questions and recording sheets Construct suitable data displays, with and without the use of digital technologies, from given or collected data. Include tables, column graphs and picture graphs where one picture can represent many data values Evaluate the effectiveness of different displays in illustrating data features including variability</p>

5	<p>Number and Place Value</p> <ul style="list-style-type: none"> Extend the place value system beyond hundredths. Identify and describe factors and multiples of whole numbers. Use estimation and rounding to check the reasonableness of answers. Solve problems involving multiplication of large numbers by one or two digits. Solve problems involving division by a one digit number, including those that result in a remainder. <p>Fractions and Decimals</p> <ul style="list-style-type: none"> Addition and Subtraction of fractions with common denominators. Describe, continue and create patterns with fractions, decimals and whole numbers. Compare, order and represent decimals. <p>Money and financial mathematics</p> <ul style="list-style-type: none"> Create simple financial plans. <p>Patterns and Algebra</p>	<p>Using units of measurement</p> <ul style="list-style-type: none"> Choose appropriate units of measurement for length, area, volume, capacity and mass. Calculate the perimeter and area of rectangles. Compare 12 and 24 hour time. <p>Shape</p> <ul style="list-style-type: none"> Connect three-dimensional objects with their nets and other two-dimensional representations. <p>Location and transformation</p> <ul style="list-style-type: none"> Use grid reference systems. Describe translations, reflections and rotations of two-dimensional shapes. Identify line and rotational symmetry. Enlarge familiar two-dimensional shapes. <p>Geometric reasoning</p> <ul style="list-style-type: none"> Estimate, measure and compare angles. Construct angles using a protractor. 	<p>Chance</p> <ul style="list-style-type: none"> List outcomes of chance experiments and express these as fractions. Investigate probability and use the 0-1 range to represent outcomes. <p>Data representation and interpretation</p> <ul style="list-style-type: none"> Pose questions and collect data. Construct graphs, dot plots and tables. Describe and interpret data sets.
6	<p>Number and place value</p> <ul style="list-style-type: none"> Identify and describe properties of prime, composite, square and triangular numbers. Locate and represent integers on a number line. <p>Fractions and Decimals</p> <ul style="list-style-type: none"> Continue and create sequences involving whole numbers, fractions and decimals. Compare fractions with related denominators. Addition and Subtraction of fractions with common or related denominators. Add and subtract decimals. Multiply and divide decimals by whole numbers including powers of 10. Make connections between equivalent decimal, fractions and percentages. <p>Money and financial mathematics</p> <ul style="list-style-type: none"> Investigate and calculate percentage discounts of 10%, 25% and 50%. <p>Patterns and Algebra</p>	<p>Using units of measurement</p> <ul style="list-style-type: none"> Recognise the equivalence of measurements such in the metric system. Convert between common metric units of length, mass and capacity. Interpret and use timetables. Connect volume and capacity. <p>Shape</p> <ul style="list-style-type: none"> Construct simple prisms and pyramids. <p>Location and transformation</p> <ul style="list-style-type: none"> Investigate combinations of translations, reflections and rotations. Cartesian coordinate system. <p>Geometric reasoning</p> <ul style="list-style-type: none"> Investigate angles on a straight line, angles at a point and vertically opposite angles. Find unknown angles. 	<p>Chance</p> <ul style="list-style-type: none"> Describe probabilities using fractions, decimals and percentages. Conduct chance experiments. Interpret and describe outcomes of chance events. <p>Data representation and interpretation</p> <ul style="list-style-type: none"> Interpret and compare a range of data displays.

7	<p>Number and place value</p> <ul style="list-style-type: none"> Investigate index notation Investigate and use square roots of perfect square numbers Apply the associative, commutative and distributive laws Compare, order, add and subtract integers <p>Real numbers</p> <ul style="list-style-type: none"> Compare fractions using equivalence. Solve problems involving addition and subtraction of fractions Multiply and divide fractions and decimals Express one quantity as a fraction of another Round decimals to a specified number of decimal places Connect fractions, decimals and percentages Find percentages of quantities Recognise and solve problems involving simple ratios <p>Money and financial mathematics</p> <ul style="list-style-type: none"> Investigate and calculate 'best buys' <p>Patterns and Algebra</p> <ul style="list-style-type: none"> Introduce the concept of variables Create algebraic expressions and evaluate them <p>Linear and non-linear relationships</p> <ul style="list-style-type: none"> Plot points and find coordinates on a Cartesian plane Solve simple linear equations Investigate, interpret and analyse graphs 	<p>Using units of measurement</p> <ul style="list-style-type: none"> Establish the formulas for areas of rectangles, triangles and parallelograms Calculate volumes of rectangular prisms <p>Shape</p> <ul style="list-style-type: none"> Draw different views of prisms and solids formed from combinations of prisms <p>Location and transformation</p> <ul style="list-style-type: none"> Describe translations, reflections in an axis, and rotations Identify line and rotational symmetries <p>Geometric reasoning</p> <ul style="list-style-type: none"> Identify corresponding, alternate and cointerior angles Investigate conditions for two lines to be parallel Classify triangles according to their side and angle properties and describe quadrilaterals Demonstrate that the angle sum of a triangle is 180° and use this to find the angle sum of a quadrilateral 	<p>Chance</p> <ul style="list-style-type: none"> Construct sample spaces for single step experiments with equally likely outcomes Assign probabilities to the outcomes of events and determine probabilities for events <p>Data representation and interpretation</p> <ul style="list-style-type: none"> Identify and investigate issues involving numerical data collected from primary and secondary sources Construct and compare a range of data displays including stem-and-leaf plots and dot plots Calculate mean, median, mode and range for sets of data. Interpret these statistics in the context of data Describe and interpret data displays using median, mean and range
8	<p>Number and place value</p> <ul style="list-style-type: none"> Use index notation with numbers to establish the index laws Carry out the four operations with rational numbers and integers <p>Real numbers</p> <ul style="list-style-type: none"> Investigate terminating and recurring decimals Investigate the concept of irrational numbers, including π Solve problems involving the use of percentages Solve a range of problems involving rates and ratios <p>Money and financial mathematics</p> <ul style="list-style-type: none"> Solve problems involving profit and loss <p>Patterns and Algebra</p> <ul style="list-style-type: none"> Extend and apply the distributive law to the expansion of algebraic expressions Factorise algebraic expressions Simplify algebraic expressions involving the four operations <p>Linear and non-linear relationships</p> <ul style="list-style-type: none"> Plot linear relationships on the Cartesian plane Solve linear equations using algebraic & graphical techniques. 	<p>Using units of measurement</p> <ul style="list-style-type: none"> Choose appropriate units of measurement for area and volume and convert from one unit to another Find perimeters and areas of parallelograms, rhombuses and kites Investigate circles Use formulas to solve problems involving circumference and area Develop the formulas for volumes of prisms Use formulas to solve problems involving volume Solve problems involving duration, including using 12- and 24-hour time within a single time zone <p>Geometric reasoning</p> <ul style="list-style-type: none"> Define congruence of plane shapes using transformations Develop the conditions for congruence of triangles Establish properties of quadrilaterals using congruent triangles and angle properties, and solve related numerical problems using reasoning 	<p>Chance</p> <ul style="list-style-type: none"> Identify complementary events Describe events using language of 'at least', exclusive 'or' (A or B but not both), inclusive 'or' (A or B or both) and 'and'. Represent events in two-way tables and Venn diagrams and solve related problems <p>Data representation and interpretation</p> <ul style="list-style-type: none"> Explore the practicalities and implications of obtaining data Investigate the effect of individual data values on the mean and median Explore the variation of means and proportions in of random samples drawn from the same population Investigate techniques for collecting data, including census and sampling

9	<p>Real numbers</p> <ul style="list-style-type: none"> Solve problems involving direct proportion. Explore the relationship between graphs and equations corresponding to simple rate problems Apply index laws to numerical expressions with integer indices Express numbers in scientific notation <p>Money and financial mathematics</p> <ul style="list-style-type: none"> Solve problems involving simple interest <p>Patterns and Algebra</p> <ul style="list-style-type: none"> Extend and apply the index laws to variables Apply the distributive law to the expansion of algebraic expressions and collect like terms <p>Linear and non-linear relationships</p> <ul style="list-style-type: none"> Find the distance points located on a Cartesian plane Sketch linear graphs using the coordinates of two points and solve linear equations Find the midpoint and gradient of a line segment Graph simple non-linear relations and solve simple related equations 	<p>Using units of measurement</p> <ul style="list-style-type: none"> Calculate the areas of composite shapes Find perimeters and areas of parallelograms, trapeziums, rhombuses and kites Solve problems involving the surface area and volume of right prisms Investigate very small and very large time scales and intervals <p>Geometric reasoning</p> <ul style="list-style-type: none"> Use the enlargement transformation to explain similarity Solve problems using ratio and scale factors in similar figures <p>Pythagoras and trigonometry</p> <ul style="list-style-type: none"> Investigate Pythagoras' Theorem and its application Use similarity to investigate the constancy of the sine, cosine and tangent ratios for a given angle in right-angled triangles Apply trigonometry to solve right-angled triangle problems 	<p>Chance</p> <ul style="list-style-type: none"> List all outcomes for two-step chance experiments, with and without replacement Assign probabilities to outcomes and determine probabilities for events Calculate relative frequencies from data to estimate probabilities of events Investigate reports of surveys to estimate population means and medians <p>Data representation and interpretation</p> <ul style="list-style-type: none"> Identify everyday questions and issues involving at least one numerical and at least one categorical variable Construct back-to-back stem-and-leaf plots and histograms and describe data Compare data displays using mean, median and range Investigate techniques for collecting data
10	<p>Money and financial mathematics</p> <ul style="list-style-type: none"> Connect the compound interest formula to repeated applications of simple interest Patterns and Algebra Factorise algebraic expressions by taking out a common algebraic factor Simplify algebraic products and quotients using index laws Apply the four operations to simple algebraic fractions with numerical denominators Expand binomial products and factorise monic quadratic expressions using a variety of strategies Substitute values into formulas to determine an unknown <p>Linear and non-linear relationships</p> <ul style="list-style-type: none"> Solve problems involving linear equations Solve linear inequalities and graph them on a number line Solve linear simultaneous equations Solve problems involving parallel and perpendicular lines Explore the connection between algebraic and graphical representations of relations such as simple quadratics, circles and exponentials using digital technology as appropriate Solve linear equations involving simple algebraic fractions Solve simple quadratic equations using a range of strategies 	<p>Using units of measurement</p> <ul style="list-style-type: none"> Solve problems involving surface area and volume for a range of prisms, cylinders and composite solids <p>Geometric reasoning</p> <ul style="list-style-type: none"> Formulate proofs involving congruent triangles and angle properties Apply logical reasoning, including the use of congruence and similarity, to proofs and numerical exercises involving plane shapes <p>Pythagoras and trigonometry</p> <ul style="list-style-type: none"> Solve right-angled triangle problems including those involving direction and angles of elevation and depression 	<p>Chance</p> <ul style="list-style-type: none"> Describe the results of two- and three step chance experiments with and without replacements and determine probabilities of events. Investigate the concept of independence Use the language of 'ifthen', 'given', 'of', 'knowing that' to investigate conditional statements and identify common mistakes in interpreting such language <p>Data representation and interpretation</p> <ul style="list-style-type: none"> Determine quartiles and interquartile range Construct and interpret box plots and use them to compare data sets Compare shapes of box plots to corresponding histograms and dot plots Use scatter plots to investigate and comment on relationships between two numerical variables Investigate and describe bivariate numerical data where the independent variable is time Evaluate statistical reports in the media and other places by linking claims to displays, statistics and representative data