

The Australian Curriculum

Subjects	Mathematics
Year levels	Year 8

Year 8 Content Descriptions

Number and Algebra

Number and place value


Use [index notation](#) with numbers to establish the [index laws](#) with positive integral [indices](#) and the zero index ([ACMNA182 - Scootle](#) )



Elaborations

evaluating numbers expressed as powers of positive integers



Carry out the four operations with [rational numbers](#) and integers, using efficient mental and written strategies and appropriate digital technologies ([ACMNA183 - Scootle](#) )



Elaborations


using patterns to assist in finding rules for the multiplication and division of integers



using the number line to develop strategies for adding and subtracting rational numbers



Real numbers


Investigate terminating and recurring decimals ([ACMNA184 - Scootle](#) )



Elaborations

recognising terminating, recurring and non-terminating decimals and choosing their appropriate representations

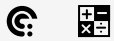



Investigate the concept of irrational numbers, including π ([ACMNA186 - Scootle](#) )



Elaborations

understanding that the real number system includes irrational numbers



Solve problems involving the use of percentages, including [percentage](#) increases and decreases, with and without digital technologies ([ACMNA187 - Scootle](#) )




Elaborations

using percentages to solve problems, including those involving mark-ups, discounts, and GST



using percentages to calculate population increases and decreases

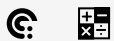


Solve a [range](#) of problems involving rates and ratios, with and without digital technologies ([ACMNA188 - Scootle](#) )



Elaborations

understanding that rate and ratio problems can be solved using fractions or percentages and choosing the most efficient form to solve a particular problem



calculating population growth rates in Australia and Asia and explaining their difference



Money and financial mathematics

Solve problems involving profit and loss, with and without digital technologies ([ACMNA189 - Scootle](#) )



Elaborations


expressing profit and loss as a percentage of cost or selling price, comparing the difference



investigating the methods used in retail stores to express discounts



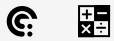
Patterns and algebra


Extend and apply the [distributive](#) law to the expansion of algebraic expressions ([ACMNA190 - Scootle](#) )



Elaborations

applying the distributive law to the expansion of algebraic expressions using strategies such as the area model



[Factorise](#) algebraic expressions by identifying numerical factors ([ACMNA191 - Scootle](#) )




Elaborations

recognising the relationship between factorising and expanding



identifying the greatest common divisor (highest common factor) of numeric and algebraic expressions and using a range of strategies to factorise algebraic expressions



Simplify algebraic expressions involving the four operations ([ACMNA192 - Scootle](#) )



Elaborations

understanding that the laws used with numbers can also be used with algebra



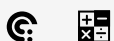
Linear and non-linear relationships

Plot linear relationships on the [Cartesian plane](#) with and without the use of digital technologies ([ACMNA193 - Scootle](#) )

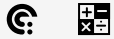


Elaborations

completing a table of values, plotting the resulting points and determining whether the relationship is linear



finding the rule for a linear relationship

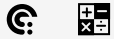


Solve linear equations using algebraic and graphical techniques. Verify solutions by substitution
(ACMNA194 - Scootle [↗](#))



Elaborations

solving real life problems by using variables to represent unknowns



Measurement and Geometry

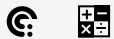
Using units of measurement

Choose appropriate units of measurement for area and volume and convert from one unit to another
(ACMMG195 - Scootle [↗](#))



Elaborations

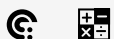
choosing units for area including mm^2 , cm^2 , m^2 , hectares, km^2 , and units for volume including mm^3 , cm^3 , m^3



recognising that the conversion factors for area units are the squares of those for the corresponding linear units



recognising that the conversion factors for volume units are the cubes of those for the corresponding linear units




Find perimeters and areas of parallelograms, trapeziums, rhombuses and kites
(ACMMG196 - Scootle [↗](#))



Elaborations

establishing and using formulas for areas such as trapeziums, rhombuses and kites



Investigate the relationship between features of circles such as [circumference](#), [area](#), [radius](#) and [diameter](#). Use formulas to solve problems involving [circumference](#) and [area](#) ([ACMMG197 - Scootle](#) )




Elaborations

investigating the circumference and area of circles with materials or by measuring, to establish an understanding of formulas



investigating the area of circles using a square grid or by rearranging a circle divided into sectors




Develop formulas for volumes of rectangular and triangular prisms and prisms in general. Use formulas to solve problems involving [volume](#) ([ACMMG198 - Scootle](#) )



Elaborations

investigating the relationship between volumes of rectangular and triangular prisms



Solve problems involving duration, including using 12- and 24-hour time within a single time zone ([ACMMG199 - Scootle](#) )




Elaborations

identifying regions in Australia and countries in Asia that are in the same time zone



Geometric reasoning

Define [congruence](#) of plane shapes using transformations ([ACMMG200 - Scootle](#) )



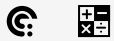
Elaborations

understanding the properties that determine congruence of triangles and recognising which transformations create congruent figures



establishing that two figures are congruent if one shape lies exactly on top of the other after one or more transformations (translation, reflection, rotation), and recognising that the matching sides and

the matching angles are equal

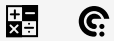


Develop the conditions for congruence of triangles ([ACMMG201 - Scootle](#) )

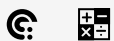


Elaborations

investigating the minimal conditions needed for the unique construction of triangles, leading to the establishment of the conditions for congruence (SSS, SAS, ASA and RHS)




solving problems using the properties of congruent figures



constructing triangles using the conditions for congruence

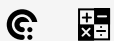


Establish properties of quadrilaterals using congruent triangles and angle properties, and solve related numerical problems using reasoning ([ACMMG202 - Scootle](#) )

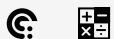


Elaborations

establishing the properties of squares, rectangles, parallelograms, rhombuses, trapeziums and kites




identifying properties related to side lengths, parallel sides, angles, diagonals and symmetry



Statistics and Probability

Chance

Identify complementary events and use the sum of probabilities to solve problems ([ACMSP204 - Scootle](#) )

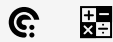



Elaborations

identifying the complement of familiar events



understanding that probabilities range between 0 to 1 and that calculating the probability of an event allows the probability of its complement to be found



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 - Scootle](#) )



Elaborations

posing 'and', 'or' and 'not' probability questions about objects or people



Represent events in two-way tables and Venn diagrams and solve related problems

([ACMSP292 - Scootle](#) )



Elaborations

using Venn diagrams and two-way tables to calculate probabilities for events, satisfying 'and', 'or' and 'not' conditions



understanding that representing data in Venn diagrams or two-way tables facilitates the calculation of probabilities



collecting data to answer the questions using Venn diagrams or two-way tables



Data representation and interpretation


Investigate techniques for collecting data, including census, sampling and observation ([ACMSP284 - Scootle](#) )



Elaborations

identifying situations where data can be collected by census and those where a sample is appropriate




Explore the practicalities and implications of obtaining data through sampling using a variety of investigative processes ([ACMSP206 - Scootle](#) )



Elaborations

investigating the uses of random sampling to collect data




Explore the variation of means and proportions of random samples drawn from the same population ([ACMSP293 - Scootle](#) )



Elaborations

using sample properties to predict characteristics of the population



Investigate the effect of individual data values, including outliers, on the mean and median ([ACMSP207 - Scootle](#) )



Elaborations

using displays of data to explore and investigate effects

