Fruit fractions: Fruit karate

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| Year levelStrand(s)Lesson length Code | Year 3 Number60 mins[AC9M3N02](https://v9.australiancurriculum.edu.au/f-10-curriculum.html/learning-areas/mathematics/year-3/content-description?subject-identifier=MATMATY3&content-description-code=AC9M3N02&detailed-content-descriptions=0&hide-ccp=0&hide-gc=0&side-by-side=1&strands-start-index=0&subjects-start-index=0&view=quick) |
| Lesson summary | In this lesson, students use fruit to explore common fractions. They step into the world of fractions by exploring various fruits and slicing them into halves, quarters and eighths. Through materials such as playdough and interactive discussions, they discover the meaning of terms such as numerator and denominator while getting creative with fruit fractions, and answering questions such as, ‘Are halves always identical?’ Extend the exploration to quarters and eighths, all while having fun with fruity fractions. |
| Learning intention | We are learning to recognise and represent unit fractions, such as halves, quarters and eighths, using playdough.We will understand the concepts of numerator and denominator.We are learning to apply knowledge of fractions to explore and explain the concepts of sharing and the visual differences between fractions like halves, quarters and eighths in a fun and interactive way.  |
| Success criteria | By the end of this lesson, students can:explain, using appropriate mathematical vocabulary, the practicality of fractions and how they are applied in real-life scenarioscreate visual representations of fruit fractions and use playdough to demonstrate their understanding. |
| Why are we learning about this? | Fractions are like the building blocks of mathematics and understanding them helps us in many ways. Think about fruit – it comes in different shapes and sizes. Have you ever wondered how to share a piece of fruit fairly? In this lesson, we'll dive into the world of fruit fractions. By mastering fractions, you'll discover how to divide, share and enjoy your favourite fruits in a fair and delicious way. |
| Prerequisite student knowledge and language | Students:have basic arithmetic skills (addition, subtraction and multiplication)some familiarity with common fruits and their shapes or parts. |
| Resources | Fruit karate slides (PowerPoint)Playdough or similar material (different colours to represent different fruit colours, if possible)Plastic knives (if appropriate) |

Curriculum information

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| Achievement standard | Students represent unit fractions and their multiples in different ways. |
| Content description(s) | Students recognise and represent unit fractions including $\frac{1}{2},\frac{1}{3},\frac{1}{4} ,\frac{1}{5} $and $\frac{1}{10}$ and their multiples in different ways; they combine fractions with the same denominator to complete the whole. [AC9M3N02](https://v9.australiancurriculum.edu.au/f-10-curriculum.html/learning-areas/mathematics/year-3/content-description?subject-identifier=MATMATY3&content-description-code=AC9M3N02&detailed-content-descriptions=0&hide-ccp=0&hide-gc=0&side-by-side=1&strands-start-index=0&subjects-start-index=0&view=quick) |
| General capabilitiesCross-curriculum priority | **General capabilities**Literacy * Speaking and listening ([PL4](https://v9.australiancurriculum.edu.au/f-10-curriculum/general-capabilities/literacy/slideout?code=LSLiS4&element=0&sub-element=0))

Numeracy * Interpreting fractions ([PL5](https://v9.australiancurriculum.edu.au/f-10-curriculum.html/learning-areas/mathematics/year-3/general-capability-snapshot?subject-identifier=MATMATY3&content-description-code=AC9M3N02&general-capability-code=N&element-code=NN&sub-element-index=0&sub-element-code=NNInF&detailed-content-descriptions=0&hide-ccp=0&hide-gc=0&side-by-side=1&strands-start-index=0&subjects-start-index=0&view=quick))
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| Areas of challenge | Some students may:understand the concept of fractions: Some students may find it challenging to grasp the fundamental concept of fractions, especially if they haven't been exposed to it beforeconfuse the terms numerator and denominator and can be a bit abstract for younger studentshave difficulty with the variability in halves. While halves represent equal parts, the specific shape or size of those parts can vary (for example, half of an apple and half of a banana look different). |
| Strategies | [Explicit teaching](https://www.mathematicshub.edu.au/plan-teach-and-assess/teaching/teaching-strategies/explicit-teaching/)[Classroom talks](https://www.mathematicshub.edu.au/plan-teach-and-assess/teaching/teaching-strategies/classroom-talks/)[Concrete, Representational, Abstract model (CRA)](https://www.mathematicshub.edu.au/plan-teach-and-assess/teaching/teaching-strategies/concrete-representational-abstract-cra/) |

Lesson structure

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| Learning hook10 mins | **Warm-up challenge:** True or False: this is a half.Show image from the teacher’s slides. Students use mini-whiteboards or their maths book to choose ‘True’ or ‘False’ and justify their answer using mathematical language. Expect responses such as: True because it is cut into two pieces; False because the line doesn't go through the middle. Rate the responses; gather or annotate some students’ answers. Have a class discussion as to what constitutes a half (two equal parts) and why this is not a half. Further questioning includes: Does a line to cut into halves require it to be vertically/horizontally down the middle or can the line be diagonal? **Differentiation** (extension): How else could you have half of that circle? **Differentiation** (support): Have students use physical materials. |
| Introduction 10 mins  | * Start the lesson by asking students if they've ever played the popular tech game ‘Fruit Ninja’. (Use screenshots of the game, if necessary.)
* Show images from slide 3, featuring a variety of fruits to capture their attention. (Link with Aboriginal and Torres Strait Islander culture by focusing on quandong and finger lime. Pose questions such as: I wonder what these taste like? I wonder where they grow?)
* Engage students with questions such as:
	+ ‘What is your favourite type of fruit?’
	+ ‘When would we need to chop fruit?’
	+ ‘Have you ever shared a piece of fruit? What does sharing mean?’

[Explicit teaching](https://www.mathematicshub.edu.au/plan-teach-and-assess/teaching/teaching-strategies/explicit-teaching/): Make the learning intention and success criteria explicit. You may choose to write them on the board, display them on a slide, or provide them to students as a handout to be stuck in their exercise book. Have students rate their knowledge of fractions from 1 to 5 using their hand as a visual feedback cue for teachers.* Explain: ‘Half means when something is divided into two equal parts, and you have just one of those parts.’
* Introduce the terms ‘numerator’ and ‘denominator’:
	+ ‘In the fraction $\frac{1}{2}$, 2 is the denominator. It tells us the number of equal parts into which the whole is divided.’
	+ ‘The numerator is the top part of a fraction, representing the number of equal parts you have, for example, in the fraction $\frac{1}{2}$, 1 is the numerator.’

[Classroom talks](https://www.mathematicshub.edu.au/plan-teach-and-assess/teaching/teaching-strategies/classroom-talks/): this lesson offers numerous opportunities for engaging conversations about when and how we use fractions to solve sharing problems. |
| Explore30 mins | Hand out a physical material such as playdough (and plastic knives, if appropriate).Have students work with their playdough to create fruit fractions.* + Look at various images of fruit and get students to represent them.
	+ For example, ‘Using your playdough, can you create a banana and then show me $\frac{1}{2}$ ?’
	+ ‘Can you create a fraction representing $\frac{1}{4} $?’
	+ ‘What is left over?’
	+ ‘How about $\frac{1}{8} $?’ ‘How about $\frac{2}{8} $?’ etc.

Encourage students to share their playdough fractions with the class.Use the whiteboard to illustrate fractions based on students' playdough creations. (Take photos for a digital version.)Review the concepts of numerator and denominator as students present their fractions.**Differentiation** (extension):Challenge students to make their fractions look different. Can their quarters look different but still be equal?**Differentiation** (support):Have students use real fruit, where necessary.[Concrete, Representational, Abstract model (CRA)](https://www.mathematicshub.edu.au/plan-teach-and-assess/teaching/teaching-strategies/concrete-representational-abstract-cra/) model: Use physical materials (concrete) that represent different pieces of fruit. Students begin by working with these tangible items, dividing a specific quantity into various unit fractions. This process helps them grasp the practicality of their starting number by observing the multiple ways it can be evenly divided. Illustrate fractions in ways that make sense to students (representational). Consequently, students can more easily develop a conceptual understanding of 'practical numbers' and express a number's 'practicality' through its factors (abstract). |
| Summary and reflection10 mins | Summarise the lesson's key points and invite students to reflect on what they've learned:* ‘What did you find most interesting about fractions and different shapes of fruit?’
* ‘What do we know about numerators and denominators?’
* ‘How can you use fractions in everyday situations?’
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| Assessment | The following formative assessment questions are recommended for this lesson.* Preserve time at the end of the lesson for students to reflect and demonstrate their learning.

Use the Exit ticket from slide 4 to ask the question: $\frac{1}{4}$is bigger than $\frac{1}{2}$ True or False.Expect responses such as*:* True because four is bigger than two; False because ‘I just know’. |