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.

- $400 - 200$

- $450 - 200$

- $450 - 205$

- $450 - 215$

Compare Two Subtraction Algorithms

1. The first steps of 2 algorithms are shown.

Algorithm A, Step 1

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

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 $824 - 541$.

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.

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