

Australian Curriculum: BSHS Mathematics — Year 10

Year 10 Achievement Standard

By the end of Year 10, students recognise the connection between simple and compound interest. They solve problems involving linear equations and inequalities. They make the connections between algebraic and graphical representations of relations. Students solve surface area and volume problems relating to composite solids. They recognise the relationships between parallel and perpendicular lines. Students apply deductive reasoning to proofs and numerical exercises involving plane shapes. They compare data sets by referring to the shapes of the various data displays. They describe bivariate data where the independent variable is time. Students describe statistical relationships between two continuous variables. They evaluate statistical reports.

Students expand binomial expressions and factorise monic quadratic expressions. They find unknown values after substitution into formulas. They perform the four operations with simple algebraic fractions. Students solve simple quadratic equations and pairs of simultaneous equations. They use triangle and angle properties to prove congruence and similarity. Students use trigonometry to calculate unknown angles in right-angled triangles. Students list outcomes for multi-step chance experiments and assign probabilities for these experiments. They calculate quartiles and inter-quartile ranges.

CURRICULUM	SEMESTER 1		SEMESTER 2	
	Unit 1	Unit 2	Unit 3	Unit 4
Unit name	Number and Algebra	Measurement and Geometry	Statistics and Probability	Number and Algebra
Unit description	Basic Skills in Number and Algebra	Building and Construction	Modern Day Statistics	Financial Modelling and Extended Skills in Number and Algebra

ASSESSMENT		SEMESTER 1		SEMESTER 2	
		Summative assessment task 1	Summative assessment task 2	Summative assessment task 3	Summative assessment task 4
Range and balance of summative assessment conventions	Technique	Examination	Examination	Problem Solving and Modelling Task	Examination
	Type of text	Written	Written	Written	Written
	Mode	Short response	Short response	Extended Response	Short response
	Conditions	Closed book 1 X 70 minute lesson	Closed book 1 X 70 minute lesson	Closed book 3 x 70 minute lessons	Closed book 1 x 70 minute lessons
Aspects of the achievement standard					
Recognise the connection between simple and compound interest.					
Solve problems involving linear equations and inequalities.					
Make the connections between algebraic and graphical representations of relations.					
Solve surface area and volume problems relating to composite solids.					
Recognise the relationships between parallel and perpendicular lines.					
Apply deductive reasoning to proofs and numerical exercises involving plane shapes.					
Compare data sets by referring to the shapes of the various data displays.					
Describe bivariate data where the independent variable is time.					
Describe statistical relationships between two continuous variables.					
Evaluate statistical reports.					
Expand binomial expressions and factorise monic quadratic expressions.					
Find unknown values after substitution into formulas.					
Perform the four operations with simple algebraic fractions.					
Solve simple quadratic equations.					
Solve pairs of simultaneous equations.					
Use triangle and angle properties to prove congruence and similarity.					
Use trigonometry to calculate unknown angles in right-angled triangles.					
List outcomes for multi-step chance experiments and assign probabilities for these experiments					
They calculate quartiles and inter-quartile ranges.					

Shaded cells indicate opportunities that summative assessments provide for students to demonstrate evidence against all aspects of the achievement standard

PROFICIENCIES			
The Australian Curriculum: Mathematics proficiency strands are understanding, fluency, problem-solving and reasoning. They describe how content is explored or developed; that is, the thinking and doing of mathematics. The inclusion of the proficiencies in the curriculum is to ensure that student learning and student independence are at the centre of the curriculum. The curriculum focuses on developing increasingly sophisticated and refined mathematical proficiency skills. They enable students to respond to familiar and unfamiliar situations by employing mathematical strategies to make informed decisions and solve problems efficiently.			
Understanding Students build a robust knowledge of adaptable and transferable mathematical concepts. They make connections between related concepts and progressively apply the familiar to develop new ideas. They develop an understanding of the relationship between the 'why' and the 'how' of mathematics. Students build understanding when they connect related ideas, when they represent concepts in different ways, when they identify commonalities and differences between aspects of content, when they describe their thinking mathematically and when they interpret mathematical information.	Fluency Students develop skills in choosing appropriate procedures; carrying out procedures flexibly, accurately, efficiently and appropriately; and recalling factual knowledge and concepts readily. Students are fluent when they calculate answers efficiently, when they recognise robust ways of answering questions, when they choose appropriate methods and approximations, when they recall definitions and regularly use facts, and when they can manipulate expressions and equations to find solutions.	Problem-solving Students develop the ability to make choices, interpret, formulate, model and investigate problem situations, and communicate solutions effectively. Students formulate and solve problems when they use mathematics to represent unfamiliar or meaningful situations, when they design investigations and plan their approaches, when they apply their existing strategies to seek solutions, and when they verify that their answers are reasonable.	Reasoning Students develop an increasingly sophisticated capacity for logical thought and actions, such as analysing, proving, evaluating, explaining, inferring, justifying and generalising. Students are reasoning mathematically when they explain their thinking, when they deduce and justify strategies used and conclusions reached, when they adapt the known to the unknown, when they transfer learning from one context to another, when they prove that something is true or false, and when they compare and contrast related ideas and explain their choices.

