Year 2 unit overview — Australian Curriculum: Mathematics

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

| School name | Unit title | Duration of unit |
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| Our School | Is the whole greater than the sum of its parts? | 4–5 weeks |

| Unit outline |
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| Children investigate fractions as an expansion of fair sharing and an introduction to division. Children connect and explain the social and mathematical meaning of common fractions in the contexts of time, collections, and whole numbers. Half and halving, in particular, are worth special attention because children often come to school with social meanings that need to be refined. The concept of fractions can be difficult for children to understand and they need opportunities to explore and represent halves, quarters and eighths in various ways to develop deeper understandings. In this unit, children explore the concept that fractions are part of a whole and that sets of objects can be partitioned in different ways to demonstrate fractions. They apply this understanding in everyday situations.The big ideas of the unit include:* fractions can be represented in different ways
* fractions can be shown as parts of a whole and parts of a collection
* fractions are used in our everyday lives
* fractions are represented differently from counting numbers.

Inquiry questions for the unit:* What is a fraction?
* What does a fraction look like?
* How are fractions different from whole numbers?
* How are fractions represented?
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| Identify curriculum |
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| Content descriptions to be taught | General capabilities and cross‑curriculum priorities |
| Number and Algebra | Measurement and Geometry | Statistics and Probability |
| Number and place value * Recognise and represent division as grouping into equal sets and solve simple problems using these representations [(ACMNA032)](http://www.australiancurriculum.edu.au/Curriculum/ContentDescription/ACMNA032)

Fractions and decimals * Recognise and interpret common uses of halves, quarters and eighths of shapes and collections [(ACMNA033)](http://www.australiancurriculum.edu.au/Curriculum/ContentDescription/ACMNA033)
 | Using units of measurement * Tell time to the quarter-hour, using the language of 'past' and 'to'  [(ACMMG039)](http://www.australiancurriculum.edu.au/Curriculum/ContentDescription/ACMMG039)

Location and transformation * Identify and describe half and quarter turns [(ACMMG046)](http://www.australiancurriculum.edu.au/Curriculum/ContentDescription/ACMMG046)
 |  | gc_literacy Literacy* Develop the language of fractions

gc_numeracy Numeracy* Apply concepts of equal portions

gc_ict **ICT capability*** Use digital technologies to create online and pictographic representations and glossaries of fractions

gc_critical Critical and creative thinking* Use reasoning to explain how to create fair shares

gc_personal_social **Personal and social capability*** Develop the notion of a fair share

 Aboriginal and Torres Strait Islander histories and cultures* Demonstrate alternative ways of knowing and sharing

cc_sust Sustainability* Develop the notion of a fair share of resources
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| Achievement standard |
| By the end of Year 2, students recognise increasing and decreasing number sequences involving 2s, 3s and 5s. They represent multiplication and division by grouping into sets. They associate collections of Australian coins with their value. Students identify the missing element in a number sequence. Students recognise the features of three-dimensional objects. They interpret simple maps of familiar locations. They explain the effects of one-step transformations. Students make sense of collected information.Students count to and from 1000. They perform simple addition and subtraction calculations using a range of strategies. They divide collections and shapes into halves, quarters and eighths. Students order shapes and objects using informal units. They tell time to the quarter hour and use a calendar to identify the date and the months included in seasons. They draw two- dimensional shapes. They describe outcomes for everyday events. Students collect data from relevant questions to create lists, tables and picture graphs. |
| Proficiencies |
| Opportunities to develop proficiencies include:**Understanding*** identifying and describing the relationship between multiplication and division

**Fluency** * describing and comparing time durations
 | **Problem Solving** * formulating problems from authentic situations
* making models
* using number sentences that represent problem situations

**Reasoning** * using known facts to derive strategies for unfamiliar calculations
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| Relevant prior curriculum | Curriculum working towards |
| **In the Australian Curriculum: Mathematics at Year 1**Number and AlgebraFractions and decimals * Recognise and describe one-half as one of two equal parts of a whole.

Measurement and GeometryUsing units of measurement * Tell time to the half-hour.
 | **In the Australian Curriculum: Mathematics at Year 3**Number and AlgebraFractions and decimals * Model and represent unit fractions, including 1/2, 1/4, 1/3, 1/5 and their multiples, to a complete whole.

Measurement and GeometryUsing units of measurement * Tell time to the minute and investigate the relationships between units of time.
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| Bridging content |
| **In the Essential Learnings by the end of Year 3**Number* Simple fractions, including half and quarter, and mixed numbers can be represented in different ways.

Measurement* Hour, half-hour and quarter-hour times and five-minute intervals are read using analogue clocks and all times are read using digital clocks.
* Standard units, including centimetre, metre, kilogram (half and quarter) and litre (half and quarter), and non-standard units of measurement can be used to measure attributes of shapes and objects.
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| Links to other learning areas |
| Learning is integrated within early years contexts and embedded across a range of learning areas. |

| Assessment | Make judgments |
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| Describe the assessment | Assessment date | Teachers gather evidence to make judgements about the following characteristics of student work:Understanding* description and identification of concepts
* description of choices made, strategies used, and checks of reasonableness of answers in mathematical investigations
* modelling and representation

Skills* use of problem-solving strategies to investigate situations
* recall and use of mathematical facts, concepts calculations and procedures
* communication of calculations, answers and explanations, using mathematical language, conventions and symbols

For further advice and guidelines on constructing guides to making judgments refer to the Learning area standard descriptors: [www.qsa.qld.edu.au](http://www.qsa.qld.edu.au) |
| Children are given opportunities to demonstrate their knowledge, skills and understanding through both formative and summative assessment. The assessment is collated in folios and allows for ongoing feedback to children on their learning.Year 2 teachers make decisions about the length of time required to complete the tasks and the conditions under which the assessment is to be conducted.The teaching and learning experiences throughout the term provide opportunities for children to develop the understanding and skills required to complete these assessments. As children engage with these learning experiences, the teacher can provide feedback on specific skills. | Weeks 4-5 |
| Modelling and problem solving task (Demonstration)Children design a fruit platter for the class party to ensure that everyone gets equal shares.Children plan, draw and provide their reasoning for a plan to provide equal shares of different fruits for groups of 2, 4 and 8 children. Fruits available could include:* a bunch of grapes
* a bowl of cherries
* two oranges
* one apple
* one banana
* two mandarins
* a can of 10 pineapple rings.

Format of the response could include physical models and/or individual drawings of the children’s platters. Children could provide spoken/signed or written representations of their divisions and their reasoning.Teachers make observations about the children’s ability to make comparisons and explain their reasoning. |

| Teaching and learning | Supportive learning environment |
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| Teaching strategies and learning experiences | Adjustments for needs of learners | Resources |
| Engage: introduce the concept * Brainstorm children’s understanding of fractions, including half, quarter, eighth; fair share; everyday fractions.
* Establish the concept of division and fractions as equal shares.
* Discuss and negotiate the task and outcomes of how we might understand fractional numbers and partitioning.
* Explore “we all can’t get half!” by asking children how to divide an orange or pizza into equal/fair shares.
* Provide multiple opportunities to use mathematical terms accurately and in context.

Explore: halves, quarters and eighths* Represent halves, quarters and eighths of everyday shapes, objects and collections by cutting and folding shapes and objects and sharing collections.
* Brainstorm objects that can and can’t be broken into halves, quarters and eighths.
* Use onscreen resources to demonstrate and discuss equal and unequal parts of shapes and collections.
* Draw pictures showing how everyday shapes and objects can be divided into fractional parts.
* Discuss the diverse ways objects and collections can be partitioned into two, four or eight equal-sized parts.
* Find ways to check that each portion is equally divided.

Explain: represent 1/2, 1/4 and 1/8 in different ways* Introduce the concept of a quarter and the relationship with a half and a whole, e.g. cut fruit into four equal parts.
* Introduce the concept of an eighth and relationship to a whole.
* Use concrete materials to demonstrate comparing with one-to-one matching strategies.
* Develop checking strategies for equivalence.
* Use pictorial representations and/or symbolic representations.
* Relate fractions to time concepts (half past/quarter past).
* Consolidate understanding of halves, quarters and eighths.

Elaborate: investigate fractions in the environmentExamples could include investigations of:* handball, netball or basketball courts
* clock faces
* food.
 | Section 6 of the *Disability Standards for Education* (The Standards for Curriculum Development, Accreditation and Delivery) states that education providers, including class teachers, must take reasonable steps to ensure a course/program is designed to allow any student to participate and experience success in learning. The *Disability Standards for Education 2005* (Cwlth) is available from: <www.ag.gov.au> select Human rights and anti-discrimination > Disability standards for education. | **Equipment*** resources readily available in the classroom
* scoops
* funnels
* buckets
* bottles
* sand
* water
* jugs
* measuring cups
* spoons
* rain gauge
* blocks
* food
* clocks
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| Use feedback |
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| Ways to monitor learning and assessment | Teachers meet to collaboratively plan the teaching, learning and assessment to meet the needs of all learners in each unit.Teachers create opportunities for discussion about levels of achievement to develop shared understandings; co-mark or cross mark at key points to ensure consistency of judgments; and participate in moderating samples of student work at school or cluster level to reach consensus and consistency. |
| Feedback to students | Teachers strategically plan opportunities and ways to provide ongoing feedback (both written and informal) and encouragement to children on their strengths and areas for improvement.Children reflect on and discuss with their teachers or peers what they can do well and what they need to improve.Teachers reflect on and review learning opportunities to incorporate specific learning experiences and provide multiple opportunities for children to experience, practise and improve. |
| Reflection on the unit plan | Identify what worked well during and at the end of the unit, including:* activities that worked well and why
* activities that could be improved and how
* assessment that worked well and why
* assessment that could be improved and how
* common student misconceptions that need, or needed, to be clarified.
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