



Western Australian Curriculum | Mathematics

Year-by-year view (Pre-primary – Year 10)

- This document presents the Mathematics curriculum with year-level descriptions, content descriptions and achievement standards for Pre-primary to Year 10.
- These documents are based on version 8.1 of the Western Australian Curriculum.



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Western Australian Curriculum | Mathematics | Pre-primary

	Sub-strands	Content Descriptions	Year Level Description
Number and Algebra	Number and place value	<ul style="list-style-type: none"> Establish understanding of the language and processes of counting by naming numbers in sequences, initially to and from 20, moving from any starting point (ACMNA001) Connect number names, numerals and quantities, including zero, initially up to 10 and then beyond (ACMNA002) Subitise small collections of objects (ACMNA003) Compare, order and make correspondences between collections, initially to 20, and explain reasoning (ACMNA289) Represent practical situations to model addition and sharing (ACMNA004) 	<p>The proficiency strands understanding, fluency, problem-solving and reasoning are an integral part of mathematics content across the three content strands: Number and Algebra, Measurement and Geometry, and Statistics and Probability. The proficiencies reinforce the significance of working mathematically within the content and describe how the content is explored or developed. They provide the language to build in the developmental aspects of the learning of mathematics. The achievement standards reflect the content and encompass the proficiencies.</p> <p>At this year level:</p> <ul style="list-style-type: none"> understanding includes connecting names, numerals and quantities fluency includes readily counting numbers in sequences, continuing patterns and comparing the lengths of objects problem-solving includes using materials to model authentic problems, sorting objects, using familiar counting sequences to solve unfamiliar problems and discussing the reasonableness of the answer reasoning includes explaining comparisons of quantities, creating patterns and explaining processes for indirect comparison of length
	Fractions and decimals		
	Real numbers		
	Money and financial mathematics		
	Patterns and algebra	<ul style="list-style-type: none"> Sort and classify familiar objects and explain the basis for these classifications. Copy, continue and create patterns with objects and drawings (ACMNA005) 	
	Linear and non-linear relationships		
Measurement and Geometry	Using units of measurement	<ul style="list-style-type: none"> Use direct and indirect comparisons to decide which is longer, heavier or holds more, and explain reasoning in everyday language (ACMMG006) Compare and order duration of events using everyday language of time (ACMMG007) Connect days of the week to familiar events and actions (ACMMG008) 	
	Shape	<ul style="list-style-type: none"> Sort, describe and name familiar two-dimensional shapes and three-dimensional objects in the environment (ACMMG009) 	
	Geometric reasoning		
	Location and transformation	<ul style="list-style-type: none"> Describe position and movement (ACMMG010) 	
	Pythagoras and trigonometry		
Statistics and Probability	Chance		
	Data representation and interpretation	<ul style="list-style-type: none"> Answer yes/no questions to collect information and make simple inferences (ACMSP011) 	
Achievement Standard (organised by Strands)	<p>Number and Algebra At Standard, students count to and from 20 and order small collections. They make connections between number names, numerals and quantities up to 10.</p>	<p>Measurement and Geometry Students compare objects using mass, length and capacity. They explain the order and duration of events. Students connect events and the days of the week. They group objects based on common characteristics and sort shapes and objects. Students use appropriate language to describe location.</p>	<p>Statistics and Probability Students answer simple questions to collect information and make simple inferences.</p>

Western Australian Curriculum | Mathematics | Year 1

	Sub-strands	Content Descriptions	Year Level Description
Number and Algebra	Number and place value	<ul style="list-style-type: none"> Develop confidence with number sequences to and from 100 by ones from any starting point. Skip-count by twos, fives and tens starting from zero (ACMNA012) Recognise, model, read, write and order numbers to at least 100. Locate these numbers on a number line (ACMNA013) Count collections to 100 by partitioning numbers using place value (ACMNA014) Represent and solve simple addition and subtraction problems using a range of strategies including counting on, partitioning and rearranging parts (ACMNA015) 	<p>The proficiency strands understanding, fluency, problem-solving and reasoning are an integral part of mathematics content across the three content strands: Number and Algebra, Measurement and Geometry, and Statistics and Probability. The proficiencies reinforce the significance of working mathematically within the content and describe how the content is explored or developed. They provide the language to build in the developmental aspects of the learning of mathematics. The achievement standards reflect the content and encompass the proficiencies.</p> <p>At this year level:</p> <ul style="list-style-type: none"> understanding includes connecting names, numerals and quantities, and partitioning numbers in various ways fluency includes readily counting number in sequences forwards and backwards, locating numbers on a line and naming the days of the week problem-solving includes using materials to model authentic problems, giving and receiving directions to unfamiliar places, using familiar counting sequences to solve unfamiliar problems and discussing the reasonableness of the answer reasoning includes explaining direct and indirect comparisons of length using uniform informal units, justifying representations of data and explaining patterns that have been created
	Fractions and decimals	<ul style="list-style-type: none"> Recognise and describe one-half as one of two equal parts of a whole. (ACMNA016) 	
	Real numbers		
	Money and financial mathematics	<ul style="list-style-type: none"> Recognise, describe and order Australian coins according to their value (ACMNA017) 	
	Patterns and algebra	<ul style="list-style-type: none"> Investigate and describe number patterns formed by skip-counting and patterns with objects (ACMNA018) 	
	Linear and non-linear relationships		
Measurement and Geometry	Using units of measurement	<ul style="list-style-type: none"> Measure and compare the lengths and capacities of pairs of objects using uniform informal units (ACMMG019) Tell time to the half-hour (ACMMG020) Describe duration using months, weeks, days and hours (ACMMG021) 	
	Shape	<ul style="list-style-type: none"> Recognise and classify familiar two-dimensional shapes and three-dimensional objects using obvious features (ACMMG022) 	
	Geometric reasoning		
	Location and transformation	<ul style="list-style-type: none"> Give and follow directions to familiar locations (ACMMG023) 	
	Pythagoras and trigonometry		
Statistics and Probability	Chance	<ul style="list-style-type: none"> Identify outcomes of familiar events involving chance and describe them using everyday language such as 'will happen', 'won't happen' or 'might happen' (ACMSP024) 	
	Data representation and interpretation	<ul style="list-style-type: none"> Choose simple questions and gather responses and make simple inferences (ACMSP262) Represent data with objects and drawings where one object or drawing represents one data value. Describe the displays (ACMSP263) 	
Achievement Standard (organised by Strands)	<p>Number and Algebra At Standard, students count to and from 100 and locate numbers on a number line. They partition numbers using place value. Students carry out simple additions and subtractions using counting strategies. They identify representations of one half. Students recognise Australian coins according to their value. They continue simple patterns involving numbers and objects. Students describe number sequences resulting from skip-counting by 2s, 5s and 10s.</p>	<p>Measurement and Geometry Students order objects based on lengths and capacities using informal units. They tell time to the half hour and explain time durations. Students describe two-dimensional shapes and three-dimensional objects. They use the language of direction to move from place to place.</p>	<p>Statistics and Probability Students classify outcomes of simple familiar events. They collect data by asking questions, draw simple data displays and make simple inferences. Students describe data displays.</p>

Western Australian Curriculum | Mathematics | Year 2

	Sub-strands	Content Descriptions	Year Level Description
Number and Algebra	Number and place value	<ul style="list-style-type: none"> Investigate number sequences, initially those increasing and decreasing by twos, threes, fives and tens from any starting point, then moving to other sequences (ACMNA026) Recognise, model, represent and order numbers to at least 1000 (ACMNA027) Group, partition and rearrange collections up to 1000 in hundreds, tens and ones to facilitate more efficient counting (ACMNA028) Explore the connection between addition and subtraction (ACMNA029) Solve simple addition and subtraction problems using a range of efficient mental and written strategies (ACMNA030) Recognise and represent multiplication as repeated addition, groups and arrays (ACMNA031) Recognise and represent division as grouping into equal sets and solve simple problems using these representations (ACMNA032) 	<p>The proficiency strands understanding, fluency, problem-solving and reasoning are an integral part of mathematics content across the three content strands: Number and Algebra, Measurement and Geometry, and Statistics and Probability. The proficiencies reinforce the significance of working mathematically within the content and describe how the content is explored or developed. They provide the language to build in the developmental aspects of the learning of mathematics. The achievement standards reflect the content and encompass the proficiencies.</p> <p>At this year level:</p> <ul style="list-style-type: none"> understanding includes connecting number calculations with counting sequences, partitioning and combining numbers flexibly and identifying and describing the relationship between addition and subtraction and between multiplication and division fluency includes readily counting numbers in sequences, using informal units iteratively to compare measurements, using the language of chance to describe outcomes of familiar events and describing and comparing time durations problem-solving includes formulating problems from authentic situations, making models and using number sentences that represent problem situations, and matching transformations with their original shape reasoning includes using known facts to derive strategies for unfamiliar calculations, comparing and contrasting related models of operations and creating and interpreting simple representations of data
	Fractions and decimals	<ul style="list-style-type: none"> Recognise and interpret common uses of halves, quarters and eighths of shapes and collections (ACMNA033) 	
	Real numbers		
	Money and financial mathematics	<ul style="list-style-type: none"> Count and order small collections of Australian coins and notes according to their value (ACMNA034) 	
	Patterns and algebra	<ul style="list-style-type: none"> Describe patterns with numbers and identify missing elements (ACMNA035) Solve problems by using number sentences for addition or subtraction (ACMNA036) 	
	Linear and non-linear relationships		
Measurement and Geometry	Using units of measurement	<ul style="list-style-type: none"> Compare and order several shapes and objects based on length, area, volume and capacity using appropriate uniform informal units (ACMMG037) Compare masses of objects using balance scales (ACMMG038) Tell time to the quarter-hour, using the language of 'past' and 'to' (ACMMG039) Name and order months and seasons (ACMMG040) Use a calendar to identify the date and determine the number of days in each month (ACMMG041) 	
	Shape	<ul style="list-style-type: none"> Describe and draw two-dimensional shapes, with and without digital technologies (ACMMG042) Describe the features of three-dimensional objects (ACMMG043) 	
	Geometric reasoning		
	Location and transformation	<ul style="list-style-type: none"> Interpret simple maps of familiar locations and identify the relative positions of key features (ACMMG044) Investigate the effect of one-step slides and flips with and without digital technologies (ACMMG045) Identify and describe half and quarter turns (ACMMG046) 	
	Pythagoras and trigonometry		
Statistics and Probability	Chance	<ul style="list-style-type: none"> Identify practical activities and everyday events that involve chance. Describe outcomes as 'likely' or 'unlikely' and identify some events as 'certain' or 'impossible' (ACMSP047) 	
	Data representation and interpretation	<ul style="list-style-type: none"> Identify a question of interest based on one categorical variable. Gather data relevant to the question (ACMSP048) Collect, check and classify data (ACMSP049) Create displays of data using lists, table and picture graphs and interpret them (ACMSP050) 	
Achievement Standard (organised by Strands)	<p>Number and Algebra At Standard, students count to and from 1000. They perform simple addition and subtraction calculations using a range of strategies. Students represent multiplication and division by grouping into sets. They divide collections and shapes into halves, quarters and eighths. Students associate collections of Australian coins with their value. They recognise increasing and decreasing number sequences involving twos, threes, fives and tens. Students identify the missing element in a number sequence.</p>	<p>Measurement and Geometry Students order shapes and objects using informal units. They tell time to the quarter hour and use a calendar to identify the date and the months included in seasons. Students recognise the features of three-dimensional objects. They draw two-dimensional shapes. Students interpret simple maps of familiar locations. They explain the effects of one-step transformations.</p>	<p>Statistics and Probability Students describe outcomes for everyday events. They collect, organise and represent data to make simple inferences. Students make sense of collected information.</p>

Western Australian Curriculum | Mathematics | Year 3

	Sub-strands	Content Descriptions	Year Level Description
Number and Algebra	Number and place value	<ul style="list-style-type: none"> Investigate the conditions required for a number to be odd or even and identify odd and even numbers (ACMNA051) Recognise, model, represent and order numbers to at least 10 000 (ACMNA052) Apply place value to partition, rearrange and regroup numbers to at least 10 000 to assist calculations and solve problems (ACMNA053) Recognise and explain the connection between addition and subtraction (ACMNA054) Recall addition facts for single-digit numbers and related subtraction facts to develop increasingly efficient mental strategies for computation (ACMNA055) Recall multiplication facts of two, three, five and ten and related division facts (ACMNA056) Represent and solve problems involving multiplication using efficient mental and written strategies and appropriate digital technologies (ACMNA057) 	<p>The proficiency strands understanding, fluency, problem-solving and reasoning are an integral part of mathematics content across the three content strands: Number and Algebra, Measurement and Geometry, and Statistics and Probability. The proficiencies reinforce the significance of working mathematically within the content and describe how the content is explored or developed. They provide the language to build in the developmental aspects of the learning of mathematics. The achievement standards reflect the content and encompass the proficiencies.</p> <p>At this year level:</p> <ul style="list-style-type: none"> understanding includes connecting number representations with number sequences, partitioning and combining numbers flexibly, representing unit fractions, using appropriate language to communicate times and identifying environmental symmetry fluency includes recalling multiplication facts, using familiar metric units to order and compare objects, identifying and describing outcomes of chance experiments, interpreting maps and communicating positions problem-solving includes formulating and modelling authentic situations involving planning methods of data collection and representation, making models of three-dimensional objects and using number properties to continue number patterns reasoning includes using generalising from number properties and results of calculations, comparing angles and creating and interpreting variations in the results of data collections and data displays
	Fractions and decimals	<ul style="list-style-type: none"> Model and represent unit fractions including $\frac{1}{2}$, $\frac{1}{4}$, $\frac{1}{3}$, $\frac{1}{5}$ and their multiples to a complete whole (ACMNA058) 	
	Real numbers		
	Money and financial mathematics	<ul style="list-style-type: none"> Represent money values in multiple ways and count the change required for simple transactions to the nearest five cents (ACMNA059) 	
	Patterns and algebra	<ul style="list-style-type: none"> Describe, continue and create number patterns resulting from performing addition or subtraction (ACMNA060) 	
	Linear and non-linear relationships		
Measurement and Geometry	Using units of measurement	<ul style="list-style-type: none"> Measure, order and compare objects using familiar metric units of length, mass and capacity (ACMMG061) Tell time to the minute and investigate the relationship between units of time (ACMMG062) 	
	Shape	<ul style="list-style-type: none"> Make models of three-dimensional objects and describe key features (ACMMG063) 	
	Location and transformation	<ul style="list-style-type: none"> Create and interpret simple grid maps to show position and pathways (ACMMG065) Identify symmetry in the environment (ACMMG066) 	
	Geometric reasoning	<ul style="list-style-type: none"> Identify angles as measures of turn and compare angle sizes in everyday situations (ACMMG064) 	
	Pythagoras and trigonometry		
Statistics and Probability	Chance	<ul style="list-style-type: none"> Conduct chance experiments, identify and describe possible outcomes and recognise variation in results (ACMSP067) 	
	Data representation and interpretation	<ul style="list-style-type: none"> Identify questions or issues for categorical variables. Identify data sources and plan methods of data collection and recording (ACMSP068) Collect data, organise into categories and create displays using lists, tables, picture graphs and simple column graphs, with and without the use of digital technologies (ACMSP069) Interpret and compare data displays (ACMSP070) 	
Achievement Standard (organised by Strands)	<p>Number and Algebra</p> <p>At Standard, students count to and from 10 000. They classify numbers as either odd or even. Students recall addition and multiplication facts for single-digit numbers. They recognise the connection between addition and subtraction and solve problems using efficient strategies for multiplication. Students model and represent unit fractions. They represent money values in various ways. Students correctly count out change from financial transactions. They continue number patterns involving addition and subtraction.</p>	<p>Measurement and Geometry</p> <p>Students use metric units for length, mass and capacity. They tell time to the nearest minute. Students make models of three-dimensional objects. They match positions on maps with given information. Students identify symmetry in the environment. They recognise angles in real situations.</p>	<p>Statistics and Probability</p> <p>Students conduct chance experiments and list possible outcomes. They conduct simple data investigations for categorical variables. Students interpret and compare data displays.</p>

Western Australian Curriculum | Mathematics | Year 4

	Sub-strands	Content Descriptions	Year Level Description
Number and Algebra	Number and place value	<ul style="list-style-type: none"> Investigate and use the properties of odd and even numbers (ACMNA071) Recognise, represent and order numbers to at least tens of thousands (ACMNA072) Apply place value to partition, rearrange and regroup numbers to at least tens of thousands to assist calculations and solve problems (ACMNA073) Investigate number sequences involving multiples of 3, 4, 6, 7, 8, and 9 (ACMNA074) Recall multiplication facts up to 10×10 and related division facts (ACMNA075) Develop efficient mental and written strategies and use appropriate digital technologies for multiplication and for division where there is no remainder (ACMNA076) 	<p>The proficiency strands understanding, fluency, problem-solving and reasoning are an integral part of mathematics content across the three content strands: Number and Algebra, Measurement and Geometry, and Statistics and Probability. The proficiencies reinforce the significance of working mathematically within the content and describe how the content is explored or developed. They provide the language to build in the developmental aspects of the learning of mathematics. The achievement standards reflect the content and encompass the proficiencies.</p> <p>At this year level:</p> <ul style="list-style-type: none"> understanding includes making connections between representations of numbers, partitioning and combining numbers flexibly, extending place value to decimals, using appropriate language to communicate times and describing properties of symmetrical shapes fluency includes recalling multiplication tables, communicating sequences of simple fractions, using instruments to measure accurately, creating patterns with shapes and their transformations and collecting and recording data problem-solving includes formulating, modelling and recording authentic situations involving operations, comparing large numbers with each other, comparing time durations and using properties of numbers to continue patterns reasoning includes using generalising from number properties and results of calculations, deriving strategies for unfamiliar multiplication and division tasks, comparing angles, communicating information using graphical displays and evaluating the appropriateness of different displays
	Fractions and decimals	<ul style="list-style-type: none"> Investigate equivalent fractions used in contexts (ACMNA077) Count by quarters, halves and thirds, including with mixed numerals. Locate and represent these fractions on a number line (ACMNA078) Recognise that the place value system can be extended to tenths and hundredths. Make connections between fractions and decimal notation (ACMNA079) 	
	Real numbers		
	Money and financial mathematics	<ul style="list-style-type: none"> Solve problems involving purchases and the calculation of change to the nearest five cents with and without digital technologies (ACMNA080) 	
	Patterns and algebra	<ul style="list-style-type: none"> Explore and describe number patterns resulting from performing multiplication (ACMNA081) Solve word problems by using number sentences involving multiplication or division where there is no remainder (ACMNA082) Find unknown quantities in number sentences involving addition and subtraction and identify equivalent number sentences involving addition and subtraction. (ACMNA083) 	
	Linear and non-linear relationships		
Measurement and Geometry	Using units of measurement	<ul style="list-style-type: none"> Use scaled instruments to measure and compare lengths, masses, capacities and temperatures (ACMMG084) Compare objects using familiar metric units of area and volume (ACMMG290) Convert between units of time (ACMMG085) Use 'am' and 'pm' notation and solve simple time problems (ACMMG086) 	
	Shape	<ul style="list-style-type: none"> Compare the areas of regular and irregular shapes by informal means (ACMMG087) Compare and describe two-dimensional shapes that result from combining and splitting common shapes, with and without the use of digital technologies (ACMMG088) 	
	Location and transformation	<ul style="list-style-type: none"> Use simple scales, legends and directions to interpret information contained in basic maps (ACMMG090) Create symmetrical patterns, pictures and shapes, with and without digital technologies (ACMMG091) 	
	Geometric reasoning	<ul style="list-style-type: none"> Compare angles and classify them as equal to, greater than or less than a right angle (ACMMG089) 	
	Pythagoras and trigonometry		
Statistics and Probability	Chance	<ul style="list-style-type: none"> Describe possible everyday events and order their chances of occurring (ACMSP092) Identify everyday events where one cannot happen if the other happens (ACMSP093) Identify events where the chance of one will not be affected by the occurrence of the other (ACMSP094) 	
	Data representation and interpretation	<ul style="list-style-type: none"> Select and trial methods for data collection, including survey questions and recording sheets (ACMSP095) Construct suitable data displays, with and without the use of digital technologies, from given or collected data. Include tables, column graphs and picture graphs where one picture can represent many data values (ACMSP096) Evaluate the effectiveness of different displays in illustrating data features including variability (ACMSP097) 	
Achievement Standard (organised by Strands)	<p>Number and Algebra</p> <p>At Standard, students use the properties of odd and even numbers. They recall multiplication facts to 10×10 and related division facts. Students continue number sequences involving multiples of single-digit numbers. They choose appropriate strategies for calculations involving multiplication and division. Students locate familiar fractions on a number line. They recognise common equivalent fractions in familiar contexts and make connections between fraction and decimal notations up to two decimal places. Students solve simple purchasing problems. They describe number patterns resulting from multiplication. Students identify and explain strategies for finding unknown quantities in number sentences.</p>	<p>Measurement and Geometry</p> <p>Students use scaled instruments to measure temperatures, lengths, shapes and objects. They compare areas of regular and irregular shapes using informal units. Students solve problems involving time duration. They convert between units of time. Students interpret information contained in maps. They create symmetrical shapes and patterns. They classify angles in relation to a right angle.</p>	<p>Statistics and Probability</p> <p>Students list the probabilities of everyday events. They identify dependent and independent events. Students describe different methods for data collection and representation and evaluate their effectiveness. They construct data displays from given or collected data.</p>

Western Australian Curriculum | Mathematics | Year 5

	Sub-strands	Content Descriptions	Year Level Description
Number and Algebra	Number and place value	<ul style="list-style-type: none"> Identify and describe factors and multiples of whole numbers and use them to solve problems (ACMNA098) Use estimation and rounding to check the reasonableness of answers to calculations (ACMNA099) Solve problems involving multiplication of large numbers by one or two-digit numbers using efficient mental and written strategies and appropriate digital technologies (ACMNA100) Solve problems involving division by a one-digit number, including those that result in a remainder (ACMNA101) Use efficient mental and written strategies and apply appropriate digital technologies to solve problems (ACMNA291) 	<p>The proficiency strands understanding, fluency, problem-solving and reasoning are an integral part of mathematics content across the three content strands: Number and Algebra, Measurement and Geometry, and Statistics and Probability. The proficiencies reinforce the significance of working mathematically within the content and describe how the content is explored or developed. They provide the language to build in the developmental aspects of the learning of mathematics. The achievement standards reflect the content and encompass the proficiencies.</p> <p>At this year level:</p> <ul style="list-style-type: none"> understanding includes making connections between representations of numbers, using fractions to represent probabilities, comparing and ordering fractions and decimals and representing them in various ways, describing transformations and identifying line and rotation symmetry fluency includes choosing appropriate units of measurement for calculation of perimeter and area, using estimation to check the reasonableness of answers to calculations and using instruments to measure angles problem-solving includes formulating and solving authentic problems using whole numbers and measurements and creating financial plans reasoning includes investigating strategies to perform calculations efficiently, continuing patterns involving fractions and decimals, interpreting results of chance experiments, posing appropriate questions for data investigations and interpreting data sets
	Fractions and decimals	<ul style="list-style-type: none"> Compare and order common unit fractions and locate and represent them on a number line (ACMNA102) Investigate strategies to solve problems involving addition and subtraction of fractions with the same denominator (ACMNA103) Recognise that the place value system can be extended beyond hundredths (ACMNA104) Compare, order and represent decimals (ACMNA105) 	
	Real numbers		
	Money and financial mathematics	<ul style="list-style-type: none"> Create simple financial plans (ACMNA106) 	
	Patterns and algebra	<ul style="list-style-type: none"> Describe, continue and create patterns with fractions, decimals and whole numbers resulting from addition and subtraction (ACMNA107) Find unknown quantities in number sentences involving multiplication and division and identify equivalent number sentences involving multiplication and division (ACMNA121) 	
	Linear and non-linear relationships		
Measurement and Geometry	Using units of measurement	<ul style="list-style-type: none"> Choose appropriate units of measurement for length, area, volume, capacity and mass (ACMMG108) Calculate perimeter and area of rectangles using familiar metric units (ACMMG109) Compare 12- and 24-hour time systems and convert between them (ACMMG110) 	
	Shape	<ul style="list-style-type: none"> Connect three-dimensional objects with their nets and other two-dimensional representations (ACMMG111) 	
	Location and transformation	<ul style="list-style-type: none"> Use a grid reference system to describe locations. Describe routes using landmarks and directional language (ACMMG113) Describe translations, reflections and rotations of two-dimensional shapes. Identify line and rotational symmetries (ACMMG114) Apply the enlargement transformation to familiar two-dimensional shapes and explore the properties of the resulting image compared with the original (ACMMG115) 	
	Geometric reasoning	<ul style="list-style-type: none"> Estimate, measure and compare angles using degrees. Construct angles using a protractor (ACMMG112) 	
	Pythagoras and trigonometry		
Statistics and Probability	Chance	<ul style="list-style-type: none"> List outcomes of chance experiments involving equally likely outcomes and represent probabilities of those outcomes using fractions (ACMSP116) Recognise that probabilities range from 0 to 1 (ACMSP117) 	
	Data representation and interpretation	<ul style="list-style-type: none"> Pose questions and collect categorical or numerical data by observation or survey (ACMSP118) Construct displays, including column graphs, dot plots and tables, appropriate for data type, with and without the use of digital technologies (ACMSP119) Describe and interpret different data sets in context (ACMSP120) 	
Achievement Standard (organised by Strands)	<p>Number and Algebra At Standard, students identify and describe factors and multiples. They solve simple problems involving the four operations using a range of strategies. Students check the reasonableness of answers using estimation and rounding. They order decimals and unit fractions and locate them on number lines. Students add and subtract fractions with the same denominator. They explain plans for simple budgets. Students continue patterns by adding and subtracting fractions and decimals. They identify and explain strategies for finding unknown quantities in number sentences involving the four operations.</p>	<p>Measurement and Geometry Students use appropriate units of measurement for length, area, volume, capacity and mass, and calculate perimeter and area of rectangles. They convert between 12- and 24-hour time. Students connect three-dimensional objects with their two-dimensional representations. They describe transformations of two-dimensional shapes and identify line and rotational symmetry. Students use a grid reference system to locate landmarks. They measure and construct different angles.</p>	<p>Statistics and Probability Students interpret different data sets. They list outcomes of chance experiments with equally likely outcomes and assign probabilities between 0 and 1. Students pose questions to gather data, and construct data displays appropriate for the data.</p>

Western Australian Curriculum | Mathematics | Year 6

	Sub-strands	Content Descriptions	Year Level Description
Number and Algebra	Number and place value	<ul style="list-style-type: none"> Identify and describe properties of prime, composite, square and triangular numbers (ACMNA122) Select and apply efficient mental and written strategies and appropriate digital technologies to solve problems involving all four operations with whole numbers (ACMNA123) Investigate everyday situations that use integers. Locate and represent these numbers on a number line (ACMNA124) 	<p>The proficiency strands understanding, fluency, problem-solving and reasoning are an integral part of mathematics content across the three content strands: Number and Algebra, Measurement and Geometry, and Statistics and Probability. The proficiencies reinforce the significance of working mathematically within the content and describe how the content is explored or developed. They provide the language to build in the developmental aspects of the learning of mathematics. The achievement standards reflect the content and encompass the proficiencies.</p> <p>At this year level:</p> <ul style="list-style-type: none"> understanding includes describing properties of different sets of numbers, using fractions and decimals to describe probabilities, representing fractions and decimals in various ways and describing connections between them, and making reasonable estimations fluency includes representing integers on a number line, calculating simple percentages, using brackets appropriately, converting between fractions and decimals, using operations with fractions, decimals and percentages, measuring using metric units and interpreting timetables problem-solving includes formulating and solving authentic problems using fractions, decimals, percentages and measurements, interpreting secondary data displays and finding the size of unknown angles reasoning includes explaining mental strategies for performing calculations, describing results for continuing number sequences, explaining the transformation of one shape into another and explaining why the actual results of chance experiments may differ from expected results
	Fractions and decimals	<ul style="list-style-type: none"> Compare fractions with related denominators and locate and represent them on a number line (ACMNA125) Solve problems involving addition and subtraction of fractions with the same or related denominators (ACMNA126) Find a simple fraction of a quantity where the result is a whole number, with and without digital technologies (ACMNA127) Add and subtract decimals, with and without digital technologies, and use estimation and rounding to check the reasonableness of answers (ACMNA128) Multiply decimals by whole numbers and perform divisions by non-zero whole numbers where the results are terminating decimals, with and without digital technologies (ACMNA129) Multiply and divide decimals by powers of 10 (ACMNA130) Make connections between equivalent fractions, decimals and percentages (ACMNA131) 	
	Real numbers		
	Money and financial mathematics	<ul style="list-style-type: none"> Investigate and calculate percentage discounts of 10%, 25% and 50% on sale items, with and without digital technologies (ACMNA132) 	
	Patterns and algebra	<ul style="list-style-type: none"> Continue and create sequences involving whole numbers, fractions and decimals. Describe the rule used to create the sequence (ACMNA133) Explore the use of brackets and order of operations to write number sentences (ACMNA134) 	
	Linear and non-linear relationships		
Measurement and Geometry	Using units of measurement	<ul style="list-style-type: none"> Connect decimal representations to the metric system (ACMMG135) Convert between common metric units of length, mass and capacity (ACMMG136) Solve problems involving the comparison of lengths and areas using appropriate units (ACMMG137) Connect volume and capacity and their units of measurement (ACMMG138) Interpret and use timetables (ACMMG139) 	
	Shape	<ul style="list-style-type: none"> Construct simple prisms and pyramids (ACMMG140) 	
	Location and transformation	<ul style="list-style-type: none"> Investigate combinations of translations, reflections and rotations, with and without the use of digital technologies (ACMMG142) Introduce the Cartesian coordinate system using all four quadrants (ACMMG143) 	
	Geometric reasoning	<ul style="list-style-type: none"> Investigate, with and without digital technologies, angles on a straight line, angles at a point and vertically opposite angles. Use results to find unknown angles (ACMMG141) 	
	Pythagoras and trigonometry		
Statistics and Probability	Chance	<ul style="list-style-type: none"> Describe probabilities using fractions, decimals and percentages (ACMSP144) Conduct chance experiments with both small and large numbers of trials using appropriate digital technologies (ACMSP145) Compare observed frequencies across experiments with expected frequencies (ACMSP146) 	
	Data representation and interpretation	<ul style="list-style-type: none"> Interpret and compare a range of data displays, including side-by-side column graphs for two categorical variables (ACMSP147) Interpret secondary data presented in digital media and elsewhere (ACMSP148) 	
Achievement Standard (organised by Strands)	<p>Number and Algebra</p> <p>At Standard, students recognise the properties of prime, composite, square and triangular numbers. They describe the use of integers in everyday contexts. Students solve problems involving all four operations with whole numbers. They locate fractions and integers on a number line. Students solve problems involving the addition and subtraction of related fractions. They calculate a simple fraction of a quantity. Students connect fractions, decimals and percentages as different representations of the same number. They make connections between the powers of 10 and the multiplication and division of decimals. Students add, subtract and multiply decimals and divide decimals where the result is rational. They calculate common percentage discounts on sale items. Students describe rules used in sequences involving whole numbers, fractions and decimals. They write correct number sentences using brackets and order of operations.</p>	<p>Measurement and Geometry</p> <p>Students connect decimal representations to the metric system and choose appropriate units of measurement to perform a calculation. They make connections between capacity and volume. Students solve problems involving length and area. They interpret timetables. Students construct simple prisms and pyramids. They describe combinations of transformations. Students solve problems using the properties of angles. They locate an ordered pair in any one of the four quadrants on the Cartesian plane.</p>	<p>Statistics and Probability</p> <p>Students compare observed and expected frequencies. They describe probabilities using simple fractions, decimals and percentages. Students interpret and compare a variety of data displays including those displays for two categorical variables. They interpret secondary data displayed in the media.</p>

Western Australian Curriculum | Mathematics | Year 7

	Sub-strands	Content Descriptions	Year Level Description
Number and Algebra	Number and place value	<ul style="list-style-type: none"> Investigate index notation and represent whole numbers as products of powers of prime numbers (ACMNA149) Investigate and use square roots of perfect square numbers (ACMNA150) Apply the associative, commutative and distributive laws to aid mental and written computation (ACMNA151) Compare, order, add and subtract integers (ACMNA280) 	<p>The proficiency strands understanding, fluency, problem-solving and reasoning are an integral part of mathematics content across the three content strands: Number and Algebra, Measurement and Geometry, and Statistics and Probability. The proficiencies reinforce the significance of working mathematically within the content and describe how the content is explored or developed. They provide the language to build in the developmental aspects of the learning of mathematics. The achievement standards reflect the content and encompass the proficiencies.</p> <p>At this year level:</p> <ul style="list-style-type: none"> understanding includes describing patterns in uses of indices with whole numbers, recognising equivalences between fractions, decimals, percentages and ratios, plotting points on the Cartesian plane, identifying angles formed by a transversal crossing a pair of lines, and connecting the laws and properties of numbers to algebraic terms and expressions fluency includes calculating accurately with integers, representing fractions and decimals in various ways, investigating best buys, finding measures of central tendency and calculating areas of shapes and volumes of prisms problem-solving includes formulating and solving authentic problems using numbers and measurements, working with transformations and identifying symmetry, calculating angles and interpreting sets of data collected through chance experiments reasoning includes applying the number laws to calculations, applying known geometric facts to draw conclusions about shapes, applying an understanding of ratio and interpreting data displays
	Fractions and decimals		
	Real numbers	<ul style="list-style-type: none"> Compare fractions using equivalence. Locate and represent positive and negative fractions and mixed numbers on a number line (ACMNA152) Solve problems involving addition and subtraction of fractions, including those with unrelated denominators (ACMNA153) Multiply and divide fractions and decimals using efficient written strategies and digital technologies (ACMNA154) Express one quantity as a fraction of another, with and without the use of digital technologies (ACMNA155) Round decimals to a specified number of decimal places (ACMNA156) Connect fractions, decimals and percentages and carry out simple conversions (ACMNA157) Find percentages of quantities and express one quantity as a percentage of another, with and without digital technologies (ACMNA158) Recognise and solve problems involving simple ratios (ACMNA173) 	
	Money and financial mathematics	<ul style="list-style-type: none"> Investigate and calculate 'best buys', with and without digital technologies (ACMNA174) 	
	Patterns and algebra	<ul style="list-style-type: none"> Introduce the concept of variables as a way of representing numbers using letters (ACMNA175) Create algebraic expressions and evaluate them by substituting a given value for each variable (ACMNA176) Extend and apply the laws and properties of arithmetic to algebraic terms and expressions (ACMNA177) 	
	Linear and non-linear relationships	<ul style="list-style-type: none"> Given coordinates, plot points on the Cartesian plane, and find coordinates for a given point (ACMNA178) Solve simple linear equations (ACMNA179) Investigate, interpret and analyse graphs from authentic data (ACMNA180) 	
Measurement and Geometry	Using units of measurement	<ul style="list-style-type: none"> Establish the formulas for areas of rectangles, triangles and parallelograms, and use these in problem-solving (ACMMG159) Calculate volumes of rectangular prisms (ACMMG160) 	
	Shape	<ul style="list-style-type: none"> Draw different views of prisms and solids formed from combinations of prisms (ACMMG161) 	
	Location and transformation	<ul style="list-style-type: none"> Describe translations, reflections in an axis, and rotations of multiples of 90° on the Cartesian plane using coordinates. Identify line and rotational symmetries (ACMMG181) 	
	Geometric reasoning	<ul style="list-style-type: none"> Identify corresponding, alternate and co-interior angles when two straight lines are crossed by a transversal (ACMMG163) Investigate conditions for two lines to be parallel and solve simple numerical problems using reasoning (ACMMG164) Demonstrate that the angle sum of a triangle is 180° and use this to find the angle sum of a quadrilateral (ACMMG166) Classify triangles according to their side and angle properties and describe quadrilaterals (ACMMG165) 	
	Pythagoras and trigonometry		
Statistics and Probability	Chance	<ul style="list-style-type: none"> Construct sample spaces for single-step experiments with equally likely outcomes (ACMSP167) Assign probabilities to the outcomes of events and determine probabilities for events (ACMSP168) 	
	Data representation and interpretation	<ul style="list-style-type: none"> Identify and investigate issues involving numerical data collected from primary and secondary sources (ACMSP169) Construct and compare a range of data displays including stem-and-leaf plots and dot plots (ACMSP170) Calculate mean, median, mode and range for sets of data. Interpret these statistics in the context of data (ACMSP171) Describe and interpret data displays using median, mean and range (ACMSP172) 	
Achievement Standard (organised by Strands)	<p>Number and Algebra At Standard, students solve problems involving the comparison, addition and subtraction of integers. They make the connections between whole numbers and index notation and the relationship between perfect squares and square roots. Students use fractions, decimals and percentages, and their equivalences. They express one quantity as a fraction or percentage of another. Students solve problems involving percentages and all four operations with fractions and decimals. They compare the cost of items to make financial decisions. Students represent numbers using variables. They connect the laws and properties for numbers to algebra. Students assign ordered pairs to given points on the Cartesian plane. They interpret simple linear representations and model authentic information. Students solve simple linear equations and evaluate algebraic expressions after numerical substitution.</p>	<p>Measurement and Geometry Students describe different views of three-dimensional objects. They represent transformations in the Cartesian plane. Students solve simple numerical problems involving angles formed by a transversal crossing two lines. They use formulas for the area and perimeter of rectangles and calculate volumes of rectangular prisms. Students classify triangles and quadrilaterals. They name the types of angles formed by a transversal crossing parallel line.</p>	<p>Statistics and Probability Students identify issues involving the collection of continuous data. They construct stem-and-leaf plots and dot plots. Students describe the relationship between the median and mean in data displays. They calculate mean, mode, median and range for data sets. Students determine the sample space for simple experiments with equally likely outcomes and assign probabilities to those outcomes.</p>

Western Australian Curriculum | Mathematics | Year 8

	Sub-strands	Content Descriptions	Year Level Description
Number and Algebra	Number and place value	<ul style="list-style-type: none"> Use index notation with numbers to establish the index laws with positive integral indices and the zero index (ACMNA182) Carry out the four operations with rational numbers and integers, using efficient mental and written strategies and appropriate digital technologies (ACMNA183) 	<p>The proficiency strands understanding, fluency, problem-solving and reasoning are an integral part of mathematics content across the three content strands: Number and Algebra, Measurement and Geometry, and Statistics and Probability. The proficiencies reinforce the significance of working mathematically within the content and describe how the content is explored or developed. They provide the language to build in the developmental aspects of the learning of mathematics. The achievement standards reflect the content and encompass the proficiencies.</p> <p>At this year level:</p> <ul style="list-style-type: none"> understanding includes describing patterns involving indices and recurring decimals, identifying commonalities between operations with algebra and arithmetic, connecting rules for linear relations with their graphs, explaining the purpose of statistical measures and explaining measurements of perimeter and area fluency includes calculating accurately with simple decimals, indices and integers; recognising equivalence of common decimals and fractions including recurring decimals; factorising and simplifying basic algebraic expressions and evaluating perimeters and areas of common shapes and volumes of three-dimensional objects problem-solving includes formulating and modelling practical situations involving ratios, profit and loss, areas and perimeters of common shapes and using two-way tables and Venn diagrams to calculate probabilities reasoning includes justifying the result of a calculation or estimation as reasonable, deriving probability from its complement, using congruence to deduce properties of triangles, finding estimates of means and proportions of populations
	Fractions and decimals		
	Real numbers	<ul style="list-style-type: none"> Investigate terminating and recurring decimals (ACMNA184) Investigate the concept of irrational numbers, including π (ACMNA186) Solve problems involving the use of percentages, including percentage increases and decreases, with and without digital technologies (ACMNA187) Solve a range of problems involving rates and ratios, with and without digital technologies (ACMNA188) 	
	Money and financial mathematics	<ul style="list-style-type: none"> Solve problems involving profit and loss, with and without digital technologies (ACMNA189) 	
	Patterns and algebra	<ul style="list-style-type: none"> Extend and apply the distributive law to the expansion of algebraic expressions (ACMNA190) Factorise algebraic expressions by identifying numerical factors (ACMNA191) Simplify algebraic expressions involving the four operations (ACMNA192) 	
	Linear and non-linear relationships	<ul style="list-style-type: none"> Plot linear relationships on the Cartesian plane with and without the use of digital technologies (ACMNA193) Solve linear equations using algebraic and graphical techniques. Verify solutions by substitution (ACMNA194) 	
Measurement and Geometry	Using units of measurement	<ul style="list-style-type: none"> Choose appropriate units of measurement for area and volume and convert from one unit to another (ACMMG195) Find perimeters and areas of parallelograms, trapeziums, rhombuses and kites (ACMMG196) Investigate the relationship between features of circles such as circumference, area, radius and diameter. Use formulas to solve problems involving circumference and area (ACMMG197) Develop the formulas for volumes of rectangular and triangular prisms and prisms in general. Use formulas to solve problems involving volume (ACMMG198) Solve problems involving duration, including using 12- and 24-hour time within a single time zone (ACMMG199) 	
	Shape		
	Geometric reasoning	<ul style="list-style-type: none"> Define congruence of plane shapes using transformations (ACMMG200) Develop the conditions for congruence of triangles (ACMMG201) Establish properties of quadrilaterals using congruent triangles and angle properties, and solve related numerical problems using reasoning (ACMMG202) 	
	Location and transformation		
	Pythagoras and trigonometry		
Statistics and Probability	Chance	<ul style="list-style-type: none"> Identify complementary events and use the sum of probabilities to solve problems (ACMSP204) Describe events using language of 'at least', exclusive 'or' (A or B but not both), inclusive 'or' (A or B or both) and 'and' (ACMSP205) Represent events in two-way tables and Venn diagrams and solve related problems (ACMSP292) 	
	Data representation and interpretation	<ul style="list-style-type: none"> Investigate techniques for collecting data, including census, sampling and observation (ACMSP284) Explore the practicalities and implications of obtaining data through sampling using a variety of investigative processes (ACMSP206) Explore the variation of means and proportions of random samples drawn from the same population (ACMSP293) Investigate the effect of individual data values, including outliers, on the mean and median (ACMSP207) 	
Achievement Standard (organised by Strands)	<p>Number and Algebra At Standard, students solve everyday problems involving rates, ratios and percentages. They describe index laws and apply them to whole numbers. Students describe rational and irrational numbers. They solve problems involving profit and loss. Students make connections between expanding and factorising algebraic expressions. They use efficient mental and written strategies to carry out the four operations with integers. Students simplify a variety of algebraic expressions. They solve linear equations and graph linear relationships on the Cartesian plane.</p>	<p>Measurement and Geometry Students solve problems relating to the volume of prisms. They make sense of time duration in real applications. Students identify conditions for the congruence of triangles and deduce the properties of quadrilaterals. They convert between units of measurement for area and volume. Students 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.</p>	<p>Statistics and Probability Students model authentic situations with two-way tables and Venn diagrams. They choose appropriate language to describe events and experiments. Students explain issues related to the collection of data and the effect of outliers on means and medians in that data. They determine the probabilities of complementary events and calculate the sum of probabilities.</p>

Western Australian Curriculum | Mathematics | Year 9

	Sub-strands	Content Descriptions	Year Level Description
Number and Algebra	Number and place value		<p>The proficiency strands understanding, fluency, problem-solving and reasoning are an integral part of mathematics content across the three content strands: Number and Algebra, Measurement and Geometry, and Statistics and Probability. The proficiencies reinforce the significance of working mathematically within the content and describe how the content is explored or developed. They provide the language to build in the developmental aspects of the learning of mathematics. The achievement standards reflect the content and encompass the proficiencies.</p> <p>At this year level:</p> <ul style="list-style-type: none"> understanding includes describing the relationship between graphs and equations, simplifying a range of algebraic expressions and explaining the use of relative frequencies to estimate probabilities and of the trigonometric ratios for right-angle triangles fluency includes applying the index laws to expressions with integer indices, expressing numbers in scientific notation, listing outcomes for experiments, developing familiarity with calculations involving the Cartesian plane and calculating areas of shapes and surface areas of prisms problem-solving includes formulating and modelling practical situations involving surface areas and volumes of right prisms, applying ratio and scale factors to similar figures, solving problems involving right-angle trigonometry and collecting data from secondary sources to investigate an issue reasoning includes following mathematical arguments, evaluating media reports and using statistical knowledge to clarify situations, developing strategies in investigating similarity and sketching linear graphs
	Fractions and decimals		
	Real numbers	<ul style="list-style-type: none"> Solve problems involving direct proportion. Explore the relationship between graphs and equations corresponding to simple rate problems (ACMNA208) Apply index laws to numerical expressions with integer indices (ACMNA209) Express numbers in scientific notation (ACMNA210) 	
	Money and financial mathematics	<ul style="list-style-type: none"> Solve problems involving simple interest (ACMNA211) 	
	Patterns and algebra	<ul style="list-style-type: none"> Extend and apply the index laws to variables, using positive integer indices and the zero index (ACMNA212) Apply the distributive law to the expansion of algebraic expressions, including binomials, and collect like terms where appropriate (ACMNA213) 	
	Linear and non-linear relationships	<ul style="list-style-type: none"> Find the distance between two points located on the Cartesian plane using a range of strategies, including graphing software (ACMNA214) Find the midpoint and gradient of a line segment (interval) on the Cartesian plane using a range of strategies, including graphing software (ACMNA294) Sketch linear graphs using the coordinates of two points and solve linear equations (ACMNA215) Graph simple non-linear relations with and without the use of digital technologies and solve simple related equations (ACMNA296) 	
Measurement and Geometry	Using units of measurement	<ul style="list-style-type: none"> Calculate areas of composite shapes (ACMMG216) Calculate the surface area and volume of cylinders and solve related problems (ACMMG217) Solve problems involving the surface area and volume of right prisms (ACMMG218) Investigate very small and very large time scales and intervals (ACMMG219) 	
	Shape		
	Geometric reasoning	<ul style="list-style-type: none"> Use the enlargement transformation to explain similarity and develop the conditions for triangles to be similar (ACMMG220) Solve problems using ratio and scale factors in similar figures (ACMMG221) 	
	Location and transformation		
	Pythagoras and trigonometry	<ul style="list-style-type: none"> Investigate Pythagoras' Theorem and its application to solving simple problems involving right-angled triangles (ACMMG222) Use similarity to investigate the constancy of the sine, cosine and tangent ratios for a given angle in right-angled triangles (ACMMG223) Apply trigonometry to solve right-angled triangle problems (ACMMG224) 	
Statistics and Probability	Chance	<ul style="list-style-type: none"> List all outcomes for two-step chance experiments, both with and without replacement using tree diagrams or arrays. Assign probabilities to outcomes and determine probabilities for events (ACMSP225) Calculate relative frequencies from given or collected data to estimate probabilities of events involving 'and' or 'or' (ACMSP226) Investigate reports of surveys in digital media and elsewhere for information on how data were obtained to estimate population means and medians (ACMSP227) 	
	Data representation and interpretation	<ul style="list-style-type: none"> Identify everyday questions and issues involving at least one numerical and at least one categorical variable, and collect data directly from secondary sources (ACMSP228) Construct back-to-back stem-and-leaf plots and histograms and describe data, using terms including 'skewed', 'symmetric' and 'bi-modal' (ACMSP282) Compare data displays using mean, median and range to describe and interpret numerical data sets in terms of location (centre) and spread (ACMSP283) 	
Achievement Standard (organised by Strands)	<p>Number and Algebra At Standard, students solve problems involving simple interest. They apply the index laws to numbers and express numbers in scientific notation. Students expand binomial expressions. They find the distance between two points on the Cartesian plane and the gradient and midpoint of a line segment. Students sketch linear and non-linear relations.</p>	<p>Measurement and Geometry Students interpret ratio and scale factors in similar figures. They explain similarity of triangles. Students recognise the connections between similarity and the trigonometric ratios. They calculate areas of shapes and the volume and surface area of right prisms and cylinders. Students use Pythagoras' Theorem and trigonometry to find unknown sides of right-angled triangles.</p>	<p>Statistics and Probability Students calculate relative frequencies to estimate probabilities, list outcomes for two-step experiments and assign probabilities for those outcomes. They compare techniques for collecting data from primary and secondary sources. Students construct histograms and back-to-back stem-and-leaf plots. They make sense of the position of the mean and median in skewed, symmetric and bi-modal displays to describe and interpret data.</p>

Western Australian Curriculum | Mathematics | Year 10

	Sub-strands	Content Descriptions	Year Level Description
Number and Algebra	Number and place value		<p>The proficiency strands understanding, fluency, problem-solving and reasoning are an integral part of mathematics content across the three content strands: Number and Algebra, Measurement and Geometry, and Statistics and Probability. The proficiencies reinforce the significance of working mathematically within the content and describe how the content is explored or developed. They provide the language to build in the developmental aspects of the learning of mathematics. The achievement standards reflect the content and encompass the proficiencies.</p> <p>At this year level:</p> <ul style="list-style-type: none"> understanding includes applying the four operations to algebraic fractions, finding unknowns in formulas after substitution, making the connection between equations of relations and their graphs, comparing simple and compound interest in financial contexts and determining probabilities of two- and three-step experiments fluency includes factorising and expanding algebraic expressions, using a range of strategies to solve equations and using calculations to investigate the shape of data sets problem-solving includes calculating the surface area and volume of a diverse range of prisms to solve practical problems, finding unknown lengths and angles using applications of trigonometry, using algebraic and graphical techniques to find solutions to simultaneous equations and inequalities and investigating independence of events reasoning includes formulating geometric proofs involving congruence and similarity, interpreting and evaluating media statements and interpreting and comparing data sets
	Fractions and decimals		
	Real numbers		
	Money and financial mathematics	<ul style="list-style-type: none"> Connect the compound interest formula to repeated applications of simple interest using appropriate digital technologies (ACMNA229) 	
	Patterns and algebra	<ul style="list-style-type: none"> Factorise algebraic expressions by taking out a common algebraic factor (ACMNA230) Simplify algebraic products and quotients using index laws (ACMNA231) Apply the four operations to simple algebraic fractions with numerical denominators (ACMNA232) Expand binomial products and factorise monic quadratic expressions using a variety of strategies (ACMNA233) Substitute values into formulas to determine an unknown (ACMNA234) 	
	Linear and non-linear relationships	<ul style="list-style-type: none"> Solve problems involving linear equations, including those derived from formulas (ACMNA235) Solve linear inequalities and graph their solutions on a number line (ACMNA236) Solve linear simultaneous equations, using algebraic and graphical techniques including using digital technology (ACMNA237) Solve problems involving parallel and perpendicular lines (ACMNA238) Explore the connection between algebraic and graphical representations of relations such as simple quadratics, circles and exponentials using digital technology as appropriate (ACMNA239) Solve linear equations involving simple algebraic fractions (ACMNA240) Solve simple quadratic equations using a range of strategies (ACMNA241) 	
Measurement and Geometry	Using units of measurement	<ul style="list-style-type: none"> Solve problems involving surface area and volume for a range of prisms, cylinders and composite solids (ACMMG242) 	
	Shape		
	Geometric reasoning	<ul style="list-style-type: none"> Formulate proofs involving congruent triangles and angle properties (ACMMG243) Apply logical reasoning, including the use of congruence and similarity, to proofs and numerical exercises involving plane shapes (ACMMG244) 	
	Location and transformation		
	Pythagoras and trigonometry	<ul style="list-style-type: none"> Solve right-angled triangle problems including those involving direction and angles of elevation and depression (ACMMG245) 	
Statistics and Probability	Chance	<ul style="list-style-type: none"> Describe the results of two- and three-step chance experiments, both with and without replacements, assign probabilities to outcomes and determine probabilities of events. Investigate the concept of independence (ACMSP246) Use the language of 'if ...then', 'given', 'of', 'knowing that' to investigate conditional statements and identify common mistakes in interpreting such language (ACMSP247) 	
	Data representation and interpretation	<ul style="list-style-type: none"> Determine quartiles and interquartile range (ACMSP248) Construct and interpret box plots and use them to compare data sets (ACMSP249) Compare shapes of box plots to corresponding histograms and dot plots (ACMSP250) Use scatter plots to investigate and comment on relationships between two numerical variables (ACMSP251) Investigate and describe bivariate numerical data where the independent variable is time (ACMSP252) Evaluate statistical reports in the media and other places by linking claims to displays, statistics and representative data (ACMSP253) 	
Achievement Standard (organised by Strands)	<p>Number and Algebra At Standard, students recognise the connection between simple and compound interest. They solve problems involving linear equations and inequalities. Students make the connections between algebraic and graphical representations of relations. They expand binomial expressions and factorise monic quadratic expressions. Students 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.</p>	<p>Measurement and Geometry 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 use triangle and angle properties to prove congruence and similarity. Students use trigonometry to calculate unknown angles in right-angled triangles.</p>	<p>Statistics and Probability Students 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 list outcomes for multi-step chance experiments and assign probabilities for these experiments. They calculate quartiles and inter-quartile ranges.</p>

Western Australian Curriculum | Mathematics | Year 10A

	Sub-strands	Content Descriptions	Year Level Description
Number and Algebra	Number and place value		The 10A content is optional and is intended for students who require more content to enrich their mathematical study whilst completing the common Year 10 content. It is not anticipated that all students will attempt the 10A content, but doing so would be advantageous for students intending to pursue Mathematical Methods or Mathematics Specialist in the senior secondary years. A selection of topics from the 10A curriculum can be completed according to the needs of the students.
	Fractions and decimals		
	Real numbers	<ul style="list-style-type: none"> Define rational and irrational numbers and perform operations with surds and fractional indices (ACMNA264) Use the definition of a logarithm to establish and apply the laws of logarithms (ACMNA265) 	
	Money and financial mathematics		
	Patterns and algebra	<ul style="list-style-type: none"> Investigate the concept of a polynomial and apply the factor and remainder theorems to solve problems (ACMNA266) 	
	Linear and non-linear relationships	<ul style="list-style-type: none"> Describe, interpret and sketch parabolas, hyperbolas, circles and exponential functions and their transformations (ACMNA267) Solve simple exponential equations (ACMNA270) Apply understanding of polynomials to sketch a range of curves and describe the features of these curves from their equation (ACMNA268) Factorise monic and non-monic quadratic expressions and solve a wide range of quadratic equations derived from a variety of contexts (ACMNA269) 	
Measurement and Geometry	Using units of measurement	<ul style="list-style-type: none"> Solve problems involving surface area and volume of right pyramids, right cones, spheres and related composite solids (ACMMG271) 	
	Shape		
	Geometric reasoning	<ul style="list-style-type: none"> Prove and apply angle and chord properties of circles (ACMMG272) 	
	Location and transformation		
	Pythagoras and trigonometry	<ul style="list-style-type: none"> Establish the sine, cosine and area rules for any triangle and solve related problems (ACMMG273) Use the unit circle to define trigonometric functions, and graph them with and without the use of digital technologies (ACMMG274) Solve simple trigonometric equations (ACMMG275) Apply Pythagoras' Theorem and trigonometry to solving three-dimensional problems in right-angled triangles (ACMMG276) 	
Statistics and Probability	Chance	<ul style="list-style-type: none"> Investigate reports of studies in digital media and elsewhere for information on their planning and implementation (ACMSP277) 	
	Data representation and interpretation	<ul style="list-style-type: none"> Calculate and interpret the mean and standard deviation of data and use these to compare data sets (ACMSP278) Use information technologies to investigate bivariate numerical data sets. Where appropriate use a straight line to describe the relationship allowing for variation (ACMSP279) 	
Achievement Standard	As the 10A content is optional and schools can choose students to study all or some of this content, there are no achievement standards associated with these additional topics.		