

## Summary of learning goals

- To build students' understanding of place value of numbers up to at least 200.
- Students develop skills in identifying the value of digits in a number and also build correct terminology to sort and describe one-digit, two-digit and three-digit numbers.
- The second task uses a Venn diagram to sort and describe numbers.

## Australian Curriculum: Mathematics (Year 1)

**ACMNA013:** Recognise, model, read, write and order numbers to at least 100. Locate these numbers on a number line.

## Summary of lessons

### Who is this sequence for?

- Students will need to be able to recognise, name and model numbers up to at least 200. They will need to understand early place-value concepts, specifically that the place of a digit in a number gives its value. These concepts will be built on further through the explorations.

### Lesson 1: How Will You Sort?

Students are presented with a variety of one-, two- and three-digit numbers. They are asked to sort and then re-sort these numbers. Students participate in a gallery walk to look at the different ways that others in the class have sorted the same collection of numbers.

### Lesson 2: Groups Within Groups

Students sort numbers using Venn diagrams, to show commonalities between groups. Initially, students are presented with some numbers already placed in Venn diagrams and are asked to explain how the numbers are sorted. They are then presented with a collection of numbers and are asked to use a Venn diagram to sort the numbers themselves.

## Reflection on this sequence

### Rationale

Place value is a complex understanding developed over time through mathematical reasoning. Students might appear to understand place-value concepts through fluent counting or naming digits that appear in different place-value columns in a number, but the reality is that many students do not have a deep understanding of our number system at all. Place value requires students to name, order and represent numbers. It requires students to recognise 10 as foundational to our number system, and to fluently regroup 10 ones as one group of 10, 10 tens as 1 hundred and so on.

The place-value properties of a number are represented multiplicatively; for example,  $24 = 2 \text{ tens} + 4 \text{ ones}$  or  $24 = (2 \times 10) + (4 \times 1)$ . Considering students do not learn to multiply until the middle primary years, stating '2 tens' or '4 ones' can hold little or no meaning to students. It is important to reiterate the value of the digits; for example, 2 tens is the same as 20 or the value of 2 in 24 is 20. This sequence introduces to students a multiplicative representation of the place-value parts of a number.



### reSolve mathematics is purposeful

- This sequence focuses on the substantial mathematical ideas of place value. Students sort different representations of numbers based on their place-value properties. Venn diagrams are introduced to show similarities between the groups.
- This sequence presents an abstract mathematical concept to students, using the practical task of sorting.



### reSolve tasks are inclusive and challenging

- Students are engaged in sustained inquiry and problem-solving as they decide how to sort collections of numbers. They are required to clearly communicate to others in the class how they have sorted their collection.
- The openness of tasks allows students to access the activities at a level appropriate to their understanding. Students use their existing knowledge of place value to develop new knowledge and explore relationships between numbers.



### reSolve classrooms have a knowledge-building culture

- Students participate in a gallery walk to see how others have sorted numbers. Opportunity is then provided for them to sort the numbers again, drawing on what they've learned from others in the class.
- Students work collaboratively to come to a shared understanding of Venn diagrams as a way to highlight similarities and differences between groups.