

The Chocolate Problem

About the Crate

For this lesson, students will be working with place value to understand how the number system is composed of a Base 10 model. This lesson crate is designed for Grade 4 and 5 classes but can be adapted for other grade levels by changing numbers and how big to package the items.

Content Background

This lesson will help students solidify their understanding of Base 10 and how it applies to the place value system. No prior knowledge is required as the Crate will support learners through the base activity (numbers up to 10) and provide a scaffold for progression. We've also provided a misconception chart to support feedback and learning.

This crate is designed as a multi-day problem where you can keep adding more place values as you go. This particular lesson works with numbers up to 10,000 but there are during activities to work with the ten's, hundreds, thousands and above 10,000 if needed.

The Learning Goal

We are learning how the place value system was created.

We are learning to compose and decompose numbers to 10,000.

We are learning how to read and represent numbers to 10,000.

Big Ideas

To demonstrate an understanding of numbers and make connections to the way numbers are used in everyday life and more specifically, read, represent, compose, and decompose whole numbers up to and including 10,000.

Before

Before the math problem happens, students will read about fair trade chocolate. Using this crate, students will explore using Read&Write to support their learning including reading text aloud, the highlight tool and finding definitions of new words.

During

After your class discussion surrounding fair trade chocolate, it's time to move into discovering the math problem. The problem takes place at Roger's Chocolate which is located in St. Lawrence Market in Toronto, Ontario, Canada. Using the skills learned prior, students will read the problem and identify the key information that will be used to solve the problem.

As students work on the problem, look to the misconception chart for strategies and questions to ask to develop further understanding.

Consolidation

When consolidating this lesson, it is important to focus on how students are progressing through the problem. Paying close attention to the misconception chart will allow you to navigate towards understanding that place value is all Base 10.

Depending on the understanding of your students you will have to work through the different strategies. The main purpose is to recognize that 1 group of 10 (or 100, 1,000, 10,000) can be individual items and also 1 of that group.

It is also important for students to understand that as you move towards different place value groups the individual number changes. For example, if I had 12, 345 chocolates that would equal 1234 boxes; 123 packages; 12 cartons and 1 skid; with 5 left over to put in another box. As you do these problems over and over again students will begin to recognize and identify this pattern.