



# Another Addition Algorithm

Let's learn another algorithm to add.

## Warm-up

### Notice and Wonder: Another Curious Table

What do you notice? What do you wonder?

+	98	99	100	101	102
98		197		199	
99	197		199		201
100		?		?	
101	199		201		203
102		201		203	

## Activity 1

### A New Addition Algorithm

Here are 2 algorithms for adding  $367 + 231$ .

Han's algorithm

$$\begin{array}{r} 3 \ 6 \ 7 \\ + 2 \ 3 \ 1 \\ \hline 8 \quad \text{step 1} \\ 9 \ 0 \quad \text{step 2} \\ + 5 \ 0 \ 0 \quad \text{step 3} \\ \hline 5 \ 9 \ 8 \quad \text{step 4} \end{array}$$

Elena's algorithm

$$\begin{array}{r} 3 \ 6 \ 7 \\ + 2 \ 3 \ 1 \\ \hline 8 \quad \text{step 1} \end{array}$$

$$\begin{array}{r} 3 \ 6 \ 7 \\ + 2 \ 3 \ 1 \\ \hline 9 \ 8 \quad \text{step 2} \end{array}$$

$$\begin{array}{r} 3 \ 6 \ 7 \\ + 2 \ 3 \ 1 \\ \hline 5 \ 9 \ 8 \quad \text{step 3} \end{array}$$

Discuss with your partner:

1. How is Elena's algorithm different from Han's algorithm?
2. Why do both algorithms work?

## Activity 2

### Compose New Units

Here are 2 algorithms for adding  $365 + 182$ .

Han's algorithm

$$\begin{array}{r} 3 \ 6 \ 5 \\ + 1 \ 8 \ 2 \\ \hline 7 \quad \text{step 1} \\ 1 \ 4 \ 0 \quad \text{step 2} \\ + 4 \ 0 \ 0 \quad \text{step 3} \\ \hline 5 \ 4 \ 7 \quad \text{step 4} \end{array}$$

Elena's algorithm

$$\begin{array}{r} 3 \ 6 \ 5 \\ + 1 \ 8 \ 2 \\ \hline 7 \quad \text{step 1} \end{array}$$

$$\begin{array}{r} 1 \ 0 \ 0 \\ 3 \ 6 \ 5 \\ + 1 \ 8 \ 2 \\ \hline 4 \ 7 \quad \text{step 2} \end{array}$$

$$\begin{array}{r} 1 \ 0 \ 0 \\ 3 \ 6 \ 5 \\ + 1 \ 8 \ 2 \\ \hline 5 \ 4 \ 7 \quad \text{step 3} \end{array}$$

1. How do the algorithms show the 14 tens differently?

2. Try using Elena's algorithm to find the value of each sum.

a.  $174 + 352$

b.  $273 + 619$

c.  $354 + 198$

d.  $525 + 376$