re(Solve) MATHS BY INQUIRY One is a Snail

F

Summary of learning goals

- The sequence has the potential to develop counting-on strategies and early addition skills and facts.
- To develop students' counting skills beyond 10.
- To understand that the numbers 11 to 19 can be represented as one group of 10 and some more ones.

Australian Curriculum: Mathematics (Foundation)

ACMNA001: Establish understanding of the language and processes of counting by naming numbers in sequences, initially to and from 20, moving from any starting point.

ACMNA002: Connect number names, numerals and quantities, including zero, initially up to 10 and then beyond.

Summary of lessons

Who is this sequence for?

- This sequence is designed for students towards the end of their Foundation year. It is expected that they will have developed one-to-one correspondence with numbers up to at least 20. Students must be very familiar with numbers from 1 to 10. The students will need to have an understanding of the composition of numbers; for example, 7 can be made by combining 1 and 6.
- This unit also relies on students unitising 10 as a group. For this purpose, it would be helpful for students to have used 10 as a group previously, such as participating in tasks that use models such as ten frames.
- This task requires students to keep count with static objects, which can be more complex than keeping track of the count using manipulatives.

Lesson 1: One is a Snail, Ten is a Crab

This task uses the book *One is a Snail, Ten is a Crab* to explore numbers up to 20. Students represent numbers using the number of legs on animals in the book and look at how one number can be represented in multiple ways. Students also explore the efficiency of different representations.

Lesson 2: One Crab + Some More

This task continues to use the book *One is a Snail, Ten is a Crab*. It introduces students to the patterns of our place-value system and the significance of 10. The key understanding of unitising is introduced by asking students to represent teen numbers using one crab, which is the same as using 1 ten. In doing so, students move from using 10 ones to 1 ten.

Australian Academy of Science

Reflection on this sequence

Rationale

Teen numbers are the first numbers beyond 10 that students encounter. The act of counting to 20 matches names with numbers, but in the process may obscure the structure of the teen number. This is exacerbated by the lack of obvious mathematical structure in the names eleven and twelve, and by naming the units before the group of 10 in the numbers thirteen to nineteen. This is 'back to front'; that is, it is the reverse of how they are written. Consider thirteen, or 13: thir- represents the 3 and -teen represents the 10. This is different to all other numbers in our base-10 system, where the tens are stated before the ones in the name (e.g. twenty-two, forty-five).

This sequence focuses on developing students' understanding of teen numbers as '10 and some more'. The sequence looks at different ways to make a number such as 13. This is a gentle introduction to the important mathematical concept of partitioning, an idea that reappears in many other reSolve resources.

reSolve mathematics is purposeful

- This sequence shows numbers in a real-world context through the use of the picture book *One is a Snail, Ten is a Crab*. This grounding gives students strong motivation to explore mathematical problems. It encourages students to explore a creative variety of solutions in a vivid real-world context. The lessons also give a meaningful introduction to place value.

reSolve tasks are inclusive and challenging

- The sequence begins with the shared experience of reading a picture book as a class. The sequence provides for a wide range of student ability: a low floor is created through the provision of concrete materials with which students can experiment to find several solutions; a high ceiling is created through the encouragement of conceptual thinking and asking students to find and justify all the different ways of making a given number.

reSolve classrooms have a knowledge–building culture

- Students share solutions and strategies with one another, and naturally gravitate to working together in groups to achieve common goals. There are a variety of ways to achieve the aims of the lessons, and students are encouraged to explain their thinking and trial each other's approaches to solve their own tasks.

Acknowledgements