Australian Curriculum: BSHS Mathematics — Year 8

Year 8 Achievement Standard

By the end of Year 8, students solve everyday problems involving rates, ratios and percentages. They describe index laws and apply them to whole numbers. They describe rational and irrational numbers. Students solve problems involving profit and loss. They make connections between expanding and factorising algebraic expressions. Students solve problems relating to the volume of prisms. They make sense of time duration in real applications. They identify conditions for the congruence of triangles and deduce the properties of quadrilaterals. Students model authentic situations with two-way tables and Venn diagrams. They choose appropriate language to describe events and experiments. They explain issues related to the collection of data and the effect of outliers on means and medians in that data. Students use efficient mental and written strategies to carry out the four operations with integers. They simplify a variety of algebraic expressions. They solve linear equations and graph linear relationships on the Cartesian plane. Students convert between units of measurement for area and volume. They perform calculations to determine perimeter and area of parallelograms, rhombuses and kites. They name the features of circles and calculate the areas and circumferences of circles. Students determine the probabilities of complementary events and calculate the sum of probabilities.

CURRICULUM	SEMESTER 1		SEMESTER 2	
	Unit 1	Unit 2	Unit 3	Unit 4
Unit name	Number	Algebra	Measurement and Geometry	Probability and Data
Unit description	Number	Algebra	Measurement and Geometry	Probability and Data

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 2 x 60 minute lesson	Closed Book 2 x 60 minute lesson	Open book 4 x 70 minute lessons	Closed Book 2 x 60 minute lesson
Aspects of the achievement standard					
solve everyday problems involving rates, ratios and percentages					
describe rational and irrational numbers					
solve problems involving profit and loss					
use efficient mental and written strategies to carry out the four operations with integers					
describe index laws and apply them to whole numbers					
make connections between expanding and factorising algebraic expressions					
simplify a variety of algebraic expressions					
solve linear equations and graph linear relationships on the Cartesian plane					
Convert between units of measurement for area and volume					
solve problems relating to the volume of prisms					
identify conditions for the congruence of triangles and deduce the properties of quadrilaterals					
perform calculations to determine perimeter and area of parallelograms, rhombuses and kites					
name the features of circles and calculate the areas and circumferences of circles					
make sense of time duration in real applications					
model authentic situations with two-way tables and Venn diagrams					
choose appropriate language to describe events and experiments					
explain issues related to the collection of data and the effect of outliers on means and medians in that data					
determine the probabilities of complementary events and calculate the sum of probabilities					

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.