

Year 9 Mathematics

Achievement

By the end of Year 9, students solve problems involving simple interest. They interpret ratio and scale factors in similar figures. Students explain similarity of triangles. They recognise the connections between similarity and the trigonometric ratios. Students compare techniques for collecting data from primary and secondary sources. They make sense of the position of the mean and median in skewed, symmetric and bi-modal displays to describe and interpret data. Students apply the index laws to numbers and express numbers in scientific notation. They expand binomial expressions. They find the distance between two points on the Cartesian plane and the gradient and midpoint of a line segment. They sketch linear and non-linear relations. Students calculate areas of shapes and the volume and surface area of right prisms and cylinders. They use Pythagoras' Theorem and trigonometry to find unknown sides of right-angled triangles. Students calculate relative frequencies to estimate probabilities, list outcomes for two-step experiments and assign probabilities for those outcomes. They construct histograms and back-to-back stem-and-leaf plots.

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 student's assess the following criteria:

- Understanding and fluency
- Problem-solving and reasoning

Delivery (mode, time requirements, lessons)

Students have access to two 45 minute scheduled 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.

Year 9 Mathematics (Semester 1)

Units and Learning Experiences, Summative Assessment, Criteria Assessed, Approximate timing/due date of Summative Assessment		
Semester 1	Term 1	<p>Unit 1 Real numbers Solve rates problems, simplify rates, identify additive and multiplicative patterns in direct proportion, represent rates graphically and algebraically.</p> <p>Linear and non-linear relationships Calculate gradient, calculate the distance between two points on a Cartesian plane using Pythagoras' theorem, and calculate the midpoint of a line segment.</p>
		<p>Unit 2 Using units of measurement Calculate the area of composite shapes, calculate the surface area and prisms and cylinders, and apply reasoning around volume to design a rainwater collection system for a school, volume of right prisms and cylinders, solve problems involving the surface area and volume of right.</p>
		<p>Summative Assessment, due date:</p> <ul style="list-style-type: none"> • Assignment Unit 1 (Week 5) • Supervised Exam Unit 2 (Week 9)
	Term 2	<p>Unit 3 Patterns and algebra Expand and factorise algebraic expressions, expand binomial expressions, sketch non-linear relations and find x- and y- intercepts of parabolic functions.</p> <p>Geometric reasoning Describe the conditions of similarity, draw scaled enlargements, determine scale factors, interpret scale drawings, assess the similarity of triangles using tests and investigate scale and area.</p>
		<p>Unit 4 Pythagoras and trigonometry Apply Pythagoras' Theorem to check if a triangle is acute, right or obtuse, determine unknown side lengths of right-angled triangles, solve problems involving right-angled triangles, apply naming conventions for sides of right-angled triangles, use similarity to investigate the constancy of the sin, cos and tan ratios, investigate patterns in trigonometric ratios, calculate trigonometric ratios using known angle or side length values, calculate unknown side lengths in right-angled triangles, solve problems using trigonometry, and calculate unknown angles in right-angled triangles.</p>
		<p>Summative Assessment, due date:</p> <ul style="list-style-type: none"> • Supervised Exam Unit 3 (Week 5) • Supervised Exam Unit 4 (Week 10)

Year 9 Mathematics (Semester 2)

Units and Learning Experiences, Summative Assessment, Criteria Assessed, Approximate timing/due date of Summative Assessment		
Semester 2	Term 3	<p>Unit 5 Data representation and interpretation Consolidate types of statistical variables, collect primary and secondary data to investigate statistical questions, calculate, interpret and describe statistics from both raw data and data representations using non-digital and digital resources, construct histograms and back-to-back stem-and-leaf plots and use statistical knowledge to draw conclusions.</p>
		<p>Unit 6 Real numbers Use index notation, convert index notation to expanded notation, investigate the index laws, simplify expressions using the index laws, convert numbers from scientific notation to standard decimal form, use index laws to solve problems involving scientific notation.</p> <p>Patterns and algebra Expand and simplify binomial expressions, apply the index laws to expansion and investigate special cases of binomial expansion.</p> <p>Money and financial mathematics Use the simple interest formula, and solve problems using simple interest.</p>
		<p>Summative Assessment, due date:</p> <ul style="list-style-type: none"> • Assignment Unit 5 (Week 5) • Supervised Exam Unit 6 (Week 10)
	Term 4	<p>Unit 7 Chance Determine outcomes of two-step chance experiments using tree diagrams and arrays, assign probabilities to outcomes, calculate relative frequencies, determine probabilities of events (including those involving 'and' and 'or' criteria), organise data and determine relative frequencies in Venn diagrams and two-way tables, investigate data used in media reports (estimate population means and medians and evaluate the validity of statistics used).</p>
		<p>Unit 8 Real numbers Express numbers using scientific notation and perform operations using index laws Using units of Measurement Investigate very large and very small time scales, express time scales using metric prefixes and scientific notation, convert units of time using the index laws</p> <p>Linear and non-linear relationships Model relationships between variables and link algebraic, graphical and tabular representations of those relationships.</p>
		<p>Summative Assessment, due date:</p> <ul style="list-style-type: none"> • Supervised Exam Unit 7 (Week 5) • Supervised Exam Unit 8 (Week 9)

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