

Summary of learning goals

- This sequence builds students' algebraic reasoning and understanding of number as they explore computation on the number chart.
- The key understandings of symmetry, equivalence and compensation are developed.

Australian Curriculum: Mathematics (Year 4)

ACMNA073: Apply place value to partition, and rearrange and regroup numbers to at least tens of thousands to assist calculations and solve problems.

ACMNA083: Find unknown quantities in number sentences involving addition and subtraction, and identify equivalent number sentences involving addition and subtraction.

Summary of lessons

Who is this sequence for?

- Students are required to add two-digit numbers and should be familiar with using the number chart as a tool for exploring patterns.
- The sequence applies students' general computation strategies and moves to explore some algebraic generalisations based on symmetry, compensation and equivalence.

Lesson 1: The King

In this task, the king has escaped from a regular chessboard onto a hundreds chart. The students explore the moves of the king and the ways in which the value of the numbers change as he moves. This builds into an algebraic exploration of equivalent values that can be found on the number chart.

Reflection on this sequence

Rationale

Our number system is based on 10. To highlight the base-10 structure of our number system, the hundreds chart is frequently used in the classroom. The chart allows students to explore patterns and gain a deeper understanding of the base-10 property of number. This task uses a 1–100 number chart to explore patterns and asks student to explain why these patterns occur. In doing so, the key developmental understandings of *compensation* and *equivalence* are addressed.

In this context, the different number charts are also used as a tool for algebraic reasoning. Students move from solving the problem for one number to exploring whether the patterns will exist for any number or any sized chart. This moves the students towards forming the generalisation that, regardless of the numbers or the organisation of the chart, the patterns remain.



reSolve mathematics is purposeful

- This task requires students to use algebraic reasoning to build a deeper understanding of number and the key understandings of compensation and equivalence.



reSolve tasks are inclusive and challenging

- Students can access the task by simply adding the numbers and looking at why the patterns occur.
- The high ceiling of the task is realised when students form generalisations and test these generalisations when exploring different charts.



reSolve classrooms have a knowledge-building culture

- This problem encourages students to look for patterns and to share their thinking with the class. Strategies are discussed, giving opportunity to question and evaluate the strengths of different solution methods.
- The teacher is an active participant in the lesson, questioning students to promote deeper inquiry.