

## Summary of learning goals

- This sequence builds students' understanding of equivalence as balance. The equals sign is used to indicate the same value on both sides of an equation.
- Students develop their understanding of equivalence by looking at balancing scales with blocks of different weights.

### Australian Curriculum: Mathematics (Year 2)

**ACMNA035:** Describe patterns with numbers and identify missing elements.

**ACMNA036:** Solve problems using number sentences for addition or subtraction.

**ACMMG038:** Compare masses of objects using balance scales.

## Summary of lessons

### Who is this sequence for?

This sequence is for students who:

- are familiar with symbolic recording for addition
- have worked with addition facts up to  $10 + 10$
- have experience using balance scales to compare masses of objects.

### Lesson 1: Balancing Numbers

Students use weights to find two numbers on one side of the number balance that will balance with two numbers on the other side. They record their solutions as equations, using the equals sign as a symbol denoting balance.

### Lesson 2: Balance Without Numbers

Students are shown pictures of differently weighted blocks balanced on scales. They then decide whether additional pictures of blocks will balance, using the first set of pictures as a reference. Students are encouraged to complete this activity without using numbers or assigning values to the blocks.

## Reflection on this sequence

### Rationale

Equivalence is a central idea in algebra. Students need to appreciate that although two expressions might look different, they can have equivalent value. Equivalence between expressions is symbolised with the equals sign. For many students, the equals sign means something very different: it is an instruction to carry out the arithmetic to find the answer. This sequence challenges students' current conceptions of equivalence and the equals sign. They are asked to create equivalent expressions symbolised through balance and with the equals sign.



#### reSolve mathematics is purposeful

- Students explore the concept that, although two sides of an equation might look different, they can have the same value.
- The two tasks connect equivalent values to the concept of weight and balance.



#### reSolve tasks are inclusive and challenging

- The tasks draw on simple addition, allowing students to use their existing knowledge to develop their knowledge and understanding of equivalence.
- Enabling and extending prompts enable the teacher to differentiate the tasks to cater for the needs of all students.



#### reSolve classrooms have a knowledge-building culture

- The tasks challenge students' alternative conceptions of equivalence and the meaning of the equals sign.
- The first task requires students to persevere and find multiple answers. The use of the number balance allows them to experiment with different answers and to take risks in their learning.
- The second task asks students to work collaboratively to find answers. They are asked to reason mathematically and to listen to and make sense of the reasoning of others.