Year 7 Mathematics

Achievement

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.

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.

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.

Assessment Criteria

Using the marking guide provided, an overall level of achievement in this subject is determined by the teacher's judgment of the evidence presented in students' summative assessment. All assessment unless noted on task sheet completed by Math's students assess the following criteria:

- Understanding and fluency
- Problem-solving and reasoning

Delivery (mode, time requirements, lessons)

Students have access to live lessons each week. Lessons are delivered via our learning management system. Students are also expected to undertake independent study to complete tasks and assessments in accordance with the Work Rate Calendar.

Student Requirements

Computer, access to internet, email, printer, scanner, telephone or headset with microphone, audio visual software/devices, scientific calculator, exercise book, stationery (including a 360º protractor).

Year 7 Mathematics (Semester 1)

Units and Learning Experiences, Summative Assessment, Criteria Assessed, Approximate timing/due date of summative assessment		
Semester 1	Term 1	**Unit 1A Number concepts** The first phase of this unit builds on number concepts from Year 6. Students develop an understanding of the base 10 number system, as they adapt and represent natural numbers in expanded form. Through the exploration of prime factors, (e.g. creating factor trees), and use exponent notation to represent numbers in different ways. Students explore and describe the relationship between perfect square numbers and square roots. Students demonstrate their understanding and fluency to solve problems in an examination.
		Unit 1B Space and Measurement In the second phase of this unit, students classify shapes (polygons) according to their attributes and features. They will explore and represent three-dimensional objects in two-dimensional representations, e.g. viewpoints, isometric and perspective drawings. They investigate angles in a triangle to demonstrate the sum of the interior angles of a triangle is 180º. Students applying knowledge of angle relationships and the sum of angles in a triangle to solve problems using logic and geometric reasoning. Students apply knowledge of area using formulas for the areas of triangles and parallelograms and solve problems using formulas for the volume of rectangular and triangular prisms. The unit culminates with an end of term fluency examination.
		Summative Assessment, due date: • Examination: Number concepts (Week 5) • Examination: Space and Measurement (Week 9)
	Term 2	**Unit 2A Algebra** In the first phase of this unit, students use critical and creative thinking skills to understand the foundational algebraic concept of using variables to represent unknown values and develop the skills to formulate algebraic expressions to represent real-life situations, e.g. paving problems using the area model. They find the unknown values in one-variable linear equations algebraically. Algebraic equations are explored in real-life contexts, e.g. construction and financial scenarios to form linear growth patterns. These mathematical concepts are assessed through an understanding and fluency examination.
		Unit 2B Chance In the second phase of this unit, students use representations to develop a conceptual understanding of ratios. They will design and conduct repeated chance experiments and simulations, including physical and digital tools. Students collect and access data to conduct these experiments and simulations using real-life context, such as games involving throwing a coin or dice. They assign probabilities, using rational numbers for single-staged events, e.g. tossing a coin or rolling a dice, and make predictions based on the relative frequencies of these events. These mathematical concepts are assessed through an understanding and fluency investigation.
		Summative Assessment, due date: • Examination: Algebra (Week 4) • Investigation: Chance (Week 8)

Year 7 Mathematics (Semester 2)

Units and Learning Experiences, Summative Assessment, Criteria Assessed, Approximate timing/due date of summative assessment		
Semester 2	Term 3	**Unit 3A Financial Decisions** In the first phase of this unit, students will compare and calculate (applying unit pricing) and justify comparisons between similar items is identify 'the best buy'. They will apply their problem-solving proficiencies to plan and make considerations for a class BBQ project for a determined budget.
		Unit 3B Number concepts 2 In the first phase of this unit, students continue to build on their knowledge of rational numbers from Unit 1 to include using equivalent representations to assist with calculations involving rational numbers. Students continue to develop fluency when using efficient calculation strategies to solve problems involving addition and subtraction of integers and all four operations, including rational numbers (fractions, decimals and percentages). Students use representations to develop a conceptual understanding of ratios and to solve ratio and percentage problems.
		Summative Assessment, due date: • Project: Financial Decisions - Plan the catering for a class BBQ (Week 5) • Examination: Number concepts 2 (Week 9)
	Term 4	**Unit 4A Interpreting Data** The first phase of this unit focuses on developing critical thinking skills to plan and conduct statistical investigations. Students explore different types of numerical data displays, e.g. stem and leaf, dot plots. Using these data displays, students then describe and compare the distribution of data using the summary of statistics, e.g. shape, centre and spread, including outliers, and central tendencies (mode, mean and median). Students provide insights into the nature of the distribution of data and explain their reasoning. These mathematical concepts are assessed through an understanding and fluency examination.
		Unit 4B Angle relationships and Circles In the second phase of this unit, students their angle understandings to explore and represent angles formed when parallel lines are crossed by a transversal, e.g. corresponding, alternate and co-interior angles. They use coordinates to plot and describe the transformation, e.g. translation, rotation and rotation, of shapes (including polygons) on a Cartesian plane. Students investigate and describe how pi (π) is the constant in the proportional relationship between the radius, diameter and circumference of a circle. They compare the circumference of circles in relation to their diameter. These mathematical concepts are assessed through an understanding and fluency examination.
		Summative Assessment, due date: • Investigation: Interpreting Data (Week 4) • Examination: Angle relationships and Circles (Week 7)

Disclaimer All of the above information is accurate at the time of development.