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|  | Number and Algebra Scope & Sequence  The Australian Curriculum v4.0 | | | | | | | | | | | |
| Number and Place Value | **Foundation** | **Year 1** | **Year 2** | **Year 3** | **Year 4** | **Year 5** | **Year 6** | **Year 7** | **Year 8** | **Year 9** | **Year 10** | Year 10 A |
|  | [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)](http://www.australiancurriculum.edu.au/mathematics/curriculum/f-10?y=F&s=NA&layout=1)  [*TIMESNA1*](http://www.amsi.org.au/teacher_modules/Counting_and_place_valueK-4.html)  [Connect number names, numerals and quantities, including zero, initially up to 10 and then beyond (ACMNA002)](http://www.australiancurriculum.edu.au/mathematics/curriculum/f-10?y=F&s=NA&layout=1)  [*TIMESNA01*](http://www.amsi.org.au/teacher_modules/Counting_and_place_valueK-4.html)  [Subitise small collections of objects (ACMNA003)](http://www.australiancurriculum.edu.au/mathematics/curriculum/f-10?y=F&s=NA&layout=1)  [*TIMESNA01*](http://www.amsi.org.au/teacher_modules/Counting_and_place_valueK-4.html)  [Compare, order and make correspondences between collections, initially to 20, and explain reasoning (ACMNA289)](http://www.australiancurriculum.edu.au/mathematics/curriculum/f-10?y=F&s=NA&layout=1)  [*TIMESNA01*](http://www.amsi.org.au/teacher_modules/Counting_and_place_valueK-4.html)  [Represent practical situations to model addition and sharing (ACMNA004)](http://www.australiancurriculum.edu.au/mathematics/curriculum/f-10?y=F&s=NA&layout=1)  [*TIMESNAO2*](http://www.amsi.org.au/teacher_modules/Addition_and_Subtraction.html) | [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)](http://www.australiancurriculum.edu.au/Mathematics/Curriculum/F-10?y=1&s=NA&layout=1)  [*TIMESNA01*](http://www.amsi.org.au/teacher_modules/Counting_and_place_valueK-4.html)  [Recognise, model, read, write and order numbers to at least 100. Locate these numbers on a number line (ACMNA013)](http://www.australiancurriculum.edu.au/Mathematics/Curriculum/F-10?y=1&s=NA&layout=1)[*TIMESNA01*](http://www.amsi.org.au/teacher_modules/Counting_and_place_valueK-4.html)  [Count collections to 100 by partitioning numbers using place value (ACMNA014)](http://www.australiancurriculum.edu.au/Mathematics/Curriculum/F-10?y=1&s=NA&layout=1)[*TIMESNA01*](http://www.amsi.org.au/teacher_modules/Counting_and_place_valueK-4.html)  [Represent and solve simple addition and subtraction problems using a range of strategies including counting on, partitioning and rearranging parts (ACMNA015)](http://www.australiancurriculum.edu.au/Mathematics/Curriculum/F-10?y=1&s=NA&layout=1)  [*TIMESNAO2*](http://www.amsi.org.au/teacher_modules/Addition_and_Subtraction.html) | [Investigate number sequences, initially those increasing and decreasing by twos, threes, fives and ten from any starting point, then moving to other sequences.(ACMNA026)](http://www.australiancurriculum.edu.au/mathematics/curriculum/f-10?y=2&s=NA&layout=1)  [*TIMESNA01*](http://www.amsi.org.au/teacher_modules/Counting_and_place_valueK-4.html)  [Recognise, model, represent and order numbers to at least 1000 (ACMNA027)](http://www.australiancurriculum.edu.au/mathematics/curriculum/f-10?y=2&s=NA&layout=1)  [*TIMESNA01*](http://www.amsi.org.au/teacher_modules/Counting_and_place_valueK-4.html)  [Group, partition and rearrange collections up to 1000 in hundreds, tens and ones to facilitate more efficient counting (ACMNA028)](http://www.australiancurriculum.edu.au/mathematics/curriculum/f-10?y=2&s=NA&layout=1)  [*TIMESNA01*](http://www.amsi.org.au/teacher_modules/Counting_and_place_valueK-4.html)  [Explore the connection between addition and subtraction (ACMNA029)](http://www.australiancurriculum.edu.au/mathematics/curriculum/f-10?y=2&s=NA&layout=1)  [*TIMESNAO2*](http://www.amsi.org.au/teacher_modules/Addition_and_Subtraction.html)  [Solve simple addition and subtraction problems using a range of efficient mental and written strategies (ACMNA030)](http://www.australiancurriculum.edu.au/mathematics/curriculum/f-10?y=2&s=NA&layout=1)  [*TIMESNAO2*](http://www.amsi.org.au/teacher_modules/Addition_and_Subtraction.html)  [Recognise and represent multiplication as repeated addition, groups and arrays(ACMNA031)](http://www.australiancurriculum.edu.au/mathematics/curriculum/f-10?y=2&s=NA&layout=1)  [*TIMESNA03*](http://www.amsi.org.au/teacher_modules/Multiplication_and_Division.html)  [Recognise and represent division as grouping into equal sets and solve simple problems using these representations (ACMNA032)](http://www.australiancurriculum.edu.au/mathematics/curriculum/f-10?y=2&s=NA&layout=1)  [*TIMESNA03*](http://www.amsi.org.au/teacher_modules/Multiplication_and_Division.html) | [Investigate the conditions required for a number to be odd or even and identify odd and even numbers (ACMNA051)](http://www.australiancurriculum.edu.au/mathematics/curriculum/f-10?y=3&s=NA&layout=1)  [Recognise, model, represent and order numbers to at least 10 000 (ACMNA052)](http://www.australiancurriculum.edu.au/mathematics/curriculum/f-10?y=3&s=NA&layout=1) [*TIMESNA01*](http://www.amsi.org.au/teacher_modules/Counting_and_place_valueK-4.html)[*TIMESNA05*](http://www.amsi.org.au/teacher_modules/Using_place_value4-7.html)  [Apply place value to partition, rearrange and regroup numbers to at least 10 000 to assist calculations and solve problems (ACMNA053)](http://www.australiancurriculum.edu.au/mathematics/curriculum/f-10?y=3&s=NA&layout=1)  [*TIMESNA01*](http://www.amsi.org.au/teacher_modules/Counting_and_place_valueK-4.html)[*TIMESNA05*](http://www.amsi.org.au/teacher_modules/Using_place_value4-7.html)  [Recognise and explain the connection between addition and subtraction (ACMNA054)](http://www.australiancurriculum.edu.au/mathematics/curriculum/f-10?y=3&s=NA&layout=1)  [*TIMESNAO2*](http://www.amsi.org.au/teacher_modules/Addition_and_Subtraction.html)  [Recall addition facts for single-digit numbers and related subtraction facts to develop increasingly efficient mental strategies for computation (ACMNA055)](http://www.australiancurriculum.edu.au/mathematics/curriculum/f-10?y=3&s=NA&layout=1)  [*TIMESNAO2*](http://www.amsi.org.au/teacher_modules/Addition_and_Subtraction.html)  [Recall multiplication facts of two, three, five and ten and related division facts(ACMNA056)](http://www.australiancurriculum.edu.au/mathematics/curriculum/f-10?y=3&s=NA&layout=1)  [*TIMESNA03*](http://www.amsi.org.au/teacher_modules/Multiplication_and_Division.html)  [Represent and solve problems involving multiplication using efficient mental and written strategies and appropriate digital technologies (ACMNA057)](http://www.australiancurriculum.edu.au/mathematics/curriculum/f-10?y=3&s=NA&layout=1)  [*TIMESNA03*](http://www.amsi.org.au/teacher_modules/Multiplication_and_Division.html) | [Investigate and use the properties of odd and even numbers (ACMNA071)](http://www.australiancurriculum.edu.au/Mathematics/Curriculum/F-10?y=4&s=NA&layout=1)  [Recognise, represent and order numbers to at least tens of thousands (ACMNA072)](http://www.australiancurriculum.edu.au/Mathematics/Curriculum/F-10?y=4&s=NA&layout=1" \o "Elaborations: reproducing five-digit numbers in words using their numerical representations, and vice versa)  [*TIMESNA05*](http://www.amsi.org.au/teacher_modules/Using_place_value4-7.html)  [Apply place value to partition, rearrange and regroup numbers to at least tens of thousands to assist calculations and solve problems (ACMNA073)](http://www.australiancurriculum.edu.au/Mathematics/Curriculum/F-10?y=4&s=NA&layout=1" \o "Elaborations: recognising and demonstrating that the place-value pattern is built on the operations of multiplication or division of tens)  [*TIMESNA05*](http://www.amsi.org.au/teacher_modules/Using_place_value4-7.html)  [Investigates number sequences involving multiples of 3, 4, 6, 7, 8, and 9 (ACMNA074)](http://www.australiancurriculum.edu.au/Mathematics/Curriculum/F-10?y=4&s=NA&layout=1" \o "Elaborations: recognising that number sequences can be extended indefinitely, and determining any patterns in the sequences)  [Recalls multiplication facts up to 10 × 10 and related division facts (ACMNA075)](http://www.australiancurriculum.edu.au/Mathematics/Curriculum/F-10?y=4&s=NA&layout=1" \o "Elaborations: using known multiplication facts to calculate related division facts) [*TIMESNA03*](http://www.amsi.org.au/teacher_modules/Multiplication_and_Division.html)  [Develop efficient mental and written strategies and use appropriate digital technologies for multiplication and for division where there is no remainder (ACMNA076)](http://www.australiancurriculum.edu.au/Mathematics/Curriculum/F-10?y=4&s=NA&layout=1" \o "Elaborations: using known facts and strategies, such as commutativity, doubling and halving for multiplication, and connecting division to multiplication when there is no remainder)  [*TIMESNA03*](http://www.amsi.org.au/teacher_modules/Multiplication_and_Division.html)  [*TIMESNA09*](http://www.amsi.org.au/teacher_modules/multiplication_of_whole_numbers.html)  [*TIMESNA10*](http://www.amsi.org.au/teacher_modules/division_of_whole_numbers.html) | [Identify and describe factors and multiples of whole numbers and use them to solve problems (ACMNA098)](http://www.australiancurriculum.edu.au/mathematics/curriculum/f-10?y=5&s=NA&layout=1)  [Use estimation and rounding to check the reasonableness of answers to calculations(ACMNA099)](http://www.australiancurriculum.edu.au/mathematics/curriculum/f-10?y=5&s=NA&layout=1)  [Solve problems involving multiplication of large numbers by one- or two-digit numbers using efficient mental, written strategies and appropriate digital technologies(ACMNA100)](http://www.australiancurriculum.edu.au/mathematics/curriculum/f-10?y=5&s=NA&layout=1)  [*TIMESNA9*](http://www.amsi.org.au/teacher_modules/multiplication_of_whole_numbers.html)  [Solve problems involving division by a one digit number, including those that result in a remainder (ACMNA101)](http://www.australiancurriculum.edu.au/mathematics/curriculum/f-10?y=5&s=NA&layout=1)  [*TIMESNA10*](http://www.amsi.org.au/teacher_modules/division_of_whole_numbers.html)  [Use efficient mental and written strategies and apply appropriate digital technologies to solve problems (ACMNA291)](http://www.australiancurriculum.edu.au/mathematics/curriculum/f-10?y=5&s=NA&layout=1)  [*TIMESNA07*](http://www.amsi.org.au/teacher_modules/addition_of_whole_numbers.html)[*TIMESNA08*](http://www.amsi.org.au/teacher_modules/subtraction_of_whole_numbers.html)  [*TIMESNA09*](http://www.amsi.org.au/teacher_modules/multiplication_of_whole_numbers.html) | [Identify and describe properties of prime, composite, square and triangular numbers (ACMNA122)](http://www.australiancurriculum.edu.au/mathematics/curriculum/f-10?y=6&s=NA&layout=1)  [*TIMESNA19*](http://www.amsi.org.au/teacher_modules/multiples_factors_and_powers.html)  [Select and apply efficient mental and written strategies and appropriate digital technologies to solve problems involving all four operations with whole numbers (ACMNA123)](http://www.australiancurriculum.edu.au/mathematics/curriculum/f-10?y=6&s=NA&layout=1)  [*TIMESNA19*](http://www.amsi.org.au/teacher_modules/multiples_factors_and_powers.html)  [*(SAMMYNA01)*](http://www.amsi.org.au/ESA_middle_years/Year6/Year6_md/Year6_1a.html#intro)  [Investigate everyday situations that use integers. Locate and represent these numbers on a number line (ACMNA124)](http://www.australiancurriculum.edu.au/mathematics/curriculum/f-10?y=6&s=NA&layout=1)  [*TIMESNA15*](http://www.amsi.org.au/teacher_modules/integer.html) | [Investigate index notation and represent whole numbers as products of powers of prime numbers (ACMNA149)](http://www.australiancurriculum.edu.au/glossary/popup?a=M&t=Index" \o "Elaborations: 1) defining and comparing prime and composite numbers and explaining the difference between them, 2) applying knowledge of factors to strategies for expressing whole numbers, 3) solving problems involving LCM and GCD for whole number pairs)  [*TIMESNA13*](http://www.amsi.org.au/teacher_modules/whole_number_arithmetic.html)  [*TIMESNA16*](http://www.amsi.org.au/teacher_modules/Primes_and_Prime_Factorisation.html)  [*TIMESNA19*](http://www.amsi.org.au/teacher_modules/multiples_factors_and_powers.html)  [Investigate and use square roots of perfect square numbers (ACMNA150)](http://www.australiancurriculum.edu.au/Mathematics/Curriculum/F-10?y=7&s=NA&layout=1" \o "Elaborations: 1) investigating square numbers such as 25 and 36 and developing square-root notation, 2) investigating between which two whole numbers a square root lies)  [Apply the associative, commutative and distributive laws to aid mental and written computation (ACMNA151)](http://www.australiancurriculum.edu.au/Mathematics/Curriculum/F-10?y=7&s=NA&layout=1" \o "Elaborations: understanding that arithmetic laws are powerful ways of describing and simplifying calculations)  [*TIMESNA13*](http://www.amsi.org.au/teacher_modules/whole_number_arithmetic.html)  [*SAMMYNA08*](http://www.amsi.org.au/ESA_middle_years/Year7/Year7_md/Year7_1c.html#intro)  [Compare, order, add and subtract integers (ACMNA280)](http://www.australiancurriculum.edu.au/Mathematics/Curriculum/F-10?y=7&s=NA&layout=1" \o "Elaborations: None for this)  [*TIMESNA15*](http://www.amsi.org.au/teacher_modules/integer.html) | [Use index notation with numbers to establish the index laws with positive integral indices and the zero index (ACMNA182)](http://www.australiancurriculum.edu.au/mathematics/curriculum/f-10?y=8&s=NA&layout=1)  [*TIMESNA13*](http://www.amsi.org.au/teacher_modules/whole_number_arithmetic.html)  [*TIMESNA19*](http://www.amsi.org.au/teacher_modules/multiples_factors_and_powers.html)  [*SAMMYNA15*](http://www.amsi.org.au/ESA_middle_years/Year8/Year8_md/Year8_1d.html#intro)  [Carry out the four operations with rational numbers and integers, using efficient mental and written strategies and appropriate digital technologies(ACMNA183)](http://www.australiancurriculum.edu.au/mathematics/curriculum/f-10?y=8&s=NA&layout=1)  [*TIMESNA15*](http://www.amsi.org.au/teacher_modules/integer.html) |  |  |  |

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| Fractions and Decimals |  | [Recognise and describe one-half as one of two equal parts of a whole. (ACMNA016)](http://www.australiancurriculum.edu.au/Mathematics/Curriculum/F-10?y=1&s=NA&layout=1) | [Recognise and interpret common uses of halves, quarters and eighths of shapes and collections (ACMNA033)](http://www.australiancurriculum.edu.au/mathematics/curriculum/f-10?y=2&s=NA&layout=1) | [Model and represent unit fractions including 1/2, 1/4, 1/3, 1/5 and their multiples to a complete whole (ACMNA058)](http://www.australiancurriculum.edu.au/mathematics/curriculum/f-10?y=3&s=NA&layout=1)  [*TIMESNA03*](http://www.amsi.org.au/teacher_modules/Multiplication_and_Division.html) | [Investigate equivalent fractions by exploring fractions used in contexts (ACMNA077)](http://www.australiancurriculum.edu.au/Mathematics/Curriculum/F-10?y=4&s=NA&layout=1" \o "Elaborations: exploring the relationship between families of fractions (halves, quarters and eighths or thirds and sixths) by folding a series of paper strips to construct a fraction wall)  [*TIMESNA14*](http://www.amsi.org.au/teacher_modules/Fractions.html)  [Count by quarters halves and thirds, including with mixed numerals. Locate and represent these fractions on a number line (ACMNA078)](http://www.australiancurriculum.edu.au/Mathematics/Curriculum/F-10?y=4&s=NA&layout=1" \o "Elaborations: 1) converting mixed numbers to improper fractions and vice versa, 2) investigating the use of fractions and sharing as a way of managing Country: for example taking no more than half the eggs from a nest to protect future bird populations)  [*TIMESNA14*](http://www.amsi.org.au/teacher_modules/Fractions.html)  [Recognise that the place value system can be extended to tenths and hundredths. Make connections between fractions and decimal notation (ACMNA079)](http://www.australiancurriculum.edu.au/Mathematics/Curriculum/F-10?y=4&s=NA&layout=1" \o "Elaborations: 1) using division by 10 to extend the place-value system, 2) using knowledge of fractions to establish equivalences between fractions and decimal notation)  [TIMESNA14](http://www.amsi.org.au/teacher_modules/Fractions.html) | [Compare and order common unit fractions and locate and represent them on a number line (ACMNA102)](http://www.australiancurriculum.edu.au/mathematics/curriculum/f-10?y=5&s=NA&layout=1)  [*TIMESNA14*](http://www.amsi.org.au/teacher_modules/Fractions.html)  [Investigate strategies to solve problems involving addition and subtraction of fractions with the same denominator (ACMNA103)](http://www.australiancurriculum.edu.au/mathematics/curriculum/f-10?y=5&s=NA&layout=1)  [*TIMESNA14*](http://www.amsi.org.au/teacher_modules/Fractions.html)  [Recognise that the place value system can be extended beyond hundredths(ACMNA104)](http://www.australiancurriculum.edu.au/mathematics/curriculum/f-10?y=5&s=NA&layout=1)  [*TIMESNA18*](http://www.amsi.org.au/teacher_modules/decimals_and_percentages.html)  [Compare, order and represent decimals (ACMNA105)](http://www.australiancurriculum.edu.au/mathematics/curriculum/f-10?y=5&s=NA&layout=1)  [*TIMESNA18*](http://www.amsi.org.au/teacher_modules/decimals_and_percentages.html) | [Compare fractions with related denominators and locate and represent them on a number line (ACMNA125)](http://www.australiancurriculum.edu.au/mathematics/curriculum/f-10?y=6&s=NA&layout=1)  [*TIMESNA14*](http://www.amsi.org.au/teacher_modules/Fractions.html)  [*(SAMMYNA02)*](http://www.amsi.org.au/ESA_middle_years/Year6/Year6_md/Year6_1b.html#intro)  [Solve problems involving addition and subtraction of fractions with the same or related denominators (ACMNA126)](http://www.australiancurriculum.edu.au/mathematics/curriculum/f-10?y=6&s=NA&layout=1)  [*TIMESNA14*](http://www.amsi.org.au/teacher_modules/Fractions.html)  [Find a simple fraction of a quantity where the result is a whole number, with and without digital technologies (ACMNA127)](http://www.australiancurriculum.edu.au/mathematics/curriculum/f-10?y=6&s=NA&layout=1)  [*TIMESNA14*](http://www.amsi.org.au/teacher_modules/Fractions.html)  [*TIMESNA17*](http://www.amsi.org.au/teacher_modules/Unitary_Method.html)  [Add and subtract decimals, with and without digital technologies, and use estimation and rounding to check the reasonableness of answers(ACMNA128)](http://www.australiancurriculum.edu.au/mathematics/curriculum/f-10?y=6&s=NA&layout=1)  [*TIMESNA18*](http://www.amsi.org.au/teacher_modules/decimals_and_percentages.html)  [*(SAMMYNA03)*](http://www.amsi.org.au/ESA_middle_years/Year6/Year6_md/Year6_1c.html#intro)  [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)](http://www.australiancurriculum.edu.au/mathematics/curriculum/f-10?y=6&s=NA&layout=1)  [*TIMESNA18*](http://www.amsi.org.au/teacher_modules/decimals_and_percentages.html)  [Multiply and divide decimals by powers of 10 (ACMNA130)](http://www.australiancurriculum.edu.au/mathematics/curriculum/f-10?y=6&s=NA&layout=1)  [*TIMESNA18*](http://www.amsi.org.au/teacher_modules/decimals_and_percentages.html)  [Make connections between equivalent fractions, decimals and percentages (ACMNA131)](http://www.australiancurriculum.edu.au/mathematics/curriculum/f-10?y=6&s=NA&layout=1)  [*TIMESNA18*](http://www.amsi.org.au/teacher_modules/decimals_and_percentages.html)  [*TIMESNA20*](http://www.amsi.org.au/teacher_modules/Percentages.html) |  |  |  |  |  |

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| Real Numbers |  |  |  |  |  |  |  | [Compare fractions using equivalence. Locate and represent positive and negative fractions and mixed numbers on a number line (ACMNA152)](http://www.australiancurriculum.edu.au/Mathematics/Curriculum/F-10?y=7&s=NA&layout=1" \o "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 2/3 is the same as 4/6 and 6/9))  [*TIMESNA14*](http://www.amsi.org.au/teacher_modules/Fractions.html)  [*SAMMYNA09*](http://www.amsi.org.au/ESA_middle_years/Year7/Year7_md/Year7_1d.html#intro)  [Solve problems involving addition and subtraction of fractions, including those with unrelated denominators (ACMNA153)](http://www.australiancurriculum.edu.au/Mathematics/Curriculum/F-10?y=7&s=NA&layout=1" \o "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))  [*TIMESNA14*](http://www.amsi.org.au/teacher_modules/Fractions.html)  [*SAMMYNA10*](http://www.amsi.org.au/ESA_middle_years/Year7/Year7_md/Year7_1e.html#intro)  [Multiply and divide fractions and decimals using efficient written strategies and digital technologies (ACMNA154)](http://www.australiancurriculum.edu.au/Mathematics/Curriculum/F-10?y=7&s=NA&layout=1" \o "Elaborations: investigating multiplication of fractions and decimals, using strategies including patterning and multiplication as repeated addition, and identifying the processes for division as the inverse of multiplication the in)  [*TIMESNA14*](http://www.amsi.org.au/teacher_modules/Fractions.html)[*TIMESNA18*](http://www.amsi.org.au/teacher_modules/decimals_and_percentages.html)  [Express one quantity as a fraction of another, with and without the use of digital technologies (ACMNA155)](http://www.australiancurriculum.edu.au/Mathematics/Curriculum/F-10?y=7&s=NA&layout=1" \o "Elaborations: using authentic examples for the quantities to be expressed and understanding the reasons for the calculations)  [*TIMESNA14*](http://www.amsi.org.au/teacher_modules/Fractions.html)  [Round decimals to a specified number of decimal places (ACMNA156)](http://www.australiancurriculum.edu.au/Mathematics/Curriculum/F-10?y=7&s=NA&layout=1" \o "Elaborations: using rounding to estimate the results of calculations with whole numbers and decimals, and understanding the conventions for rounding)  [*TIMESNA18*](http://www.amsi.org.au/teacher_modules/decimals_and_percentages.html)  [Connect fractions, decimals and percentages and carry out simple conversions (ACMNA157)](http://www.australiancurriculum.edu.au/Mathematics/Curriculum/F-10?y=7&s=NA&layout=1" \o "Elaborations: 1) justifying choices of written, mental or calculator strategies for solving specific problems, 2) understanding that quantities can be represented by different number types and calculated using various operations, 3) calculating percentage)  [*TIMESNA18*](http://www.amsi.org.au/teacher_modules/decimals_and_percentages.html)  [*TIMESNA20*](http://www.amsi.org.au/teacher_modules/Percentages.html)  [Find percentages of quantities and express one quantity as a percentage of another, with and without digital technologies. (ACMNA158)](http://www.australiancurriculum.edu.au/Mathematics/Curriculum/F-10?y=7&s=NA&layout=1" \o "Elaborations: using authentic problems to express quantities as percentages of other amounts)  [*TIMESNA17*](http://www.amsi.org.au/teacher_modules/Unitary_Method.html)  [*TIMESNA20*](http://www.amsi.org.au/teacher_modules/Percentages.html)  [Recognise and solve problems involving simple ratios (ACMNA173)](http://www.australiancurriculum.edu.au/Mathematics/Curriculum/F-10?y=7&s=NA&layout=1" \o "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)  [*TIMESNA17*](http://www.amsi.org.au/teacher_modules/Unitary_Method.html) | [Investigate terminating and recurring decimals (ACMNA184)](http://www.australiancurriculum.edu.au/mathematics/curriculum/f-10?y=8&s=NA&layout=1)  [*TIMESNA18*](http://www.amsi.org.au/teacher_modules/decimals_and_percentages.html)  [*SAMMYNA13*](http://www.amsi.org.au/ESA_middle_years/Year8/Year8_md/Year8_1b.html#intro)  [Investigate the concept of irrational numbers, including π (ACMNA186)](http://www.australiancurriculum.edu.au/mathematics/curriculum/f-10?y=8&s=NA&layout=1)  [*TIMESNA28*](http://www.amsi.org.au/teacher_modules/Real_numbers.html)  [*SAMMYNA14*](http://www.amsi.org.au/ESA_middle_years/Year8/Year8_md/Year8_1c.html#intro)  [Solve problems involving the use of percentages, including percentage increases and decreases, with and without digital technologies (ACMNA187)](http://www.australiancurriculum.edu.au/mathematics/curriculum/f-10?y=8&s=NA&layout=1)  [*TIMESNA18*](http://www.amsi.org.au/teacher_modules/decimals_and_percentages.html)  [*TIMESNA20*](http://www.amsi.org.au/teacher_modules/Percentages.html)  [Solve a range of problems involving rates and ratios, with and without digital technologies (ACMNA188)](http://www.australiancurriculum.edu.au/mathematics/curriculum/f-10?y=8&s=NA&layout=1)  [TIMESNA21](http://www.amsi.org.au/teacher_modules/rates_and_ratio.html) | [Solve problems involving direct proportion. Explore the relationship between graphs and equations corresponding to simple rate problems (ACMNA208)](http://www.australiancurriculum.edu.au/Mathematics/Curriculum/F-10?y=9&s=NA&layout=1)  [*TIMESNA37*](http://www.amsi.org.au/teacher_modules/proportion.html)  [Apply index laws to numerical expressions with integer indices (ACMNA209)](http://www.australiancurriculum.edu.au/Mathematics/Curriculum/F-10?y=9&s=NA&layout=1)  [*TIMESNA24*](http://www.amsi.org.au/teacher_modules/Negative_and_the_Index_Laws.html)  [*TIMESNA31*](http://www.amsi.org.au/teacher_modules/Indices_and_logarithms.html)  [*SAMMYNA17*](http://www.amsi.org.au/ESA_middle_years/Year9/Year9_md/Year9_1a.html#intro)  [Express numbers in scientific notation (ACMNA210)](http://www.australiancurriculum.edu.au/Mathematics/Curriculum/F-10?y=9&s=NA&layout=1)  [*TIMESNA31*](http://www.amsi.org.au/teacher_modules/Indices_and_logarithms.html)  [*SAMMYNA18*](http://www.amsi.org.au/ESA_middle_years/Year9/Year9_md/Year9_1b.html#intro) |  | [Define rational and irrational numbers and perform operations with surds and fractional indices (ACMNA264)](http://www.australiancurriculum.edu.au/mathematics/curriculum/f-10?y=10A&s=NA&layout=1) [*TIMESNA27*](http://www.amsi.org.au/teacher_modules/Surds.html)  [*TIMESNA28*](http://www.amsi.org.au/teacher_modules/Real_numbers.html)  [*TIMESNA31*](http://www.amsi.org.au/teacher_modules/Indices_and_logarithms.html)  [Use the definition of a logarithm to establish and apply the laws of logarithms(ACMNA265)](http://www.australiancurriculum.edu.au/mathematics/curriculum/f-10?y=10A&s=NA&layout=1) |

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| Money and Financial Mathematics |  | [Recognise, describe and order Australian coins according to their value (ACMNA017)](http://www.australiancurriculum.edu.au/Mathematics/Curriculum/F-10?y=1&s=NA&layout=1) | [Count and order small collections of Australian coins and notes according to their value(ACMNA034)](http://www.australiancurriculum.edu.au/mathematics/curriculum/f-10?y=2&s=NA&layout=1) | [Represent money values in multiple ways and count the change required for simple transactions to the nearest five cents (ACMNA059)](http://www.australiancurriculum.edu.au/mathematics/curriculum/f-10?y=3&s=NA&layout=1) | [Solve problems involving purchases and the calculation of change to the nearest five cents with and without digital technologies (ACMNA080)](http://www.australiancurriculum.edu.au/Mathematics/Curriculum/F-10?y=4&s=NA&layout=1" \o "Elaborations: 1) recognising that not all countries use dollars and cents, eg India uses rupees, 2) carrying out calculations in another currency as well as in dollars and cents, and identifying both as decimal systems) | [Create simple financial plans (ACMNA106)](http://www.australiancurriculum.edu.au/mathematics/curriculum/f-10?y=5&s=NA&layout=1) | *Investigate and calculate percentage discounts of 10%, 25% and 50% on sale items, with and without digital technologies (ACMNA132)* [*(SAMMYNA05)*](http://www.amsi.org.au/ESA_middle_years/Year6/Year6_md/Year6_1e.html#intro) | [Investigate and calculate 'best buys', with and without digital technologies (ACMNA174)](http://www.australiancurriculum.edu.au/mathematics/curriculum/f-10?layout=1" \l "cdcode=ACMNA174&level=7" \o "Elaborations: applying the unitary method to identify ‘best buys’ situations, such as comparing the cost per 100g)  [*TIMESNA17*](http://www.amsi.org.au/teacher_modules/Unitary_Method.html)  [*(SAMMYNA06)*](http://www.amsi.org.au/ESA_middle_years/Year7/Year7_md/Year7_1a.html#intro) | [Solve problems involving profit and loss, with and without digital technologies (ACMNA189)](http://www.australiancurriculum.edu.au/mathematics/curriculum/f-10?y=8&s=NA&layout=1) | [Solve problems involving simple interest (ACMNA211)](http://www.australiancurriculum.edu.au/Mathematics/Curriculum/F-10?y=9&s=NA&layout=1)  [*TIMESNA17*](http://www.amsi.org.au/teacher_modules/Unitary_Method.html)[*TIMESNA22*](http://www.amsi.org.au/teacher_modules/consumer_arithmetic.html)  [*SAMMYNA19*](http://www.amsi.org.au/ESA_middle_years/Year9/Year9_md/Year9_1c.html#intro) | [Connect the compound interest formula to repeated applications of simple interest using appropriate digital technologies (ACMNA229)](http://www.australiancurriculum.edu.au/mathematics/curriculum/f-10?y=10&s=NA&layout=1)  [*TIMESNA22*](http://www.amsi.org.au/teacher_modules/consumer_arithmetic.html) |  |

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| Patterns and Algebra | [Sort and classify familiar objects and explain the basis for these classifications. Copy, continue and create patterns with objects and drawings (ACMNA005)](http://www.australiancurriculum.edu.au/mathematics/curriculum/f-10?y=F&s=NA&layout=1) | [Investigate and describe number patterns formed by skip counting and patterns with objects (ACMNA018)](http://www.australiancurriculum.edu.au/Mathematics/Curriculum/F-10?y=1&s=NA&layout=1) | [Describe patterns with numbers and identify missing elements (ACMNA035)](http://www.australiancurriculum.edu.au/mathematics/curriculum/f-10?y=2&s=NA&layout=1)  [Solve problems by using number sentences for addition or subtraction (ACMNA036)](http://www.australiancurriculum.edu.au/mathematics/curriculum/f-10?y=2&s=NA&layout=1) | [Describe, continue, and create number patterns resulting from performing addition or subtraction (ACMNA060)](http://www.australiancurriculum.edu.au/mathematics/curriculum/f-10?y=3&s=NA&layout=1) | [Explore and describe number patterns resulting from performing multiplication (ACMNA081)](http://www.australiancurriculum.edu.au/Mathematics/Curriculum/F-10?y=4&s=NA&layout=1" \o "Elaborations: identifying examples of number patterns in everyday life)  [Solve word problems by using number sentences involving multiplication or division where there is no remainder and vice versa (ACMNA082)](http://www.australiancurriculum.edu.au/Mathematics/Curriculum/F-10?y=4&s=NA&layout=1" \o "Elaborations: 1) representing a word problem as a number sentence, 2) writing a word problem using a given number sentence)  [Use equivalent number sentences involving addition and subtraction to find unknown quantities (ACMNA083)](http://www.australiancurriculum.edu.au/glossary/popup?a=M&t=Number" \o "Elaborations: 1) writing number sentences to represent and answer questions such as: ‘When a number is added to 23 the answer is the same as 57 minus 19. What is the number?, 2) using partitioning to find unknown quantities in number sentences) | [Describe, continue and create patterns with fractions, decimals and whole numbers resulting from addition and subtraction (ACMNA107)](http://www.australiancurriculum.edu.au/mathematics/curriculum/f-10?y=5&s=NA&layout=1)  [Use equivalent number sentences involving multiplication and division to find unknown quantities (ACMNA121)](http://www.australiancurriculum.edu.au/mathematics/curriculum/f-10?y=5&s=NA&layout=1) | [Continue and create sequences involving whole numbers, fractions and decimals. Describe the rule used to create the sequence (ACMNA133)](http://www.australiancurriculum.edu.au/mathematics/curriculum/f-10?y=6&s=NA&layout=1)  [*(SAMMYNA05)*](http://www.amsi.org.au/ESA_middle_years/Year6/Year6_md/Year6_1e.html#intro)  [Explore the use of brackets and order of operations to write number sentences (ACMNA134)](http://www.australiancurriculum.edu.au/mathematics/curriculum/f-10?y=6&s=NA&layout=1)  [*TIMESNA13*](http://www.amsi.org.au/teacher_modules/whole_number_arithmetic.html) | [Introduce the concept of variables as a way of representing numbers using letters (ACMNA175)](http://www.australiancurriculum.edu.au/Mathematics/Curriculum/F-10?y=7&s=NA&layout=1" \o "Elaborations: understanding that arithmetic laws are powerful ways of describing and simplifying calculations and that using these laws leads to the generality of algebra)  [*TIMESNA23*](http://www.amsi.org.au/teacher_modules/Algebraic_expressions.html)  [*(SAMMYNA06)*](http://www.amsi.org.au/ESA_middle_years/Year7/Year7_md/Year7_1a.html#intro)  [Create algebraic expressions and evaluate them by substituting a given value for each variable (ACMNA176)](http://www.australiancurriculum.edu.au/Mathematics/Curriculum/F-10?y=7&s=NA&layout=1)  [TIMESNA23](http://www.amsi.org.au/teacher_modules/Algebraic_expressions.html)  [*TIMESNA24*](http://www.amsi.org.au/teacher_modules/Negative_and_the_Index_Laws.html)  [Extend and apply the laws and properties of arithmetic to algebraic terms and expressions (ACMNA177)](http://www.australiancurriculum.edu.au/Mathematics/Curriculum/F-10?y=7&s=NA&layout=1" \o "Elaborations: 1)identifying order of operations in contextualised problems, preserving order by inserting brackets in numerical expressions, recognising order is preserved by convention, 2) moving fluently between algebraic and word representations)  [*TIMESNA13*](http://www.amsi.org.au/teacher_modules/whole_number_arithmetic.html)  [*TIMESNA26*](http://www.amsi.org.au/teacher_modules/linear_equations.html)  [*SAMMYNA07*](http://www.amsi.org.au/ESA_middle_years/Year7/Year7_md/Year7_1b.html#intro) | [Extend and apply the distributive law to the expansion of algebraic expressions (ACMNA190)](http://www.australiancurriculum.edu.au/mathematics/curriculum/f-10?y=8&s=NA&layout=1)  [*TIMESNA23*](http://www.amsi.org.au/teacher_modules/Algebraic_expressions.html)[*TIMESNA25*](http://www.amsi.org.au/teacher_modules/special_expansions_algbrc_fracs.html)  [*SAMMYNA16*](http://www.amsi.org.au/ESA_middle_years/Year8/Year8_md/Year8_1e.html#intro)  [Factorise algebraic expressions by identifying numerical factors (ACMNA191)](http://www.australiancurriculum.edu.au/mathematics/curriculum/f-10?y=8&s=NA&layout=1http://www.australiancurriculum.edu.au/glossary/popup?a=M&t=Factorise)  [*TIMESNA24*](http://www.amsi.org.au/teacher_modules/Negative_and_the_Index_Laws.html)  [Simplify algebraic expressions involving the four operations (ACMNA192)](http://www.australiancurriculum.edu.au/mathematics/curriculum/f-10?y=8&s=NA&layout=1http://www.australiancurriculum.edu.au/glossary/popup?a=M&t=Factorise)  [*TIMESNA23*](http://www.amsi.org.au/teacher_modules/Algebraic_expressions.html)  [*TIMESNA25*](http://www.amsi.org.au/teacher_modules/special_expansions_algbrc_fracs.html)  [*TIMESNA26*](http://www.amsi.org.au/teacher_modules/linear_equations.html) | [Extend and apply the index laws to variables, using positive integer indices and the zero index (ACMNA212)](http://www.australiancurriculum.edu.au/Mathematics/Curriculum/F-10?y=9&s=NA&layout=1)  [*TIMESNA32*](http://www.amsi.org.au/teacher_modules/fractions_and_index_law_in_algebra.html)  [Apply the distributive law to the expansion of algebraic expressions, including binomials, and collect like terms where appropriate (ACMNA213)](http://www.australiancurriculum.edu.au/Mathematics/Curriculum/F-10?y=9&s=NA&layout=1)  [*TIMESNA25*](http://www.amsi.org.au/teacher_modules/special_expansions_algbrc_fracs.html) | [Factorise algebraic expressions by taking out a common algebraic factor (ACMNA230)](http://www.australiancurriculum.edu.au/mathematics/curriculum/f-10?y=10&s=NA&layout=1)  [*TIMESNA33*](http://www.amsi.org.au/teacher_modules/Factorisation.html)  [Simplify algebraic products and quotients using index laws (ACMNA231)](http://www.australiancurriculum.edu.au/mathematics/curriculum/f-10?y=10&s=NA&layout=1)  [*TIMESNA32*](http://www.amsi.org.au/teacher_modules/fractions_and_index_law_in_algebra.html)  [Apply the four operations to simple algebraic fractions with numerical denominators(ACMNA232)](http://www.australiancurriculum.edu.au/mathematics/curriculum/f-10?y=10&s=NA&layout=1)  [*TIMESNA25*](http://www.amsi.org.au/teacher_modules/special_expansions_algbrc_fracs.html)  [*TIMESNA26*](http://www.amsi.org.au/teacher_modules/linear_equations.html)  [Expand binomial products and factorise monic quadratic expressions using a variety of strategies (ACMNA233)](http://www.australiancurriculum.edu.au/mathematics/curriculum/f-10?y=10&s=NA&layout=1)  [*TIMESNA33*](http://www.amsi.org.au/teacher_modules/Factorisation.html)  [Substitute values into formulas to determine an unknown (ACMNA234)](http://www.australiancurriculum.edu.au/mathematics/curriculum/f-10?y=10&s=NA&layout=1)  [*TIMESNA36*](http://www.amsi.org.au/teacher_modules/Formulas.html) | [Investigate the concept of a polynomial and apply the factor and remainder theorems to solve problems (ACMNA266)](http://www.australiancurriculum.edu.au/mathematics/curriculum/f-10?y=10A&s=NA&layout=1)  [TI*MESNA39*](http://www.amsi.org.au/teacher_modules/polynomials.html) |

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| Linear and non-linear relationships |  |  |  |  |  |  |  | [Given coordinates, plot points on the Cartesian plane, and find coordinates for a given point (ACMNA178)](http://www.australiancurriculum.edu.au/Mathematics/Curriculum/F-10?y=7&s=NA&layout=1" \o "Elaborations: plotting points from a table of integer values and recognising simple patterns, such as points that lie on a straight line)  [*SAMMYNA11*](http://www.amsi.org.au/ESA_middle_years/Year7/Year7_md/Year7_2a.html#intro)  [Solve simple linear equations (ACMNA179)](http://www.australiancurriculum.edu.au/Mathematics/Curriculum/F-10?y=7&s=NA&layout=1" \o "Elaborations: 1) 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, 2) investigating a range of strategies to solve equations)  [*TIMESNA26*](http://www.amsi.org.au/teacher_modules/linear_equations.html)  *[Investigate, interpret and analyse graphs from authentic data (ACMNA180)](http://www.australiancurriculum.edu.au/Mathematics/Curriculum/F-10?y=7&s=NA&layout=1" \o "Elaborations: use travel graphs to investigate/compare distance travelled to and from school, 2) interpreting features of travel graphs, eg: the slope of lines and meaning of horizontal line, 3) using graphs of evaporation rates to explore water storage)*  [*TIMESNA29*](http://www.amsi.org.au/teacher_modules/Introduction_to_coordinate_geometry.html) | [Plot linear relationships on the Cartesian plane with and without the use of digital technologies (ACMNA193)](http://www.australiancurriculum.edu.au/mathematics/curriculum/f-10?y=8&s=NA&layout=1http://www.australiancurriculum.edu.au/glossary/popup?a=M&t=Factorise)  [*SAMMYNA12*](http://www.amsi.org.au/ESA_middle_years/Year8/Year8_md/Year8_1a.html#intro)  [Solve linear equations using algebraic and graphical techniques. Verify solutions by substitution (ACMNA194)](http://www.australiancurriculum.edu.au/mathematics/curriculum/f-10?y=8&s=NA&layout=1http://www.australiancurriculum.edu.au/glossary/popup?a=M&t=Factorise) | [Find the distance between two points located on a Cartesian plane using a range of strategies, including graphing software (ACMNA214)](http://www.australiancurriculum.edu.au/Mathematics/Curriculum/F-10?y=9&s=NA&layout=1)  [*TIMESNA29*](http://www.amsi.org.au/teacher_modules/Introduction_to_coordinate_geometry.html)  [*SAMMYNA20*](http://www.amsi.org.au/ESA_middle_years/Year9/Year9_md/Year9_1d.html#intro)  [Find the midpoint and gradient of a line segment (interval) on the Cartesian plane using a range of strategies, including graphing software (ACMNA294)](http://www.australiancurriculum.edu.au/Mathematics/Curriculum/F-10?y=9&s=NA&layout=1)  [*TIMESNA29*](http://www.amsi.org.au/teacher_modules/Introduction_to_coordinate_geometry.html)  [Sketch linear graphs using the coordinates of two points and solve linear equations(ACMNA215)](http://www.australiancurriculum.edu.au/Mathematics/Curriculum/F-10?y=9&s=NA&layout=1) [*TIMESNA29*](http://www.amsi.org.au/teacher_modules/Introduction_to_coordinate_geometry.html)  [Graph simple non-linear relations with and without the use of digital technologies and solve simple related equations*(ACMNA296*)](http://www.australiancurriculum.edu.au/Mathematics/Curriculum/F-10?y=9&s=NA&layout=1)  [*TIMESNA35*](http://www.amsi.org.au/teacher_modules/Quadratic_Function.html) | [Solve problems involving linear equations, including those derived from formulas(ACMNA235)](http://www.australiancurriculum.edu.au/mathematics/curriculum/f-10?y=10&s=NA&layout=1)  [*TIMESNA26*](http://www.amsi.org.au/teacher_modules/linear_equations.html)  [*TIMESNA36*](http://www.amsi.org.au/teacher_modules/Formulas.html)  [Solve linear inequalities and graph their solutions on a number line (ACMNA236)](http://www.australiancurriculum.edu.au/mathematics/curriculum/f-10?y=10&s=NA&layout=1)  [Solve linear simultaneous equations, using algebraic and graphical techniques including using digital technology (ACMNA237)](http://www.australiancurriculum.edu.au/mathematics/curriculum/f-10?y=10&s=NA&layout=1)  [Solve problems involving parallel and perpendicular lines (ACMNA238)](http://www.australiancurriculum.edu.au/mathematics/curriculum/f-10?y=10&s=NA&layout=1)  [*TIMESNA29*](http://www.amsi.org.au/teacher_modules/Introduction_to_coordinate_geometry.html)  [Explore the connection between algebraic and graphical representations of relations such as simple quadratics, circles and exponentials using digital technology as appropriate (ACMNA239)](http://www.australiancurriculum.edu.au/mathematics/curriculum/f-10?y=10&s=NA&layout=1)  [*TIMESNA35*](http://www.amsi.org.au/teacher_modules/Quadratic_Function.html)  [Solve linear equations involving simple algebraic fractions (ACMNA240)](http://www.australiancurriculum.edu.au/mathematics/curriculum/f-10?y=10&s=NA&layout=1)  [*TIMESNA25*](http://www.amsi.org.au/teacher_modules/special_expansions_algbrc_fracs.html)  [Solve simple quadratic equations using a range of strategies (ACMNA241)](http://www.australiancurriculum.edu.au/mathematics/curriculum/f-10?y=10&s=NA&layout=1)  [*TIMESNA34*](http://www.amsi.org.au/teacher_modules/Quadratic_Equations.html)  [*TIMESNA35*](http://www.amsi.org.au/teacher_modules/Quadratic_Function.html) | [Solve simple exponential equations (ACMNA270)](http://www.australiancurriculum.edu.au/mathematics/curriculum/f-10?y=10A&s=NA&layout=1)  [Describe, interpret and sketch parabolas, hyperbolas, circles and exponential functions and their transformations (ACMNA267)](http://www.australiancurriculum.edu.au/mathematics/curriculum/f-10?y=10A&s=NA&layout=1) [*TIMESNA35*](http://www.amsi.org.au/teacher_modules/Quadratic_Function.html)  [Apply understanding of polynomials to sketch a range of curves and describe the features of these curves from their equation (ACMNA268)](http://www.australiancurriculum.edu.au/mathematics/curriculum/f-10?y=10A&s=NA&layout=1)  [*TIMESNA39*](http://www.amsi.org.au/teacher_modules/polynomials.html)  [Factorise monic and non-monic quadratic expressions and solve a wide range of quadratic equations derived from a variety of contexts (ACMNA269)](http://www.australiancurriculum.edu.au/mathematics/curriculum/f-10?y=10A&s=NA&layout=1)  [*TIMESNA33*](http://www.amsi.org.au/teacher_modules/Factorisation.html)  [*TIMESNA34*](http://www.amsi.org.au/teacher_modules/Quadratic_Equations.html)  [*TIMESNA35*](http://www.amsi.org.au/teacher_modules/Quadratic_Function.html) |