

# Unit 3 Lesson 14: Using Diagrams to Represent Addition and Subtraction

## 1 Do the Zeros Matter? (Warm up)

### Student Task Statement

1. Evaluate mentally:  $1.009 + 0.391$
2. Decide if each equation is true or false. Be prepared to explain your reasoning.
  - a.  $34.56000 = 34.56$
  - b.  $25 = 25.0$
  - c.  $2.405 = 2.45$

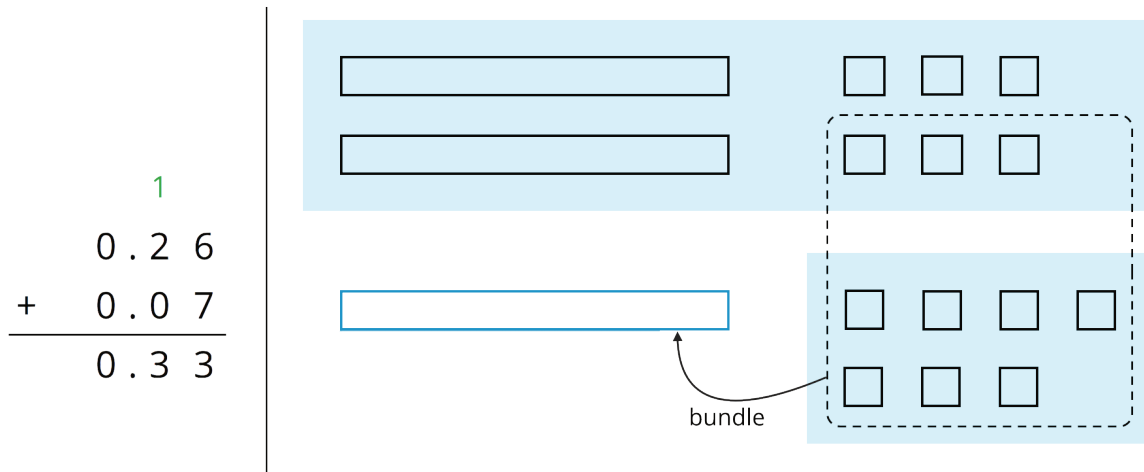
## 2 Finding Sums in Different Ways (Optional)

### Images for Launch



### Student Task Statement

1. Here are two ways to calculate the value of  $0.26 + 0.07$ . In the diagram, each rectangle represents 0.1 and each square represents 0.01.



Use what you know about base-ten units and addition to explain:

- Why ten squares can be "bundled" into a rectangle.
  - How this "bundling" is represented in the vertical calculation.
2. Find the value of  $0.38 + 0.69$  by drawing a diagram. Can you find the sum without bundling? Would it be useful to bundle some pieces? Explain your reasoning.
3. Calculate  $0.38 + 0.69$ . Check your calculation against your diagram in the previous question.

4. Find each sum. The larger square represents 1.

a.

The diagram shows a base-ten block model for the sum  $0.63 + 0.098$ . It consists of two large squares (representing 1.00), six medium squares (representing 0.10), three small squares (representing 0.01), nine tiny squares (representing 0.001), and eight very tiny squares (representing 0.0001).

b.

$$\begin{array}{r} 6.03 \\ + 0.098 \\ \hline \end{array}$$

### 3 Subtracting Decimals of Different Lengths

Images for Launch



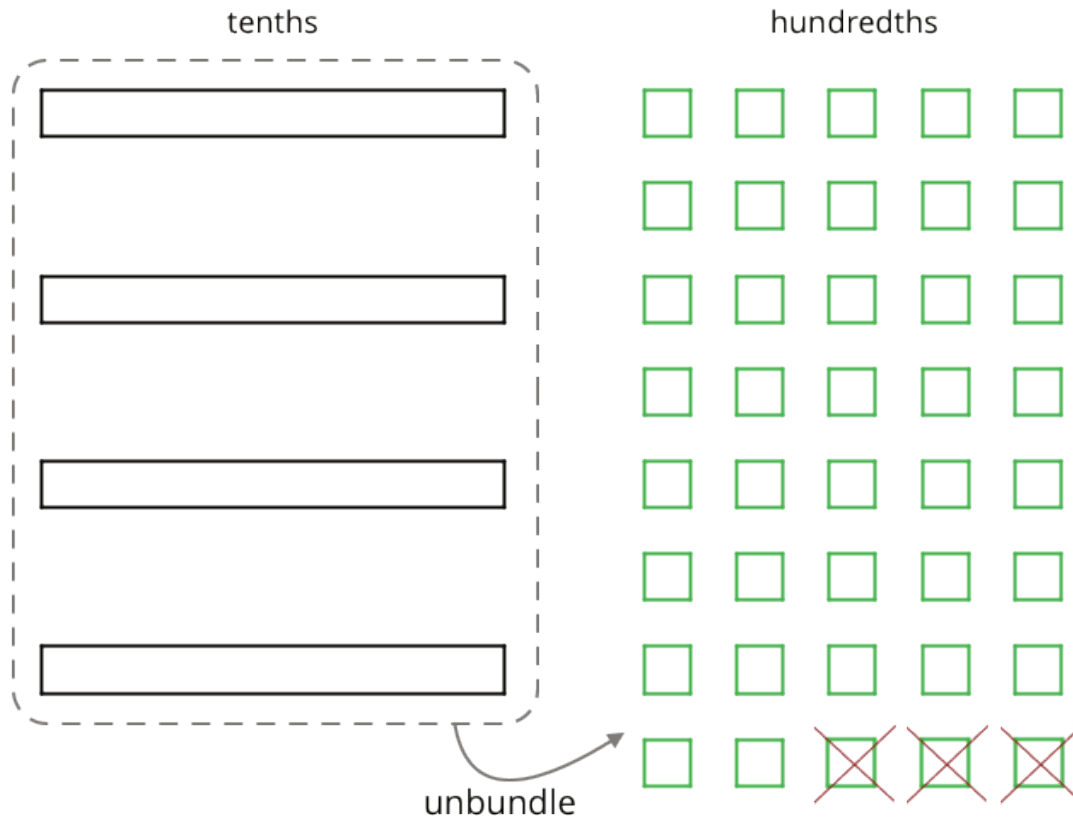
#### Student Task Statement

Diego and Noah drew different diagrams to represent  $0.4 - 0.03$ . Each rectangle represents 0.1. Each square represents 0.01.

- Diego started by drawing 4 rectangles to represent 0.4. He then replaced 1 rectangle with 10 squares and crossed out 3 squares to represent subtraction of 0.03, leaving 3 rectangles and 7 squares in his diagram.



2. Elena also drew a diagram to represent  $0.4 - 0.03$ . She started by drawing 4 rectangles. She then replaced all 4 rectangles with 40 squares and crossed out 3 squares to represent subtraction of 0.03, leaving 37 squares in her diagram. Is her diagram correct? Discuss your reasoning with a partner.



Elena's Method

3. Find each difference. Explain or show your reasoning.

- $0.3 - 0.05$
- $2.1 - 0.4$
- $1.03 - 0.06$
- $0.02 - 0.007$

Activity Synthesis

$$\begin{array}{r} \phantom{0.} 3 \phantom{0} \\ \phantom{0.} 4 \\ - 0.03 \\ \hline 0.37 \end{array}$$

$$\begin{array}{r} 0.40 \\ - 0.03 \\ \hline 0.37 \end{array}$$