Year 7 plan — Australian Curriculum: Mathematics

Implementation year: School name:

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| Identify curriculum | Year level description | The proficiency strands *Understanding*, *Fluency*, *Problem* *Solving* and *Reasoning* are an integral part of mathematics content across the three content strands: *Number and Algebra*, *Measurement and Geometry*, and *Statistics and Probability*. The proficiencies reinforce the significance of working mathematically within the content and describe how the content is explored or developed. They provide the language to build in the developmental aspects of the learning of mathematics.At this year level:*Understanding* includes making connections between representations of numbers, using fractions to represent probabilities, comparing and ordering fractions and decimals and representing them in various ways, describing transformations and identifying line and rotational symmetry *Fluency* includes choosing appropriate units of measurement for calcu lation of perimeter and area, using estimation to check the reasonableness of answers to calculations and using instruments to measure angles *Problem* *Solving* includes formulating and solving authentic problems using whole numbers and measurements and creating financial plans *Reasoning* includes investigating strategies to perform calculations efficiently, continuing patterns involving fractions and decimals, interpreting results of chance experiments, posing appropriate questions for data investigations and interpreting data sets. |
| Achievement standard | By the end of Year 7, students solve problems involving the comparison, addition and subtraction of integers. They make the connections between whole numbers and index notation and the relationship between perfect squares and square roots. They solve problems involving percentages and all four operations with fractions and decimals. They compare the cost of items to make financial decisions. Students represent numbers using variables. They connect the laws and properties for numbers to algebra. They interpret simple linear representations and model authentic information. Students describe different views of three-dimensional objects. They represent transformations in the Cartesian plane. They solve simple numerical problems involving angles formed by a transversal crossing two parallel lines. Students identify issues involving the collection of continuous data. They describe the relationship between the median and mean in data displays.Students use fractions, decimals and percentages, and their equivalences. They express one quantity as a fraction or percentage of another. Students solve simple linear equations and evaluate algebraic expressions after numerical substitution. They assign ordered pairs to given points on the Cartesian plane. Students use formulas for the area and perimeter of rectangles and calculate volumes of rectangular prisms. Students classify triangles and quadrilaterals. They name the types of angles formed by a transversal crossing parallel line. Students determine the sample space for simple experiments with equally likely outcomes and assign probabilities to those outcomes. They calculate mean, mode, median and range for data sets. They construct stem-and-leaf plots and dot-plots. |
| Source: Australian Curriculum, Assessment and Reporting Authority (ACARA), *Australian Curriculum v3.0: Mathematics for Foundation–10*, <www.australiancurriculum.edu.au/Mathematics/Curriculum/F-10>. |
| Teaching and learning | Term overview | Term 1 | Term 2 | Term 3 | Term 4 |
| During this term students will:* apply associative, commutative and distributive laws
* compare, order, add and subtract integers
* compare fractions and mixed numbers and represent these on a number line
* solve addition and subtraction problems involving fractions
* express a quantity as a fraction of another
* plot points on the Cartesian plane and find coordinates for given points
* solve simple linear equations
* draw views of 3-D shapes
* construct sample spaces
* investigate probabilities of events
* revise and consolidate Year 6 concepts as required.
 | During this term students will:* revise and consolidate Term 1 concepts as required
* explore index notation and square roots
* connect fractions, decimals and percentages
* round decimals to a specific number of decimal places
* connect fractions, decimals and percentages and convert between them
* find percentages of quantities
* investigate and calculate best buys
* create algebraic expressions
* investigate linear and non-linear relationships
* plot points on the Cartesian plane and find coordinates for given points
* investigate, interpret and analyse graphs
* establish formulas for area
* classify triangles and describe quadrilaterals
* explore corresponding, alternate and co‑interior angles
* interpret data
* construct and analyse data displays.
 | **Exemplar unit: Recipe ratios** During this term students will:* revise and consolidate Terms 1 and 2 concepts as required
* compare equivalent fractions
* multiply and divide fractions and decimals
* express one quantity as a fraction or percentage of another
* connect fractions, decimals and percentages
* understand the concept of variables and use them to create algebraic expressions
* solve problems using simple ratios
* calculate the volume of rectangular prisms
* investigate angles, parallel lines, translation, symmetry, reflection, rotation and coordinates on the Cartesian plane
* calculate and interpret mean, median, mode, and range
* explore variables and create algebraic expressions.
 | During this term students will:* revise and consolidate Terms 1, 2 and 3 concepts as required
* extend and apply associative, commutative and distributive laws to algebraic equations
* solve linear equations
* calculate the volume of rectangular prisms
* calculate and interpret mean, mode, median and range
* construct, compare and analyse a range of data displays
* investigate the collation of large count data.
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| Teaching and learning | Aboriginal and Torres Strait Islander perspectives | Mathematics provides opportunities for students to strengthen their appreciation and understanding of Aboriginal peoples and Torres Strait Islander peoples and their living cultures. Specific content and skills within relevant sections of the curriculum can be drawn upon to encourage engagement with:* Aboriginal and Torres Strait Islander frameworks of knowing and ways of learning
* Social, historical and cultural contexts associated with different uses of mathematical concepts in Australian Indigenous societies
* Aboriginal peoples’ and Torres Strait Islander peoples’ contributions to Australian society and cultures.

Mathematics provides opportunities to explore aspects of Australian Indigenous knowing in connection to, and with guidance from, the communities who own them. Using a respectful inquiry approach, students have the opportunity to explore mathematical concepts in Aboriginal and Torres Strait Islander lifestyles including knowledge of number, space, measurement and time. Through these experiences, students have opportunities to learn that Aboriginal peoples and Torres Strait Islander peoples have sophisticated applications of mathematical concepts which may be applied in other peoples’ ways of knowing.  |
| General capabilities and cross‑curriculum priorities | Opportunities to engage with:gc_literacygc_numeracygc_ictgc_critical | Opportunities to engage with:gc_literacygc_numeracygc_ictgc_criticalgc_ethical | Opportunities to engage with:gc_literacygc_numeracygc_ictgc_criticalgc_personal_socialDescription: cc_sust | Opportunities to engage with:gc_literacygc_numeracygc_criticalDescription: cc_asiaDescription: cc_sust |
| Key to general capabilities and cross-curriculum priorities | Description: gc_literacy Literacy  Description: gc_numeracy Numeracy  Description: gc_ict ICT capability  Description: gc_critical Critical and creative thinking  Description: gc_ethical Ethical behaviour  Description: gc_personal_social Personal and social capability  Description: gc_intercultural Intercultural understanding Aboriginal and Torres Strait Islander histories and cultures  Description: cc_asia Asia and Australia’s engagement with Asia  Description: cc_sust Sustainability |
| Develop assessment | AssessmentFor advice and guidelines on assessment, see [www.qsa.qld.edu.au](http://www.qsa.qld.edu.au) | A folio is a targeted selection of evidence of student learning and includes a range of responses to a variety of assessment techniques. A folio is used to make an overall on-balance judgment about student achievement and progress at appropriate points and informs the reporting process. |
| Term 1 | Term 2 | Term 3 | Term 4 |
| Week | Assessment instrument | Week | Assessment instrument | Week | Assessment instrument | Week | Assessment instrument |
| 1 | Initial assessment Identify Year 7 consolidation needs and learning goals (e.g. KWL, teacher/student conference). | 2–5 | Supervised assessment: Short response (Written)Calculate and explain best buys from data. | 2–3 | Supervised assessment: Short response (Written)Solve problems related to fractions and decimals. | 2–3 | Supervised assessment: Short response (Written)Solve problems related to associative, commutative and distributive laws. |
| 3–4 | Supervised assessment: Short response (Written)Solve problems related to:* number and fractions
* algebra
* simple linear equations (using balance model).
 | 7–9 | Mathematical investigation: Journal (Written)Investigate and develop formulas for areas of polygons by applying knowledge of square roots, parallel lines, triangles and angles. | 5–6 | Modelling and problem-solving task (Written)Explain reflection, translation and rotation on a Cartesian plane. | 5–6 | Mathematical investigation: Journal (Written)Investigate and develop formulas for the volume of prisms using algebraic equations. |
| 7–8 | Modelling and problem-solving task (Written or multimodal)Design a single-step experiment related to chance to show equally likely outcomes.The assessment package *It’s a girl!* in the QSA Assessment Bank could be used in this unit. |  |  | 9–10 | Mathematical investigation: Report (Written)Investigate recipe ratios.The assessment package *Delicious drinks* in the QSA Assessment Bank could be used in this unit. | 7–9 | Mathematical investigation: Report (Written)Design data displays for collected data incorporating mean, mode, median and range. |
|  |  |  | **NAPLAN** |  |  |  |  |
| Make judgments and use feedback | Moderation | Teachers develop tasks and plan units.Teachers co-mark tasks to ensure consistency of judgments. | Teachers develop tasks and plan units.Teachers co-mark tasks to ensure consistency of judgments.Curriculum leaders randomly sample folios to check for consistency of judgments. | Teachers develop tasks and plan units.Teachers identify A–E samples before marking tasks, and moderate to ensure consistency of judgments.Teachers co-mark tasks to ensure consistency of judgments. | Teachers develop tasks and plan units.Teachers identify A–E samples before marking tasks, and moderate to ensure consistency of judgments.Curriculum leaders randomly sample folios to check for consistency of teacher judgments. |

Year 7 Mathematics: review for balance and coverage of content descriptions

| Number and Algebra | 1 | 2 | 3 | 4 |
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| Number and place value |
| Investigate index notation and represent whole numbers as products of powers of prime numbers [(ACMNA149)](http://www.australiancurriculum.edu.au/Curriculum/ContentDescription/ACMNA149) |  | ✓ |  |  |
| Investigate and use square roots of perfect square numbers [(ACMNA150)](http://www.australiancurriculum.edu.au/Curriculum/ContentDescription/ACMNA150) |  | ✓ |  |  |
| Apply the associative, commutative and  distributive laws to aid mental and written computation [(ACMNA151)](http://www.australiancurriculum.edu.au/Curriculum/ContentDescription/ACMNA151) | ✓ |  |  | ✓ |
| Compare, order, add and subtract integers [(ACMNA280)](http://www.australiancurriculum.edu.au/Curriculum/ContentDescription/ACMNA280) | ✓ |  |  |  |
| 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/Curriculum/ContentDescription/ACMNA152) | ✓ |  | ✓ |  |
| Solve problems involving addition and subtraction of fractions, including those with unrelated denominators [(ACMNA153)](http://www.australiancurriculum.edu.au/Curriculum/ContentDescription/ACMNA153) | ✓ |  |  |  |
| Multiply and divide fractions and decimals using efficient written strategies and digital technologies [(ACMNA154)](http://www.australiancurriculum.edu.au/Curriculum/ContentDescription/ACMNA154) |  |  | ✓ |  |
| Express one quantity as a fraction of another, with and without the use of digital technologies [(ACMNA155)](http://www.australiancurriculum.edu.au/Curriculum/ContentDescription/ACMNA155) | ✓ |  | ✓ |  |
| Round decimals to a specified number of decimal places [(ACMNA156)](http://www.australiancurriculum.edu.au/Curriculum/ContentDescription/ACMNA156) |  | ✓ |  |  |
| Connect fractions, decimals and percentages and carry out simple conversions [(ACMNA157)](http://www.australiancurriculum.edu.au/Curriculum/ContentDescription/ACMNA157) |  | ✓ | ✓ |  |
| Find percentages of quantities and express one quantity as a percentage of another, with and without digital technologies [(ACMNA158)](http://www.australiancurriculum.edu.au/Curriculum/ContentDescription/ACMNA158) |  | ✓ | ✓ |  |
| Recognise and solve problems involving simple ratios [(ACMNA173)](http://www.australiancurriculum.edu.au/Curriculum/ContentDescription/ACMNA173) |  |  | ✓ |  |
| Money and financial mathematics |
| Investigate and calculate 'best buys', with and without digital technologies [(ACMNA174)](http://www.australiancurriculum.edu.au/Curriculum/ContentDescription/ACMNA174) |  | ✓ |  |  |
| Patterns and algebra |
| Introduce the concept of variables as a way of representing numbers using letters [(ACMNA175)](http://www.australiancurriculum.edu.au/Curriculum/ContentDescription/ACMNA175) | ✓ |  | ✓ |  |
| Create algebraic expressions and evaluate them by substituting a given value for each variable [(ACMNA176)](http://www.australiancurriculum.edu.au/Curriculum/ContentDescription/ACMNA176) | ✓ | ✓ | ✓ |  |
| Extend and apply the laws and properties of arithmetic to algebraic terms and expressions  [(ACMNA177)](http://www.australiancurriculum.edu.au/Curriculum/ContentDescription/ACMNA177) |  |  |  | ✓ |
| 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/Curriculum/ContentDescription/ACMNA178) |  | ✓ |  |  |
| Solve simple linear equations [(ACMNA179)](http://www.australiancurriculum.edu.au/Curriculum/ContentDescription/ACMNA179) | ✓ |  |  | ✓ |
| Investigate, interpret and analyse graphs from authentic data [(ACMNA180)](http://www.australiancurriculum.edu.au/Curriculum/ContentDescription/ACMNA180) |  | ✓ |  |  |

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| **Measurement and Geometry** | **1** | **2** | **3** | **4** |
| Using units of measurement |
| Establish the formulas for areas of rectangles, triangles and parallelograms and use these in problem solving [(ACMMG159)](http://www.australiancurriculum.edu.au/Curriculum/ContentDescription/ACMMG159) |  | ✓ |  |  |
| Calculate volumes of rectangular prisms  [(ACMMG160)](http://www.australiancurriculum.edu.au/Curriculum/ContentDescription/ACMMG160) |  |  | ✓ | ✓ |
| Shape |
| Draw different views of prisms and solids formed from combinations of prisms [(ACMMG161)](http://www.australiancurriculum.edu.au/Curriculum/ContentDescription/ACMMG161) | ✓ |  |  |  |
| Location and transformation |
| Describe translations, reflections in an axis, and rotations of multiples of 90° on the Cartesian plane using coordinates. Identify line and rotational symmetries [(ACMMG181)](http://www.australiancurriculum.edu.au/Curriculum/ContentDescription/ACMMG181) |  |  | ✓ |  |
| Geometric reasoning |
| Identify corresponding, alternate and co-interior angles when two straight lines are crossed by a transversal [(ACMMG163)](http://www.australiancurriculum.edu.au/Curriculum/ContentDescription/ACMMG163) |  | ✓ |  |  |
| Investigate conditions for two lines to be parallel and solve simple numerical problems using reasoning [(ACMMG164)](http://www.australiancurriculum.edu.au/Curriculum/ContentDescription/ACMMG164) |  |  | ✓ |  |
| Demonstrate that the angle sum of a triangle is 180° and use this to find the angle sum of a quadrilateral [(ACMMG166)](http://www.australiancurriculum.edu.au/Curriculum/ContentDescription/ACMMG166) |  | ✓ |  |  |
| Classify triangles according to their side and angle properties and describe quadrilaterals  [(ACMMG165)](http://www.australiancurriculum.edu.au/Curriculum/ContentDescription/ACMMG165) |  |  | ✓ |  |

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| **Statistics and Probability** | **1** | **2** | **3** | **4** |
| Chance |
| Construct sample spaces for single-step experiments with equally likely outcomes  [(ACMSP167)](http://www.australiancurriculum.edu.au/Curriculum/ContentDescription/ACMSP167) | ✓ |  |  |  |
| Assign probabilities to the outcomes of events and determine probabilities for events [(ACMSP168)](http://www.australiancurriculum.edu.au/Curriculum/ContentDescription/ACMSP168) | ✓ |  |  |  |
| Data representation and interpretation |
| Identify and investigate issues involving numerical data collected from primary and secondary sources [(ACMSP169)](http://www.australiancurriculum.edu.au/Curriculum/ContentDescription/ACMSP169) |  |  |  | ✓ |
| Construct and compare a range of data displays including stem-and-leaf plots and dot plots [(ACMSP170)](http://www.australiancurriculum.edu.au/Curriculum/ContentDescription/ACMSP170) |  |  |  | ✓ |
| Calculate mean, median, mode and range for sets of data. Interpret these statistics in the context of data [(ACMSP171)](http://www.australiancurriculum.edu.au/Curriculum/ContentDescription/ACMSP171) |  |  | ✓ | ✓ |
| Describe and interpret data displays using median, mean and range [(ACMSP172)](http://www.australiancurriculum.edu.au/Curriculum/ContentDescription/ACMSP172) |  |  | ✓ | ✓ |

Source: Australian Curriculum, Assessment and Reporting Authority (ACARA), *Australian Curriculum v3.0: Mathematics for Foundation–10*, <www.australiancurriculum.edu.au/Mathematics/Curriculum/F-10>.