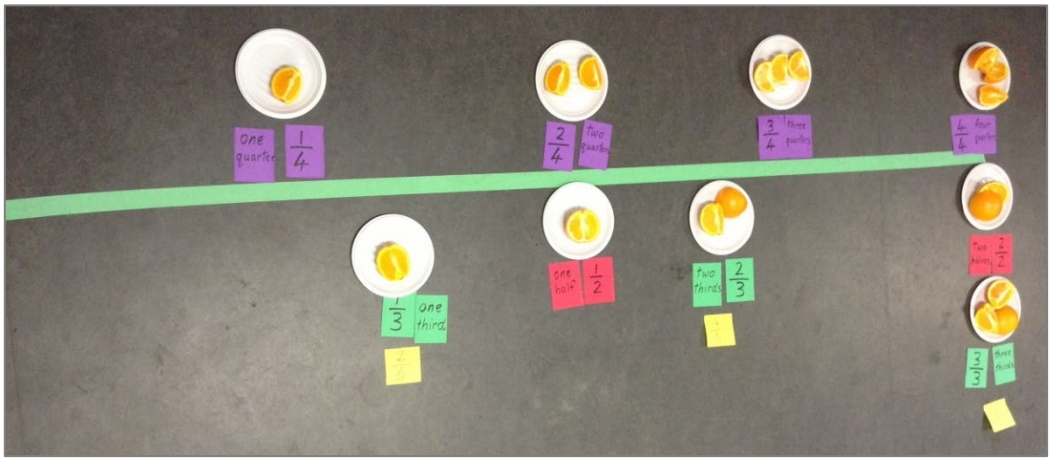
Creating a fraction number line

Foundational concepts in fractions: Unit 3 — Resource

Unit 3 highlights the importance of introducing fraction number lines through bridging experiences that help students make connections to what they already know about fractions. In this activity, students make connections within and between physical, visual, symbolic and oral representations.



Purpose

The purpose of jointly creating a large-scale number line is to build students' foundational understanding of how to locate and position fractions relative to each other on a number line.

Materials

- Painters tape
- Paper plates
- Oranges
- Knife
- Cutting board
- Paper towel
- Fraction cards with each fraction recorded in words and in symbols. In this example, halves, quarters and thirds are used.

Activity sequence

Note: Student involvement, discussion and explanation are encouraged at each step of this activity.

1. Place a piece of tape on the floor and tell students that this represents a number line with 0 at one end and 1 at the other.
2. Hold up the card that says ‘one-half’ and ask students what it says. Choose a student to find the matching card in symbol form.
3. Ask how you could represent ‘one-half’ using an orange as one whole. If required, use the following questions to reinforce how students should be thinking about fractions: What is the whole? How many parts are we cutting it into? How many of those parts do we need?
4. Cut the orange to create the fraction pieces.
5. Place an orange half on a plate and ask a student to put it on the number line along with the matching word and symbol cards. Ask the student to justify their placement. Invite other students to challenge the placement if they disagree.
6. Repeat steps 2 to 5 for two halves. Ask students to count in halves as you step along the number line — one half, two halves.
7. Continue the activity with the series of fractions involving quarters.
8. As you progress, make links between equivalent fractions. For example, demonstrate how the two one-quarter pieces of orange, when put together, are the same size as one-half.
9. You can include other fractions depending on student proficiency.

Suggested follow-up activities

- Students work in groups to complete the activity using a number line across their desk and paper strips instead of oranges. To extend, ask students to find out how many wholes they used throughout the activity.
- Use the photo of the large-scale number line to electronically create a corresponding visual representation of a number line. Reinforce the process used to partition the line and locate fractions using think-alouds*.

***Think-alouds:** Think-alouds involve teachers voicing their thinking processes aloud during the teaching of a concept or process. In mathematics, teachers use think-alouds when unpacking a question, modelling a strategy or as part of the process of solving a mathematical problem. The intention is to make the implicit thinking underlying the mathematics visible to students.

More information

If you would like more information, please visit the QCAA website www.qcaa.qld.edu.au and search for ‘Foundational concepts in fractions’.