



# Using Algorithms with Partial Products: 2 Two-Digit Numbers

Let's try to multiply two-digit numbers with an algorithm that uses partial products.

Warm-up

## Notice and Wonder: Ways to Keep Track

What do you notice? What do you wonder?

$$\begin{array}{r}
 \phantom{1} | \phantom{1} \\
 14000 \\
 \phantom{1} 700 \\
 \phantom{1} 350 \\
 \phantom{1} 56 \\
 \hline
 15,106
 \end{array}$$

$$\begin{array}{r}
 2158 \\
 \times 7 \\
 \hline
 \phantom{1} | 56 \\
 \phantom{1} 350 \\
 \phantom{1} 700 \\
 \phantom{1} | 14000 \\
 \hline
 15,106
 \end{array}$$

## Activity 1

### Partial Products, Recorded

1. Tyler uses an algorithm to find the value of  $64 \times 87$ .

$$\begin{array}{r} \phantom{x} 64 \\ x \phantom{0} 87 \\ \hline \phantom{00} 28 \\ \phantom{0} 420 \\ \phantom{00} 320 \\ \phantom{000} 4800 \\ \hline 5,568 \end{array}$$

Describe each step in Tyler's method. How do you think he arrived at the last five numbers? Record your thinking.

2. Use Tyler's method to find the value of  $31 \times 15$ . Then draw a diagram to check your answer.

## Activity 2

### Han's Multiplication Mishap

1. Decide with your partner who will find each product. Show your thinking. Organize it so it can be followed by others.

$$\begin{array}{r} 19 \\ \times 32 \\ \hline \end{array}$$

$$\begin{array}{r} 32 \\ \times 19 \\ \hline \end{array}$$

2. Here is Han's computation of  $81 \times 47$ .

$$\begin{array}{r} 81 \\ \times 47 \\ \hline 56 \\ | 40 \\ 320 \\ \hline 423 \end{array}$$

- a. What error or errors did Han make?

- b. Show the correct computation for finding the value of  $81 \times 47$ .

$$\begin{array}{r} 81 \\ \times 47 \\ \hline \end{array}$$