

# 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.  $2.405 = 2.45$

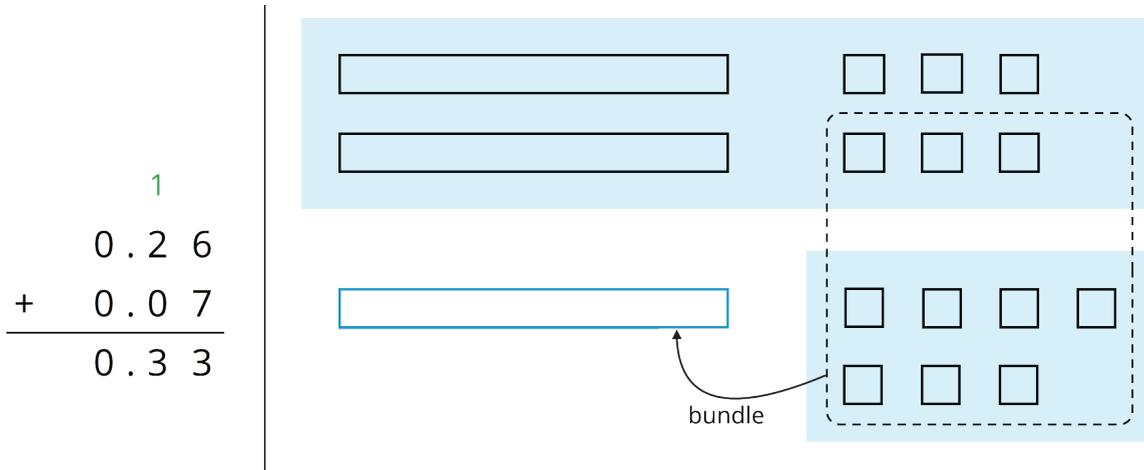
## 2 Finding Sums in Different Ways (Optional)

### 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:

- a. Why ten squares can be “bundled” into a rectangle.
  - b. 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 addition of 0.63 and 0.098. It consists of two large squares (representing 1.00), five horizontal rods (representing 0.10), and nine small squares (representing 0.01). To the right of these blocks is a separate box containing three horizontal rods and one small square, representing the sum 0.338.

b.

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

### 3 Subtracting Decimals of Different Lengths

Images for Launch



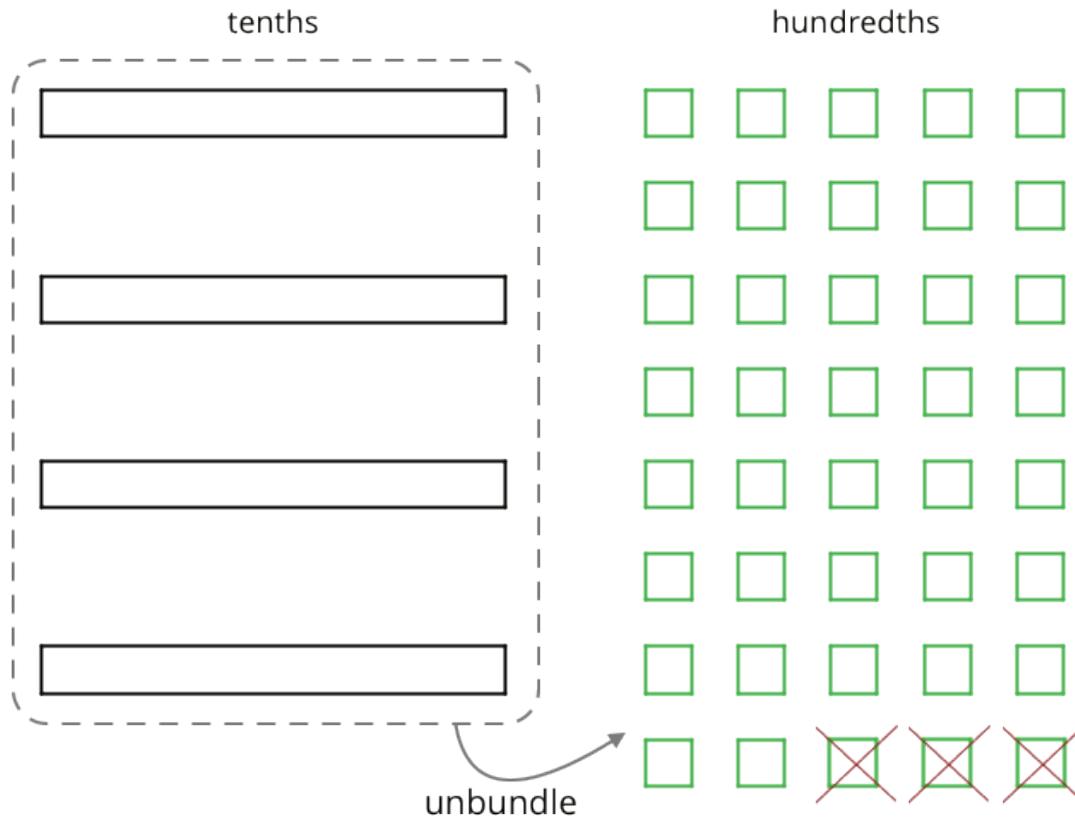
#### Student Task Statement

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

$$\begin{array}{r} \phantom{0.}310 \\ 0.\cancel{4} \\ - 0.03 \\ \hline 0.37 \end{array}$$

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