Government of Western Australia
School Curriculum and Standards Authority

Western Australian Curriculum

Mathematics

Year level descriptions | Pre-primary–Year 10
For familiarisation in 2025

Acknowledgement of Country

Kaya. The School Curriculum and Standards Authority (the Authority) acknowledges that our offices are on Whadjuk Noongar boodjar and that we deliver our services on the country of many traditional custodians and language groups throughout Western Australia. The Authority acknowledges the traditional custodians throughout Western Australia and their continuing connection to land, waters and community. We offer our respect to Elders past and present.

Disclaimer

Any resources such as texts, websites and so on that may be referred to in this document are provided as examples of resources that teachers can use to support their learning programs. Their inclusion does not imply that they are mandatory or that they are the only resources relevant to the course. Teachers must exercise their professional judgement as to the appropriateness of any they may wish to use.

2023/47508[v10]

Contents

Overview

Year level descriptions provide an overview of the content being studied at that year level. The year level descriptions include reference to the phases of schooling to provide guidance about the sort of learning experiences that children and students are likely to engage with.

Pre-primary

In the early childhood phase of schooling, learning, development and wellbeing are connected and learning builds on the *Early Years Learning Framework* and each child's funds of knowledge. A holistic curriculum that integrates knowledge, understandings, skills, values and attitudes across learning areas connects learning to children's lives and their natural curiosity about their world.

Mathematics provides opportunities for children to learn through a variety of means, including play and experimentation. Concrete materials are used to explore and visualise concepts, developing content knowledge and understanding of the symbolic representations associated with Mathematics.

Children engage in a range of approaches to learning through the proficiency strands of Understanding, Fluency, Problem-solving and Reasoning. These reinforce the significance of working mathematically with the content and describe how the content is explored or developed.

In Pre-primary, children begin to explore the number system and partitions of collections. They represent situations involving addition, subtraction, grouping and sharing using role-play and concrete materials. Children explore measurement attributes, familiar two-dimensional shapes and three-dimensional objects, and use everyday mathematical language to describe the world around them. They explore chance in familiar contexts and collect and compare data relevant to them.

Year 1

In the early childhood phase of schooling, learning, development and wellbeing are connected and learning experiences are informed by the Principles and Practices of the *Early Years Learning Framework*. A holistic curriculum that integrates knowledge, understandings, skills, values and attitudes across learning areas connects learning to children's lives and their natural curiosity about their world.

Mathematics provides opportunities for children to learn through a variety of means, including play and experimentation. Concrete materials are used to explore and visualise concepts, developing content knowledge and understanding of the symbolic representations associated with Mathematics.

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In Year 1, children become more familiar with the number system beyond two-digits. They manipulate and compare small collections using them to build calculation strategies and model real-world situations. Children explore their world, comparing everyday items based on different measurement attributes. They name two-dimensional shapes and three-dimensional objects and read the time on digital clocks. Children describe and reason about the likelihood of familiar events occurring and answer questions of interest by collecting categorical data.

Year 2

In the early childhood phase of schooling, learning, development and wellbeing are connected and learning experiences are informed by the Principles and Practices of the *Early Years Learning Framework*. A holistic curriculum that integrates knowledge, understandings, skills, values and attitudes across learning areas connects learning to children's lives and their natural curiosity about their world.

Mathematics provides opportunities for children to learn through a variety of means, including play and experimentation. Concrete materials are used to explore and visualise concepts, developing content knowledge and understanding of the symbolic representations associated with Mathematics.

Children engage in a range of approaches to learning through the proficiency strands of Understanding, Fluency, Problem-solving and Reasoning. These reinforce the significance of working mathematically with the content and describe how the content is explored or developed.

In Year 2, children extend their knowledge of the number system beyond three-digits. They connect place value and partitions to calculation strategies and apply these to model real-world situations that are relevant to them. Children broaden their awareness of how Mathematics occurs in the world around them as they explore the relationship between dollars and cents and their value, continue to develop an understanding of measurement attributes, including area and tell time to the hour, half- and quarter-hour on analogue and digital clocks. In familiar contexts, children build on their understanding of chance, comparing the likelihood of familiar chance events, and collect, compare and display data to answer a question of interest.

Year 3

In the middle to late childhood phase of schooling, students develop a sense of self, their world expands, and they begin to see themselves as members of larger communities. Learning experiences emphasise and lead to an appreciation of both the commonality and diversity of human experience and concerns.

Mathematics provides opportunities for students to develop a sound grasp of numeric conventions. Concrete materials continue to assist students as they develop the ability to think in more abstract terms.

Students engage in a range of approaches to learning through the proficiency strands of Understanding, Fluency, Problem-solving and Reasoning. These reinforce the significance of working mathematically with the content and describe how the content is explored or developed.

In Year 3, students recognise the place value pattern in numbers to at least four-digits, explore different ways to partition numbers and the use of ‘greater than’ and ‘less than’ symbols. This knowledge is applied to a range of calculation strategies and supports the modelling of relevant real-world situations. Students start using formal units of measurement and are introduced to the concept of angles, identifying mathematical applications in familiar contexts. They recognise the likelihood of outcomes for repeated chance experiments and explore different ways to collect and represent data.

Year 4

In the middle to late childhood phase of schooling, students develop a sense of self, their world expands, and they begin to see themselves as members of larger communities. Learning experiences emphasise and lead to an appreciation of both the commonality and diversity of human experience and concerns.

Mathematics provides opportunities for students to develop a sound grasp of numeric conventions. Concrete materials continue to assist students as they develop the ability to think in more abstract terms.

Students engage in a range of approaches to learning through the proficiency strands of Understanding, Fluency, Problem-solving and Reasoning. These reinforce the significance of working mathematically with the content and describe how the content is explored or developed.

In Year 4, students extend their knowledge of the number system to at least six-digits and decimal numbers up to two decimal places. They apply this understanding when trialling strategies to calculate efficiently and model relevant real-world situations. Students continue to use formal units of measurement and reason to convert between units of time, expanding their understanding of practical applications of Mathematics in the world around them. Students identify when chance events are not affected by previous events and predict the likelihood of outcomes of repeated chance experiments. They collect, organise and represent data, checking for accuracy and consistency.

Year 5

In the middle to late childhood phase of schooling, students develop a sense of self, their world expands, and they begin to see themselves as members of larger communities. Learning experiences emphasise and lead to an appreciation of both the commonality and diversity of human experience and concerns.

Mathematics provides opportunities for students to develop a sound grasp of numeric conventions. Concrete materials continue to assist students as they develop the ability to think in more abstract terms.

Students engage in a range of approaches to learning through the proficiency strands of Understanding, Fluency, Problem-solving and Reasoning. These reinforce the significance of working mathematically with the content and describe how the content is explored or developed.

In Year 5, students start to generalise place value patterns in seven-digit numbers and beyond and explore representations of factors and multiples. They apply this understanding when choosing from a range of strategies to calculate efficiently, and model additive and multiplicative problems relevant to their real world. Students choose appropriate metric units in practical situations, connect three-dimensional objects with their nets and convert between 12- and 24-hour time systems. They explore the difference between chance events with equally likely and not equally likely outcomes and discuss variation in results across trials of repeated chance experiments. Students are introduced to line graphs showing continuous data and they make decisions about organising and representing data they have collected.

Year 6

In the middle to late childhood phase of schooling, students develop a sense of self, their world expands, and they begin to see themselves as members of larger communities. Learning experiences emphasise and lead to an appreciation of both the commonality and diversity of human experience and concerns.

Mathematics provides opportunities for students to develop a sound grasp of numeric conventions. Concrete materials continue to assist students to make sense of mathematical concepts as they develop the ability to think in more abstract terms.

Students engage in a range of approaches to learning through the proficiency strands of Understanding, Fluency, Problem-solving and Reasoning. These reinforce the significance of working mathematically with the content and describe how the content is explored or developed.

In Year 6, students consolidate their understanding of the number system, expanding their repertoire of numbers to include integers, square, prime and composite numbers. They apply this understanding to calculate and model real-world problems efficiently and interpret and communicate findings. Students explore the Cartesian plane, describe a sequence of steps to determine the area of rectangles and volume of rectangular prisms and convert between units of measurement, connecting metric units to the decimal system. They represent probabilities numerically and conduct repeated chance experiments and simulations, comparing expected and observed frequencies. Students interpret data displays, including side-by-side column graphs using mode, range and shape, and they describe how features of displays may influence an audience.

Year 7

In the early adolescence phase of schooling, students align with their peer group and begin to question established conventions, practices and values. Learning and teaching programs assist students to develop a broader and more comprehensive understanding of the contexts of their lives and the world in which they live.

Mathematics provides opportunities for students to engage with concrete materials, extending to abstract thinking in a range of approaches to learning through the proficiency strands of Understanding, Fluency, Problem-solving and Reasoning. These reinforce the significance of working mathematically with the content and describe how the content is explored or developed. Students draw on the behaviours of the proficiencies when selecting and using year level content to apply the complete modelling process, leading to an increased understanding of the complexity of the natural environment, society and technology.

In Year 7, students explore and investigate to understand, calculate flexibly and efficiently, and model with a broadening range of numbers, including adding and subtracting with integers. As they transition into efficient multiplicative thinkers, students interpret proportional situations. They develop their abstract thinking through the introduction of algebra.

Students begin to formalise the language of Mathematics by applying mathematical notation, conventions and naming principles in both geometric and measurement situations. They reason with parallel lines, perform transformations of points on the Cartesian plane, classify triangles and explore time zones within Australia. Students generalise their understanding of perimeter, area and volume into formulas for efficient calculation.

Students formalise their understanding of probability through definitions and the construction of simple sample spaces. They connect probability and statistics by engaging in single-stage chance experiments and simulations, use summary statistics, and represent, analyse and critique data.

Year 8

In the early adolescence phase of schooling, students align with their peer group and begin to question established conventions, practices and values. Learning and teaching programs assist students to develop a broader and more comprehensive understanding of the contexts of their lives and the world in which they live.

Mathematics provides opportunities for students to engage in a range of approaches to learning through the proficiency strands of Understanding, Fluency, Problem-solving and Reasoning. These reinforce the significance of working mathematically with the content and describe how the content is explored or developed. Students draw on the behaviours of the proficiencies when selecting and using year level content to apply the complete modelling process, leading to an increased understanding of the complexity of the natural environment, society and technology.

In Year 8, students explore and investigate to understand, calculate flexibly and efficiently, and model with a broadening range of numbers that includes rational and irrational numbers. As they develop efficiency in multiplicative thinking, they apply and interpret proportional reasoning in fractions, percentages, ratios and rates. Students' abstract thinking develops further as they apply their understanding of the laws and properties of operations with number to algebra.

Students use the language of Mathematics in both geometric and measurement situations, applying reasoning to establish congruency of figures, interpret representations of international time zones, explore circles and use Pythagoras' theorem. They apply their understanding of the properties of quadrilaterals to find the perimeter and area and generalise volume of right prisms into formulas for efficient calculation.

Students extend their understanding of probability to recognise complementary events and construct sample spaces for two events. They connect probability and statistics by engaging in chance experiments and simulations for simple and compound events. Students critically analyse graphs and tables and extract data from these representations to determine summary statistics. They investigate and explain techniques for data collection and compare variation between samples of data.

Year 9

In the middle adolescence phase of schooling, teaching and learning programs encourage students to develop an open and questioning view of themselves as active participants in their society and the world.

Mathematics provides opportunities for students to engage in a range of approaches to learning through the proficiency strands of Understanding, Fluency, Problem-solving and Reasoning. These reinforce the significance of working mathematically with the content and describe how the content is explored or developed. Students draw on the behaviours of the proficiencies when selecting and using year level content to apply the complete modelling process, leading to an increased understanding of the complexity of the natural environment, society and technology.

In Year 9, students explore and investigate to understand, calculate flexibly and efficiently, and model with real numbers, writing solutions in exact or approximated form. They engage with financial mathematics by calculating simple interest and exploring ways in which people earn money. They work flexibly, both algebraically and graphically with linear equations, developing an understanding of gradient.

Students explain and determine perimeter and area of composite figures. They apply Pythagoras' theorem to solve perimeter and area problems. Through construction, drawing and geometric reasoning, students establish conditions for congruent triangles, explore properties of similar figures and develop the trigonometric ratios. Students extend their use of formula to include volume, capacity and surface area of right prisms and cylinders.

Students connect probability and statistics by collecting data from experiments and simulations related to two-stage chance experiments, both with and without replacement. They analyse comparative graphs in context using statistical language and critically analyse statistical processes and claims made in the media that relate to data sampling.

Note: the optional content in Year 9 is intended to build and extend students' year level knowledge according to areas of interest, understanding of content and preparation for subsequent study. The content descriptions are optional. Teachers may choose from optional content according to the needs of the student/s.

Year 10

In the middle adolescence phase of schooling, teaching and learning programs encourage students to develop an open and questioning view of themselves as active participants in their society and the world.

The Mathematics curriculum provides opportunities for students to engage in a range of approaches to learning through the proficiency strands of Understanding, Fluency, Problem-solving and Reasoning. These reinforce the significance of working mathematically with the content and describe how the content is explored or developed. Students draw on the behaviours of the proficiencies when selecting and using year level content to apply the complete modelling process, leading to an increased understanding of the complexity of the natural environment, society and technology.

In Year 10, students further engage in financial mathematics by calculating and interpreting income tax and compound interest. They explore the effect of error when using approximate rather than exact real values, including in measurement situations. They apply the index laws and extend their algebraic and graphical understanding to include inequalities, simultaneous equations and quadratic and exponential functions.

Students make connections between measurement and geometry by considering the effect on perimeter, area, volume, capacity and surface area when similar figures and objects are enlarged or reduced. Students use geometric reasoning to establish conditions for similar triangles. They find unknown sides and angles in right-angled triangles using Pythagoras' theorem or trigonometry and extend their three-dimensional spatial reasoning and use of formula to include volume, capacity and surface area of composite objects.

Students connect probability and statistics by collecting data from two- and three-stage chance experiments and simulations, both with and without replacement, to model conditional events. They interpret, compare key features and analyse, multiple boxplots. Students broaden their understanding of analysis to include commenting on association in bivariate and categorical data. Students critically analyse statistical reports in the media and identify potential sources of bias.

Note: the optional content in Year 10 is intended to build and extend students' year level knowledge according to areas of interest, understanding of content and preparation for subsequent study. The content descriptions are optional. Teachers may choose from optional content according to the needs of the student/s.