

NUMBER SORTING: Sequence Overview

Summary of learning goals

This sequence builds students' understanding of place value of numbers up to at least 200. Students will develop skills in identifying the value of digits in a number and also build correct terminology to sort and describe 1-digit, 2-digit and 3-digit numbers. The second task extends into using 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?

This sequence is designed for students in Year 1. 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 further through the explorations.

We value your feedback after these lessons via <link to be advised>

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 by using Venn diagrams to show commonalities between groups. Initially students are presented with some numbers already placed in Venn diagrams and are asked to rationalise the arrangement. 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 may appear to understand place value concepts through fluent counting or naming digits that appear in different place value columns in a number. However the reality is that many students do not have a deep understanding of our number system. Place value requires students to name, order and represent numbers. It requires students to recognise ten as foundational to our numbers and to fluently regroup 10 ones as 1 ten, 10 tens as 1 hundred and so on.

The place value properties of a number are represented multiplicatively, e.g. $24 = 2 \text{ tens} + 4 \text{ ones}$ 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, e.g. 2 tens is the same as 20 or the value of 2 in 24 is 20. This sequence introduces a multiplicative representation of the place value parts of a number to students.

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 Challenging Yet Accessible

- Students are engaged in sustained inquiry and problem solving as they decide how to sort collections of numbers. They are required to clearly communicate how they have sorted to others in the class.
- 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 exploring 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 their learnings 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.