Western Australian Curriculum

Mathematics

Achievement standards | Pre-primary–Year 10 (Provisional)

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.

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Overview

An Achievement standard describes the quality of learning (e.g. the depth of conceptual understanding and the sophistication of skills) that would indicate the student is well placed to commence the learning required at the next level of achievement.

The Achievement standard describes an expected level that the majority of students are achieving or working towards by the end of that year of schooling. Some students will have progressed beyond the Achievement standard; others will need additional support.

The Achievement standards for the Mathematics curriculum are provisional and will be validated once teachers have had the time to become familiar with the teaching and assessment of the revised curriculum.

Pre-primary

By the end of the year:

Children demonstrate the behaviours of the proficiencies of Understanding, Fluency, Problem-solving and Reasoning in conjunction with year level content in routine situations. They engage with content when representing familiar real-world situations.

Children count collections, say, read and order numbers up to 20. They subitise, partition and compare small collections and use them to represent situations involving adding, removing, grouping and sharing.

Children sort and name familiar two-dimensional shapes and show position and movement in familiar locations. They compare items using length, capacity and mass and the duration of familiar events. Children sequence days of the week and times of the day in connection to routines.

Children collect and group data to make inferences.

Pre-primary

Year 1

By the end of the year:

Children demonstrate the behaviours of the proficiencies of Understanding, Fluency, Problem-solving and Reasoning in conjunction with year level content in routine situations. They select from and engage with content when representing situations involving real-world situations in familiar contexts.

Children say, read, write and order numbers to 100. They partition collections, including in groups of 10. Children add and subtract numbers to 20 using calculation strategies. They skip count collections by twos, fives and tens and use objects to continue repeating patterns, identifying the repeating unit. Children recognise representations of one half and identify Australian coins and notes according to their value.

Children classify two-dimensional shapes and sort and name three-dimensional objects, identifying the two-dimensional shapes that comprise them. They give and follow directions within familiar locations. Children directly and indirectly compare lengths using uniform informal units, and directly compare the capacity of containers and mass of objects. They read the time on digital clocks, making connections to routines and describe duration.

Children describe the likelihood of familiar events and collect categorical data to answer questions.

Year 2

By the end of the year:

Children demonstrate the behaviours of the proficiencies of Understanding, Fluency, Problem-solving and Reasoning in conjunction with year level content in routine situations. They select from and engage with content when representing real-world situations in familiar contexts.

Children read, write and order numbers to at least 1000 and skip count by twos, threes, fives and tens from any starting point. They partition two- and three-digit numbers in 10s and 100s, recall addition and subtraction facts to 10 and use these to add and subtract one- and two-digit numbers. Children represent situations involving multiplication and division. They continue increasing or decreasing additive patterns and identify missing elements. Children recognise and create halves, quarters and eighths and describe the relationship between dollars and cents.

Children identify and draw two-dimensional shapes. They locate positions and pathways on simple maps of familiar locations. Children compare objects based on length, capacity and mass using uniform informal units. They tell the time to the hour, half- and quarter-hour, on analogue and digital clocks, and use a calendar to identify the date and determine the duration between two events.

Children describe familiar chance events as possible or impossible. They collect and display categorical data to answer questions, using tables and one-to-one block and picture graphs.

Year 2

Year 3

By the end of the year:

Students demonstrate the behaviours of the proficiencies of Understanding, Fluency, Problem-solving and Reasoning in conjunction with year level content in routine situations. They select from and use content and mathematically model situations to solve real-world problems in familiar contexts.

Students order numbers to at least four-digits. They represent and partition numbers, recall addition and subtraction facts to 20, recognise the relationship between addition and subtraction and use these to add and subtract two- and three-digit numbers. Students recall multiplication facts of 2, 3, 4, 5 and 10 and represent multiplication and division with arrays. They create increasing and decreasing additive patterns. Students represent the unit fractions $\frac{1}{2}, \frac{1}{3}, \frac{1}{4}, \frac{1}{5}$ and $\frac{1}{10}$ and recognise equivalent money values.

Students make and classify three-dimensional objects according to key features. They interpret simple maps and identify and compare angles in everyday situations. Students measure and order length and capacity in metric units and compare the mass of objects to common benchmark weights. They tell the time in minutes using analogue and digital clocks and describe duration in hours, minutes and seconds.

Students identify possible outcomes of everyday events and repeated chance experiments. They collect categorical or discrete numerical data through observation or surveys and represent and interpret data in dot plots, tables and column graphs.

Year 3

Year 4

By the end of the year:

Students demonstrate the behaviours of the proficiencies of Understanding, Fluency, Problem-solving and Reasoning in conjunction with year level content in routine situations. They select from and use content and mathematically model situations to solve real-world problems in familiar contexts.

Students add and subtract numbers up to four-digits, multiply two-digit numbers by one- and two-digit numbers and divide whole numbers by one-digit numbers, where there is no remainder, using efficient strategies, including knowledge of odd and even numbers and recall of multiplication facts up to 10 x 10. They describe rules to represent an increasing multiplicative pattern. Students represent common equivalent fractions and make connections between fraction and decimal representation.

Students use scaled instruments to measure and compare perimeter, capacity and mass and use arrays to compare the area of rectangles in informal units. They compare angles relative to a right angle. Students convert between units of time and determine duration.

Students order the likelihood of chance events and identify when events are not affected by previous events. They conduct repeated chance experiments and describe variation in results. Students collect categorical or discrete numerical data checking for accuracy and consistency. They represent data in many-to-one pictographs and column graphs and communicate findings in terms of the context.

Year 5

By the end of the year:

Students demonstrate the behaviours of the proficiencies of Understanding, Fluency, Problem-solving and Reasoning in conjunction with year level content in routine situations. They select from and use content and mathematically model situations to solve real-world problems in familiar contexts.

Students add and subtract whole numbers, multiply larger whole numbers by one- and two-digit numbers and divide whole numbers by one-digit numbers, including those with remainders, using efficient strategies. They identify factors and multiples of whole numbers. Students order decimal numbers, locate unit fractions on number lines and recognise that 100% represents a complete whole. They add and subtract fractions with the same denominator. Students follow a rule to create patterns and create simple budgets.

Students choose and use appropriate metric units to measure length, capacity and mass. They identify the dimensions of metric square and cubic units and use them to compare areas and volumes. Students connect three-dimensional objects to their nets, construct angles in degrees and identify types of angles. They use grid coordinates and convert between 12- and 24-hour time systems to determine duration.

Students make comparisons between events with equally likely and not equally likely outcomes and conduct repeated chance experiments with equally likely outcomes, representing results as fractions. They pose questions to collect categorical or discrete numerical data and make appropriate choices to represent the data. Students describe and interpret data represented in line graphs.

Year 5

Year 6

By the end of the year:

Students demonstrate the behaviours of the proficiencies of Understanding, Fluency, Problem-solving and Reasoning in conjunction with year level content in routine situations. As part of this, they select from and use year level content along with the modelling process in which they analyse the situation mathematically, represent the problem and interpret and communicate their findings, to solve straightforward, real-world problems in familiar contexts across all strands.

Students identify square, prime and composite numbers. They complete calculations with whole numbers using any of the four operations. Students order integers and common fractions on a number line. They add and subtract fractions with related denominators. Students add and subtract decimals to two decimal places, multiply decimals by whole numbers and multiply and divide decimals by powers of 10. They determine a familiar fraction, decimal or percentage of a whole number, and make connections between them. Students describe rules that relate each element of a pattern to its position.

Students convert between units of length, mass and capacity, connecting metric units to the decimal system. They describe steps to determine the area of rectangles, and the volume of rectangular prisms. Students construct three-dimensional objects, including prisms and pyramids. They determine unknown angles, explaining reasoning. Students describe translations, reflections or rotations of two-dimensional shapes and locate points in any one of the four quadrants on the Cartesian plane. They use timetables to determine duration.

Students order chance events on a scale from 0 to 1. They conduct repeated chance experiments and simulations, comparing expected and observed relative frequencies for an increasing number of trials. Students interpret a range of data displays, including using mode, range and shape and describe how the features of displays may influence an audience. They choose the most appropriate way to collect and represent data, including in line graphs and side-by-side column graphs.

Year 7

By the end of the year:

Students demonstrate the behaviours of the proficiencies of Understanding, Fluency, Problem-solving and Reasoning in conjunction with year level content in routine situations. As part of this, they select from and use year level content along with the modelling process in which they analyse the situation mathematically, represent the problem and interpret and communicate their findings, to solve straightforward, real-world problems in familiar contexts across all strands.

Students make connections between equivalent fractions, equivalent ratios and between fractions, decimals and percentages. They demonstrate flexible and efficient strategies to compare, add and subtract fractions and integers, multiply and divide positive fractions and decimals and perform percentage calculations. They round to a specified number of decimal places. Students make connections between whole numbers and index notation and square numbers and square roots. They use variables to represent numbers and link numerical laws and properties to working with variables. They evaluate expressions using numerical substitution and solve linear equations involving one operation. Students describe and represent real-world linear patterns in a table of values and plot points on a graph. Students identify features of transactional money statements.

Students demonstrate use of appropriate language, conventions and notation in measurement and geometry. They apply formulas to determine the perimeter and area of rectangles and volume of rectangular prisms. Students classify triangles according to their properties, find unknown angles, and calculate perimeter and area of triangles. They name angle relationships and find unknown angles in parallel lines and plot transformations of points on the Cartesian plane. Students represent different views of rectangular and composite rectangular prisms.

For single-stage chance experiments, students list sample spaces, and assign probabilities to outcomes. They describe variation between the estimated and theoretical probability of single-stage chance experiments and simulations. They determine mean, mode, median and range and identify which measure best reflects the dataset. Students represent and describe data in a stem and leaf plot and identify outliers. They make critical comments regarding statements made in the media relating to averages.

Year 8

By the end of the year:

Students demonstrate the behaviours of the proficiencies of Understanding, Fluency, Problem-solving and Reasoning in conjunction with year level content in routine situations. As part of this, they select from and use year level content along with the modelling process in which they analyse the situation mathematically, represent the problem and interpret and communicate their findings, to solve straightforward, real-world problems in familiar contexts across all strands.

Students identify and order rational and irrational numbers and terminating or recurring decimals. They demonstrate flexible and efficient strategies to carry out calculations involving the four operations with integers, positive rational numbers, and percentage increase and decrease. They use proportional reasoning to find unknown numbers in equivalent ratios and fractions and use familiar rates. Students apply the index laws to numbers with positive-integer indices. They simplify algebraic expressions involving the four operations and make connections between expanding and factorising algebraic expressions with numerical factors. They solve linear equations involving two operations and graph linear relationships on the Cartesian plane from a table of values. Students identify advantages and disadvantages and determine penalties of various forms of payment.

Students classify quadrilaterals according to their properties, find unknown angles, and calculate perimeter and area of quadrilaterals. They use Pythagoras' theorem to find an unknown length in a right-angled triangle. Students apply formulas to determine the circumference and area of circles and the volume of right prisms. They identify and name corresponding sides and angles of congruent figures. They determine the duration of events, involving 12- and 24-hour time systems, across multiple time zones.

Students construct sample spaces, assign probabilities and conduct chance experiments and simulations for two, simple or compound events and identify variation in estimated probabilities. They determine the probability of complementary events. Students determine the mean, mode, median and range from graphs and tables and describe the effect of an outlier on these statistical measures. They use secondary data in Venn diagrams and two-way tables to determine related probabilities. Students explain issues related to the collection of data and compare variation in same-sized random samples. They make critical comments on graphical representations and tables in the media.

Year 9

By the end of the year:

Students demonstrate the behaviours of the proficiencies of Understanding, Fluency, Problem-solving and Reasoning in conjunction with year level content in routine situations. As part of this, they select from and use year level content along with the modelling process in which they analyse the situation mathematically, represent the problem and interpret and communicate their findings, to solve straightforward, real-world problems in familiar contexts across all strands.

Students compare and order real numbers, including those expressed in scientific notation. They demonstrate flexible and efficient strategies to carry out the four operations with real numbers, expressing solutions in exact or approximated form. They express real numbers in scientific notation. Students apply the index laws to variable bases with positive-integer and zero indices, expand and factorise expressions with an algebraic factor and expand binomial products. Students solve linear equations involving brackets. They use the Cartesian plane to find the distance between two points and the gradient and midpoint of a line segment. They graph straight lines using the gradient and *y*-intercept and identify and represent direct proportion algebraically and graphically. Students solve simple quadratic equations algebraically and use tables of values to graph the function. They determine interest using the simple interest formula and perform calculations that relate to earning income.

Students determine the perimeter and area of composite shapes, including those involving right-angled triangles. They use triangle and angle properties to show reasoning as to why triangles are congruent and find unknown sides and angles. They use properties of similar figures and scale to determine real-life lengths from scale drawings and apply a trigonometric ratio to find unknown sides and angles in right-angled triangles. Students apply formulas to determine the volume, capacity and surface area of right prisms and cylinders.

Students construct sample spaces, assign probabilities and conduct experiments and simulations for two-stage events both with and without replacement and identify variation in estimated probabilities. They describe data represented in tables using statistical measures and relative frequencies to make inferences. They compare back-to-back stem and leaf plots and comparative histograms using shape and spread. Students describe different sampling methods and make critical comments on statistics relating to data sampling in the media.

Year 9

Year 10

By the end of the year:

Students demonstrate the behaviours of the proficiencies of Understanding, Fluency, Problem-solving and Reasoning in conjunction with year level content in routine situations. As part of this, they select from and use year level content along with the modelling process in which they analyse the situation mathematically, represent the problem and interpret and communicate their findings, to solve straightforward, real-world problems in familiar contexts across all strands.

Students compare the difference in using approximate to exact values on final calculations. They substitute values into real-life formulas to find unknowns using digital tools. Students solve one variable linear inequalities, verify the solution and represent on a number line. They solve linear simultaneous equations graphically. Students graph quadratic and exponential functions and relate key graphical and algebraic features. They calculate income tax and use repeated simple interest to determine compound interest.

Students use Pythagoras' theorem and/or trigonometry to determine unknown sides and angles in right-angled triangles involving angles of elevation and depression. They determine the effect on perimeter, area and volume when shapes and objects are enlarged or reduced. They use triangle and angle properties to show reasoning as to why triangles are similar and find unknown sides and angles in similar triangles. They determine volume, capacity and surface area of composite objects.

Students choose and construct appropriate sample spaces for two- and three-stage chance experiments and assign probabilities to events involving conditional statements. They conduct chance experiments and simulations to model conditional probability. They describe possible association between variables represented in a scatterplot or two-way table. Students represent multiple datasets using boxplots and compare shape, spread and centre. They critically analyse claims, inferences and conclusions in the media and identify potential sources of bias.