Lanyon High School

Year 9 — Australian Curriculum: Mathematics

Identify curriculum

Achievement standard

By the end of Year 9, students recognise and use rational and irrational numbers to solve problems. They extend and apply the exponent laws with positive integers to variables. Students expand binomial products, and factorise monic quadratic expressions. They find the distance between 2 points on the Cartesian plane, and the gradient and midpoint of a line segment. Students use mathematical modelling to solve problems involving change in financial and other applied contexts, choosing to use linear and quadratic functions. They graph quadratic functions and solve monic quadratic equations with integer roots algebraically. Students describe the effects of variation of parameters on functions and relations, using digital tools, and make connections between their graphical and algebraic representations.

They apply formulas to solve problems involving the surface area and volume of right prisms and cylinders. Students solve problems involving ratio, similarity and scale in two-dimensional situations. They determine percentage errors in measurements. Students apply Pythagoras' theorem and use trigonometric ratios to solve problems involving right-angled triangles. They use mathematical modelling to solve practical problems involving direct proportion, ratio and scale, evaluating the model and communicating their methods and findings. Students express small and large numbers in scientific notation. They apply the enlargement transformation to images of shapes and objects, and interpret results. Students design, use and test algorithms based on geometric constructions or theorems.

They compare and analyse the distributions of multiple numerical data sets, choose representations, describe features of these data sets using summary statistics and the shape of distributions, and consider the effect of outliers. Students explain how sampling techniques and representation can be used to support or question conclusions or to promote a point of view. They determine sets of outcomes for compound events and represent these in various ways. Students assign probabilities to the outcomes of compound events. They design and conduct experiments or simulations for combined events using digital tools.

Teaching and learning

Term overview

Term 1	Term 2	Term 3	Term 4
ALGEBRA AND MEASUREMENT - *Apply exponent laws to variables* - *Express numbers in scientific notation.* - *Expand and factorise binomial expressions.* **ALGEBRA** - *Graph quadratic functions and solve quadratic equations algebraically.* - *Use digital tools to describe the effects of varying parameters and connect graphical and algebraic representations.*	**SPACE AND MEASUREMENT** - *Apply enlargement transformations and interpret results.* - *Solve problems involving ratio, similarity and scale* - *Mathematical modelling involving proportion, ratio and scale.* **ALGEBRA** - *Finding the distance between two points and finding the gradient and midpoint of a line segment.* - *Mathematical modelling in financial situations.*	**SPACE** - *Use Pythagoras' Theorem and trigonometry to solve problems in right-angled triangles.* - *Design, use and test algorithms based on geometric constructions or theorems.* **MEASUREMENT AND NUMBER** - *Calculate the area, surface area and volume of right prisms and cylinders.* - *Use rational and irrational numbers.* - *Determine percentage errors in measurements.*	**STATISTICS** - *Compare and analyse the features of data sets and shape of distributions and outliers.* - *Bias in sampling techniques and representations.* **PROBABILITY** - *Determine outcomes for compound events.* - *Assign probabilities to compound events.* - *Use digital tools to design and conduct experiments for combined events.*

General capabilities and Cross-curriculum priorities

Literacy · Numeracy · ICT capability · Critical and creative thinking · Ethical behaviour · Personal and social capability · Intercultural understanding

Aboriginal and Torres Strait Islander histories and cultures · Asia and Australia's engagement with Asia · Sustainability

		Term 1		Term 2		Term 3		Term 4	
Develop assessment	**Assessment**	**Week**	**Assessment instrument**	**Week**	**Assessment instrument**	**Week**	**Assessment instrument**	**Week**	**Assessment instrument**
		4	Exponent Laws and Scientific Notation Assessment	14 15-16	Enlargement Transformations Assessment Modelling Ratio and Scale Assignment	2	Pythagoras and Trig Ratios Assessment	12 14	Statistics Assessment Sampling Assessment
		7	Expanding and Factorising Assessment	17-18	Coordinate Geometry Assessment	4	Geometric Constructions Assignment	16	Probability Assessment
		9	Solving and Graphing Quadratic Equations Assessment	18-20	Modelling in Financial Situations Assignment	5-8	Measurement and Irrational Numbers Assignment	17-18	Combined Events Experiment
		10	Comparing Graphs and Formulae Assignment	All semester	Ongoing continuous assessment	10	Percentage Errors Assessment	All semester	Ongoing continuous assessment
Make judgments and use feedback	**Moderation**	**Term 1**		**Term 2**		**Term 3**		**Term 4**	
		Teachers moderate assessment tasks to ensure consistency of judgments.							