


# The Australian Curriculum

<b>Subjects</b>	Mathematics
<b>Year levels</b>	Year 7

## Year 7 Content Descriptions

### Number and Algebra

#### Number and place value

Investigate [index notation](#) and represent whole numbers as products of powers of prime numbers ([ACMNA149 - Scootle](#) )

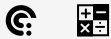


#### Elaborations

defining and comparing prime and composite numbers and explaining the difference between them



applying knowledge of factors to strategies for expressing whole numbers as products of powers of prime factors, such as repeated division by prime factors or creating factor trees



solving problems involving lowest common multiples and greatest common divisors (highest common factors) for pairs of whole numbers by comparing their prime factorisation

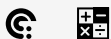


Investigate and use [square](#) roots of perfect [square](#) numbers ([ACMNA150 - Scootle](#) )



#### Elaborations

investigating square numbers such as 25 and 36 and developing square-root notation



investigating between which two whole numbers a square root lies

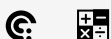


Apply the [associative](#), commutative and [distributive](#) laws to aid mental and written [computation](#) ([ACMNA151 - Scootle](#) )



#### Elaborations


understanding that arithmetic laws are powerful ways of describing and simplifying calculations



Compare, order, add and subtract integers ([ACMNA280 - Scootle](#) )



### Real numbers


Compare fractions using equivalence. Locate and represent positive and negative fractions and mixed numbers on a number line ([ACMNA152 - Scootle](#) )



Elaborations

exploring equivalence among families of fractions by using a fraction wall or a number line (for example by using a fraction wall to show that  $\frac{2}{3}$  is the same as  $\frac{4}{6}$  and  $\frac{6}{9}$ )




Solve problems involving addition and subtraction of fractions, including those with unrelated denominators ([ACMNA153 - Scootle](#) )



Elaborations

exploring and developing efficient strategies to solve additive problems involving fractions (for example by using fraction walls or rectangular arrays with dimensions equal to the denominators)




Multiply and divide fractions and decimals using efficient written strategies and digital technologies ([ACMNA154 - Scootle](#) )



Elaborations

investigating multiplication of fractions and decimals, using strategies including patterning and multiplication as repeated addition, with both concrete materials and digital technologies, and identifying the processes for division as the inverse of multiplication



Express one quantity as a fraction of another, with and without the use of digital technologies ([ACMNA155 - Scootle](#) )



Elaborations

using authentic examples for the quantities to be expressed and understanding the reasons for the

## calculations



Round decimals to a specified number of decimal places ([ACMNA156 - Scootle](#) )



## Elaborations

using rounding to estimate the results of calculations with whole numbers and decimals, and understanding the conventions for rounding



Connect fractions, decimals and percentages and carry out simple conversions

([ACMNA157 - Scootle](#) )



## Elaborations

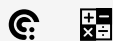
justifying choices of written, mental or calculator strategies for solving specific problems including those involving large numbers




understanding that quantities can be represented by different number types and calculated using various operations, and that choices need to be made about each



calculating the percentage of the total local municipal area set aside for parkland, manufacturing, retail and residential dwellings to compare land use




Find percentages of quantities and express one quantity as a percentage of another, with and without digital technologies. ([ACMNA158 - Scootle](#) )



## Elaborations

using authentic problems to express quantities as percentages of other amounts

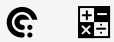


Recognise and solve problems involving simple ratios ([ACMNA173 - Scootle](#) )



## 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



### Money and financial mathematics

Investigate and calculate 'best buys', with and without digital technologies ([ACMNA174 - Scootle](#) )



## Elaborations

applying the unitary method to identify 'best buys' situations, such as comparing the cost per 100g



### Patterns and algebra

Introduce the concept of variables as a way of representing numbers using letters

([ACMNA175 - Scootle](#) )



## Elaborations

understanding that arithmetic laws are powerful ways of describing and simplifying calculations and that using these laws leads to the generality of algebra



Create algebraic expressions and evaluate them by substituting a given value for each **variable**

([ACMNA176 - Scootle](#) )



## Elaborations

using authentic formulas to perform substitutions



Extend and apply the laws and properties of arithmetic to algebraic terms and expressions

([ACMNA177 - Scootle](#) )



## Elaborations

identifying order of operations in contextualised problems, preserving the order by inserting brackets in numerical expressions, then recognising how order is preserved by convention



moving fluently between algebraic and word representations as descriptions of the same situation



### Linear and non-linear relationships

Given coordinates, plot points on the [Cartesian plane](#), and find coordinates for a given [point](#) ([ACMNA178 - Scootle](#) [↗](#))



Elaborations

plotting points from a table of integer values and recognising simple patterns, such as points that lie on a straight line



Solve simple linear equations ([ACMNA179 - Scootle](#) [↗](#))

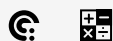


Elaborations

solving equations using concrete materials, such as the balance model, and explain the need to do the same thing to each side of the equation using substitution to check solutions



investigating a range of strategies to solve equations



Investigate, interpret and analyse graphs from authentic [data](#) ([ACMNA180 - Scootle](#) [↗](#))



Elaborations

using travel graphs to investigate and compare the distance travelled to and from school



interpreting features of travel graphs such as the slope of lines and the meaning of horizontal lines




using graphs of evaporation rates to explore water storage



## Measurement and Geometry

### Using units of measurement

Establish the formulas for areas of rectangles, triangles and parallelograms, and use these in problem-solving ([ACMMG159 - Scootle](#) )



Elaborations

building on the understanding of the area of rectangles to develop formulas for the area of triangles




establishing that the area of a triangle is half the area of an appropriate rectangle



using area formulas for rectangles and triangles to solve problems involving areas of surfaces



Calculate volumes of rectangular prisms ([ACMMG160 - Scootle](#) )



Elaborations


investigating volumes of cubes and rectangular prisms and establishing and using the formula  $V = l \times b \times h$



understanding and using cubic units when interpreting and finding volumes of cubes and rectangular prisms



### Shape

Draw different views of prisms and solids formed from combinations of prisms ([ACMMG161 - Scootle](#) )




Elaborations

using aerial views of buildings and other 3-D structures to visualise the structure of the building or

prism



### Location and transformation

Describe translations, reflections in an [axis](#) and rotations of [multiples](#) of  $90^\circ$  on the [Cartesian plane](#) using coordinates. Identify [line](#) and rotational symmetries ([ACMMG181 - Scootle](#) )



Elaborations


describing patterns and investigating different ways to produce the same transformation such as using two successive reflections to provide the same result as a translation



experimenting with, creating and re-creating patterns using combinations of reflections and rotations using digital technologies



### Geometric reasoning

Classify triangles according to their side and [angle](#) properties and describe quadrilaterals ([ACMMG165 - Scootle](#) )




Elaborations

identifying side and angle properties of scalene, isosceles, right-angled and obtuse-angled triangles



describing squares, rectangles, rhombuses, parallelograms, kites and trapeziums



Demonstrate that the [angle sum](#) of a triangle is  $180^\circ$  and use this to find the [angle sum](#) of a [quadrilateral](#) ([ACMMG166 - Scootle](#) )



Elaborations

using concrete materials and digital technologies to investigate the angle sum of a triangle and quadrilateral





Identify corresponding, alternate and **co-interior angles** when two straight lines are crossed by a transversal (ACMMG163 - Scootle [↗](#))



#### Elaborations

defining and classifying pairs of angles as complementary, supplementary, adjacent and vertically opposite



Investigate conditions for two lines to be **parallel** and solve simple numerical problems using reasoning (ACMMG164 - Scootle [↗](#))



#### Elaborations

constructing parallel and perpendicular lines using their properties, a pair of compasses and a ruler, and dynamic geometry software



defining and identifying the relationships between alternate, corresponding and co-interior angles for a pair of parallel lines cut by a transversal



## Statistics and Probability

### Chance

Construct **sample** spaces for single-step experiments with **equally likely outcomes** (ACMSP167 - Scootle [↗](#))



#### Elaborations

discussing the meaning of probability terminology (for example probability, sample space, favourable outcomes, trial, events and experiments)



distinguishing between equally likely outcomes and outcomes that are not equally likely



Assign probabilities to the outcomes of events and determine probabilities for events (ACMSP168 - Scootle [↗](#))




## Elaborations

expressing probabilities as decimals, fractionals and percentages



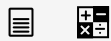
### Data representation and interpretation

Identify and investigate issues involving numerical data collected from primary and secondary sources ([ACMSP169 - Scootle](#) )



## Elaborations

obtaining secondary data from newspapers, the Internet and the Australian Bureau of Statistics



investigating secondary data relating to the distribution and use of non-renewable resources around the world

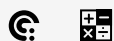


Construct and compare a range of data displays including stem-and-leaf plots and dot plots ([ACMSP170 - Scootle](#) )




## Elaborations

understanding that some data representations are more appropriate than others for particular data sets, and answering questions about those data sets



using ordered stem-and-leaf plots to record and display numerical data collected in a class investigation, such as constructing a class plot of height in centimetres on a shared stem-and-leaf plot for which the stems 12, 13, 14, 15, 16 and 17 have been produced



Calculate mean, median, mode and range for sets of data. Interpret these statistics in the context of data ([ACMSP171 - Scootle](#) )



## Elaborations

understanding that summarising data by calculating measures of centre and spread can help make

sense of the data

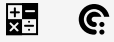


Describe and interpret data displays using median, mean and range ([ACMSP172 - Scootle](#) )



Elaborations

using mean and median to compare data sets and explaining how outliers may affect the comparison



locating mean, median and range on graphs and connecting them to real life

