

Lesson 11: 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

11.1: Two Algorithms to Multiply

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

Kiran

$$\begin{array}{r} 713 \\ \times 3 \\ \hline 2,139 \end{array}$$

Diego

$$\begin{array}{r} 713 \\ \times 3 \\ \hline 9 \\ 30 \\ + 2,100 \\ \hline 2,139 \end{array}$$

Discuss with your partner:

- How are Kiran's algorithm and Diego's algorithm alike? How are they different?
- How do you think Kiran found the product 2,139?

2. Find the value of each product.

a. 212×4

b. $3 \times 4,132$

11.2: Algorithm Comparison

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

Kiran

$$\begin{array}{r} \\ \\ \\ \times \\ \hline 8 \end{array}$$

Diego

$$\begin{array}{r} \\ \\ \\ \times \\ \hline \\ \\ \\ + \\ \hline \end{array}$$

a. How are Kiran and Diego's algorithms alike? How are they different?

b. Where is the 12 in Kiran's algorithm?

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

b. Check your work using a different method.