



Partial Products and the Standard Algorithm

Let's compare multiplication algorithms.

Warm-up

Number Talk: The Value of the Digits

Find the value of each expression mentally.

- 5×101

- 5×102

- 5×203

- 5×404

Activity 1

Two Algorithms to Multiply

1. Here are two algorithms for finding the value of 3×713 .

Kiran

$$\begin{array}{r} 7 \ 1 \ 3 \\ \times \ 3 \\ \hline 2, \ 1 \ 3 \ 9 \end{array}$$

Diego

$$\begin{array}{r} 7 \ 1 \ 3 \\ \times \ 3 \\ \hline 9 \\ 3 \ 0 \\ + \ 2, \ 1 \ 0 \ 0 \\ \hline 2, \ 1 \ 3 \ 9 \end{array}$$

Discuss with your partner:

- a. How are these algorithms alike? How are they different?
b. How do you think Kiran found the product 2,139?
2. Find the value of each product.
 - 212×4
 - $3 \times 4,132$

Activity 2

Algorithm Comparison

- Analyze the two algorithms used to find the value of 4×223 .

Kiran

$$\begin{array}{r} 1 \\ \times 2 \ 2 \ 3 \\ \hline 8 \ 9 \ 2 \end{array}$$

Diego

$$\begin{array}{r} 2 \ 2 \ 3 \\ \times \ 4 \\ \hline 1 \ 2 \\ 8 \ 0 \\ + 8 \ 0 \ 0 \\ \hline 8 \ 9 \ 2 \end{array}$$

- How are these algorithms alike? How are they different?

- Where is the 12 in Kiran's algorithm?

- Try using Kiran's algorithm to find the value of 512×3 .

- Check your work using a different method.