Chapel Hill State School

Maths Curriculum and Assessment Year Level Plan 2025

Year 6

AC V9

Curriculum Intent

Year Level Description

In Year 6, learning in Mathematics builds on each student's prior learning and experiences. Students engage in a range of approaches to learning and doing mathematics that develop their understanding of and fluency with concepts, procedures and processes by making connections, reasoning, problem-solving and practice. Proficiency in mathematics enables students to respond to familiar and unfamiliar situations by employing mathematical strategies to make informed decisions and solve problems efficiently.

Students further develop proficiency and positive dispositions towards mathematics and its use as they:

- expand the repertoire of numbers they work with to include rational numbers and the use of integers in practical contexts such as locating points in the 4 quadrants of a Cartesian plane
- extend their knowledge of factors and multiples to understand the properties of prime, composite and square numbers
- solve arithmetic problems involving all 4 operations with natural numbers of any size
- use mathematical modelling to solve practical problems, choosing models, representations and calculation strategies and justify solutions
- apply computational approaches to develop algorithms that use rules to generate numbers
- develop a range of written and digital means for representing objects and three-dimensional spaces in 2 dimensions
- apply their understanding of area and use multiplicative thinking to establish the formula for the areas of a rectangle
- begin to formally use deductive reasoning in spatial contexts involving lines and angles
- describe and compare probabilities numerically
- determine the mode and range and discuss the shape of distributions in their reports of findings from their statistical investigations
- observe and compare long-run frequencies in repeated chance experiments and simulations.

Achievement Standard

Spiral Progression and Alignment

YEAR 5

Number, Algebra

By the end of Year 5, students use place value to write and order decimals including decimals greater than one. They express natural numbers as products of factors and identify multiples. Students order and represent, add and subtract fractions with the same or related denominators. They represent common percentages and connect them to their fraction and decimal equivalents. Students use their proficiency with multiplication facts and efficient calculation strategies to multiply large numbers by one- and two-digit numbers and divide by single-digit numbers. They check the reasonableness of their calculations using estimation. Students use mathematical modelling to solve financial and other practical problems, formulating and solving problems, choosing arithmetic operations and interpreting results in terms of the situation. They apply properties of numbers and operations to find unknown values in numerical equations involving multiplication and division. Students create and use algorithms to identify and explain patterns in the factors and multiples of numbers.

Measurement, Space

They choose and use appropriate metric units to measure the attributes of length, mass and capacity, and to solve problems involving perimeter and area. Students convert between 12- and 24-hour time. They estimate, construct and measure angles in degrees. Students use grid coordinates to locate and move positions. They connect objects to their two-dimensional nets. Students perform and describe the results of transformations and identify any symmetries.

Statistics, Probability

They plan and conduct statistical investigations that collect nominal and ordinal categorical and discrete numerical data using digital tools. Students identify the mode and interpret the shape of distributions of data in context. They interpret and compare data represented in line graphs. Students conduct repeated chance experiments, list the possible outcomes, estimate likelihoods and make comparisons between those with and without equally likely outcomes.

YEAR 6

Number, Algebra

By the end of Year 6, students use integers to represent points on a number line and in the Cartesian plane. They solve problems using the properties of prime, composite and square numbers. Students order common fractions, giving reasons, and add and subtract fractions with related denominators. They use all 4 operations with decimals and connect decimal representations of measurements to the metric system. Students solve problems involving finding a fraction, decimal or percentage of a quantity and use estimation to find approximate solutions to problems involving rational numbers and percentages. They use mathematical modelling to solve financial and other practical problems involving percentages and rational numbers, formulating and solving the problem, and justifying choices. Students find unknown values in numerical equations involving combinations of arithmetic operations. They identify and explain rules used to create growing patterns. Students create and use algorithms to generate sets of numbers, using a rule.

Measurement, Space

They interpret and use timetables. Students convert between common units of length, mass and capacity. They use the formula for the area of a rectangle and angle properties to solve problems. Students identify the parallel cross-section for right prisms. They create tessellating patterns using combinations of transformations. Students locate an ordered pair in any one of the 4 quadrants on the Cartesian plane.

Statistics, Probability

They compare distributions of discrete and continuous numerical and ordinal categorical data sets as part of their statistical investigations, using digital tools. Students critique arguments presented in the media based on statistics. They assign probabilities using common fractions, decimal and percentages. Students conduct simulations using digital tools, to generate and record the outcomes from many trials of a chance experiment. They compare observed frequencies to the expected frequencies of the outcomes of chance experiments.

YEAR 7

Number, Algebra

By the end of Year 7, students represent natural numbers in expanded form and as products of prime factors, using exponent notation. They solve problems involving squares of numbers and square roots of perfect square numbers. Students solve problems involving addition and subtraction of integers. They use all 4 operations in calculations involving positive fractions and decimals, choosing efficient calculation strategies. Students choose between equivalent representations of rational numbers and percentages to assist in calculations. They use mathematical modelling to solve practical problems involving rational numbers, percentages and ratios in financial and other applied contexts, justifying choices of representation. Students use algebraic expressions to represent situations, describe the relationships between variables from authentic data and substitute values into formulas to determine unknown values. They solve linear equations with natural number solutions. Students create tables of values related to algebraic expressions and formulas, and describe the effect of variation.

Measurement, Space

They apply knowledge of angle relationships and the sum of angles in a triangle to solve problems, giving reasons. Students use formulas for the areas of triangles and parallelograms and the volumes of rectangular and triangular prisms to solve problems. They describe the relationships between the radius, diameter and circumference of a circle. Students classify polygons according to their features and create an algorithm designed to sort and classify shapes. They represent objects two-dimensionally in different ways, describing the usefulness of these representations. Students use coordinates to describe transformations of points in the plane.

Statistics, Probability

They plan and conduct statistical investigations involving discrete and continuous numerical data, using appropriate displays. Students interpret data in terms of the shape of distribution and summary statistics, identifying possible outliers. They decide which measure of central tendency is most suitable and explain their reasoning. Students list sample spaces for single step experiments, assign probabilities to outcomes and predict relative frequencies for related events. They conduct repeated single-step chance experiments and run simulations using digital tools, giving reasons for differences between predicted and observed results.

Sequence of units	Semester 1		Semester 2	
	Unit 1	**Unit 2**	**Unit 3**	**Unit 4**
Unit description	**Number, Space, Statistics** Students further develop proficiency and positive dispositions towards mathematics and its use as they: • expand the repertoire of numbers to include rational numbers and the use of integers in practical contexts such as locating points in the four quadrants of a Cartesian plane • build fluency of understanding to solve arithmetic problems involving all four operations with natural numbers • use combinations of transformations to create tessellating patterns • conduct a statistical investigation to determine the mode and range of data, discuss the shape of distributions and communicate findings.	**Number, Algebra, Measurement** Students further develop proficiency and positive dispositions towards mathematics and its use as they: • solve arithmetic problems involving all four operations with natural numbers of any size • extend knowledge of factors and multiples to understand the properties of prime, composite and square numbers to solve problems efficiently • use mathematical modelling to solve financial problems, choosing models, representations and calculation strategies and justify solutions • use timetables of daily activities to solve practical problems • find unknown values in numerical equations involving and combinations of arithmetic operations.	**Number, Space, Measurement** Students further develop proficiency and positive dispositions towards mathematics and its use as they: • solve practical problems using addition and subtraction of fractions with related denominators • solve arithmetic problems involving all four operations with decimals • use mathematical modelling to solve practical problems, choosing models, representations and calculation strategies, and justify solutions • use physical materials to compare the parallel cross-sections of familiar objects including right prisms • apply an understanding of area and use multiplicative thinking to establish the formula for the area of a rectangle • convert between common metric units of length, mass and capacity (for example: metres and centimetres) • begin to formally use deductive reasoning in spatial contexts involving lines and angles.	**Number, Algebra, Probability** Students further develop proficiency and positive dispositions towards mathematics and its use as they: • solve problems involving fractions, decimals and percentages of a quantity, including percentage discounts and choosing efficient calculation strategies using digital tools where appropriate • recognise and use rules that generate growing patterns and number patterns involving natural numbers and rational numbers • apply computational thinking to develop algorithms that use rules to generate numbers, such as to find unknown values in patterns • recognise that probabilities of an event can be described and compared numerically • observe and compare long-run frequencies in repeated chance experiments and simulations.
Curriculum links	Science Unit 1 ERP v8		English Unit 3 v9	HASS unit 5 v8

Assessment		Semester 1		Semester 2	
		Assessment task U1.1 *Using integers*	**Assessment task U2.1** *Number, algebra and mathematical modelling*	**Assessment task U3.1** *Number and mathematical modelling*	**Assessment task U4.1** *Number, algebra and computational thinking*
Range and balance of assessment conventions	**Technique**	Short response Observed demonstration	Short response Observed demonstration	Short response Observed demonstration	Test Observed demonstration
	Mode	Written	Practical	Practical	Practical
	Conditions	☒ Access to resources ☒ Individual task **or** ☐ Group task **Consideration of:** ☒ Time conditions ☒ Accessibility for all students	☒ Access to resources ☒ Individual task **or** ☐ Group task **Consideration of:** ☒ Time conditions ☒ Accessibility for all students	☒ Access to resources ☒ Individual task **or** ☐ Group task **Consideration of:** ☒ Time conditions ☒ Accessibility for all students	☒ Access to resources ☒ Individual task **or** ☐ Group task **Consideration of:** ☒ Time conditions ☒ Accessibility for all students
	Diagnostic	Includes Diagnostic Number Task	Includes Diagnostic Number Task	Includes Diagnostic Number Task	Includes Diagnostic Number Task
Assessment		**Assessment task U1.2** *Creating tessellating patterns*	**Assessment task U2.2** *Measurement*	**Assessment task U3.2** *Measurement*	**Assessment task U4.2** *Probability and probability experiments and simulations*
Range and balance of assessment conventions	**Technique**	Test Observed demonstration	Short response Observed demonstration	Test Observed demonstration	Other Observed demonstration
	Mode	Written	Written	Written	Practical
	Conditions	☒ Access to resources ☒ Individual task **or** ☐ Group task **Consideration of:** ☒ Time conditions ☒ Accessibility for all students	☒ Access to resources ☒ Individual task **or** ☐ Group task **Consideration of:** ☒ Time conditions ☒ Accessibility for all students	☒ Access to resources ☒ Individual task **or** ☐ Group task **Consideration of:** ☒ Time conditions ☒ Accessibility for all students	☒ Access to resources ☐ Individual task **or** ☒ Group task **Consideration of:** ☒ Time conditions ☒ Accessibility for all students
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Assessment		**Assessment task U1.3** *Planning and conducting a statistical investigation about sustainability*		Monitoring task U3.3 *Identifying parallel-cross sections for right prisms*	
Range and balance of assessment conventions	**Technique**	Investigation Observed demonstration	Choose an item. Choose an item.	Other Observed demonstration	Choose an item. Choose an item.
	Mode	Multimodal	Choose an item.	Practical	Choose an item.
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Achievement Standard Elements Assessed				
	Unit 1	**Unit 2**	**Unit 3**	**Unit 4**
	Number, Algebra By the end of Year 6, **students use integers to represent points on a number line and in the Cartesian plane.** They solve problems using the properties of prime, composite and square numbers. Students order common fractions, giving reasons, and add and subtract fractions with related denominators. They use all 4 operations with decimals and connect decimal representations of measurements to the metric system. Students solve problems involving finding a fraction, decimal or percentage of a quantity and use estimation to find approximate solutions to problems involving rational numbers and percentages. They use mathematical modelling to solve financial and other practical problems involving percentages and rational numbers, formulating and solving the problem, and justifying choices. Students find unknown values in numerical equations involving combinations of arithmetic operations. They identify and explain rules used to create growing patterns. Students create and use algorithms to generate sets of numbers, using a rule. **Measurement, Space** They interpret and use timetables. Students convert between common units of length, mass and capacity. They use the formula for the area of a rectangle and angle properties to solve problems. Students identify the parallel cross-section for right prisms. **They create tessellating patterns using combinations of transformations**. **Students locate an ordered pair in any one of the 4 quadrants on the Cartesian plane.** **Statistics, Probability** **They compare distributions of discrete and continuous numerical and ordinal categorical data sets as part of their statistical investigations, using digital tools. Students critique arguments presented in the media based on statistics.** They assign probabilities using common fractions, decimal and percentages. Students conduct simulations using digital tools, to generate and record the outcomes from many trials of a chance experiment. 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