Unit 3, Lesson 11

Analyze Subtraction Algorithms

Let's think about subtraction algorithms in more detail.

Warm-up

Number Talk: Subtract within 1,000

Find the value of each expression mentally.

- $400 - 200$
- $450 - 200$
- $450 - 205$
- $450 - 215$

Activity 1

Compare Two Subtraction Algorithms

1. The first steps of 2 algorithms are shown.

   Algorithm A, Step 1

   $$\begin{array}{r} {\scriptstyle 4\ 10} \\ 5\ \cancel{0}\ 8 \\ -\ 1\ 5\ 6 \\ \hline \end{array}$$

   Algorithm B, Step 1

   $$\begin{array}{r} 5\ 0\ 8 \\ -\ 1\ 5\ 6 \\ \hline 2 \end{array}$$

   How are the steps different?

2. Use each algorithm to find the value of $824 - 541$.

Activity 2

Use an Algorithm?

Noah wanted to find the value of $301 - 167$ and wrote:

$$\begin{array}{r} 3\ 0\ 1 \\ -\ 1\ 6\ 7 \\ \hline \end{array}$$

Elena said that we can't subtract this way because we would need more ones to subtract 7 ones, but there's a zero in the tens place of 301.

1. Do you agree with Elena's statement? Explain your reasoning.

2. Show how you would use an algorithm (either Noah's or another algorithm) to find the difference between 301 and 167.