

## Illustrative Mathematics

### 5.NBT Elmer's Multiplication Error

#### Alignments to Content Standards

- [Alignment: 5.NBT.B.5](#)

#### Tags

- *This task is not yet tagged.*

This is Elmer's work on a multiplication problem:

$$\begin{array}{r} \phantom{0} 4 \phantom{0} 5 \\ \phantom{0} 3 \phantom{0} 3 \\ \phantom{0} 179 \\ \times \phantom{0} 64 \\ \hline \phantom{0} 716 \\ + \phantom{0} 1,074 \\ \hline \phantom{0} 1,790 \end{array}$$

- Use estimation to explain why Elmer's answer is not reasonable.
- What error do you think Elmer made? Why do you think he made that error?
- Find  $179 \times 64$  using a correct version of Elmer's method. Then show another way of doing it to help Elmer see why your answer is correct.

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### Commentary

This task has students explore a very common multiplication error that occurs when using the standard algorithm. Often, students are not thinking about the meaning of a particular digit based on its place in the number, and in fact, that is one of the advantages of the algorithm--you only need single-digit multiplication facts to use it. However, it is easy to forget a step or misalign the addends if you aren't thinking about the value of a particular digit. This task is designed to help students catch these kinds of errors. Part (a) asks them to think about the reasonableness of an answer and part (b) asks them to analyze the error. Part (c) helps students see and explain what went wrong and also helps them develop flexibility in solving multi-digit multiplication problems, which is an aspect of fluency.

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### Solutions



	100	70	9
60	60 x 100 = 6,000	60 x 70 = 4,200	60 x 9 = 540
4	4 x 100 = 400	4 x 70 = 280	4 x 9 = 36

$$\begin{array}{r}
 6,000 \\
 4,200 \\
 540 \\
 400 \\
 280 \\
 + \quad 36 \\
 \hline
 11,456
 \end{array}$$



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