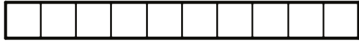


# Unit 5 Lesson 2: Using Diagrams to Represent Addition and Subtraction

## 1 Changing Values (Warm up)

### Student Task Statement

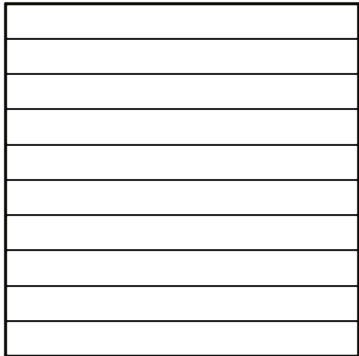
1. Here is a rectangle.



What number does the rectangle represent if each small square represents:

- a. 1
- b. 0.1
- c. 0.01
- d. 0.001

2. Here is a square.



What number does the square represent if each small rectangle represents:

- a. 10
- b. 0.1
- c. 0.00001

## 2 Squares and Rectangles (Optional)

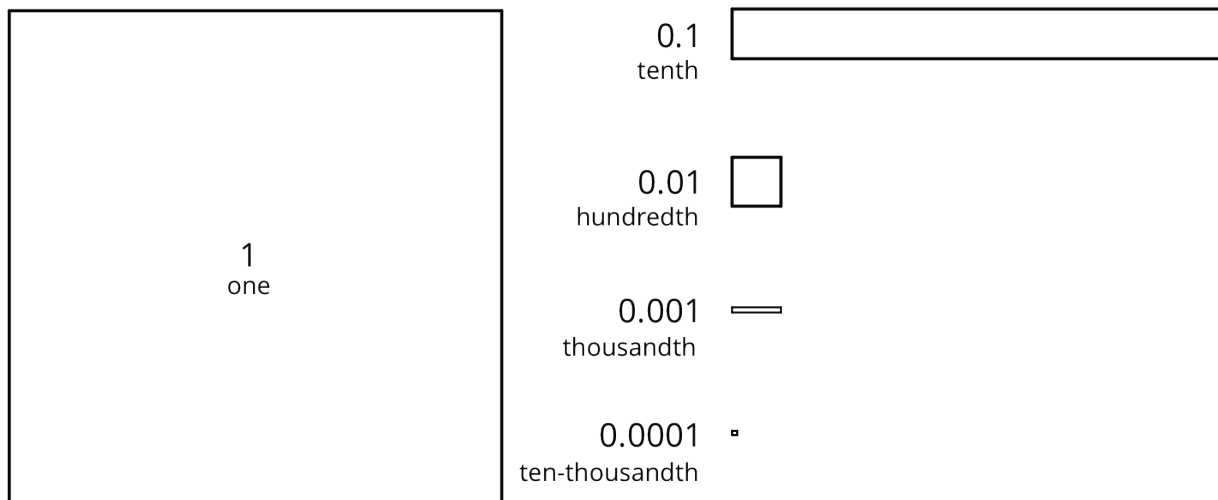
### Images for Launch



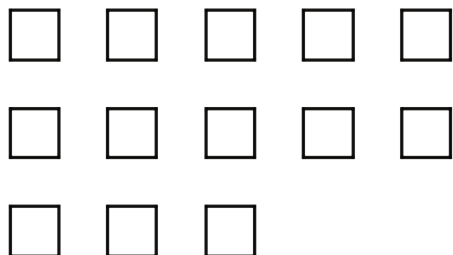
### Student Task Statement

You may be familiar with base-ten blocks that represent ones, tens, and hundreds. Here are some diagrams that we will use to represent base-ten units.

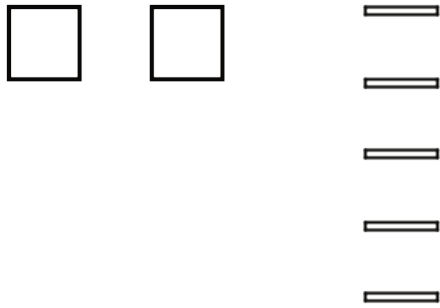
- A large square represents 1 one.
- A medium rectangle represents 1 tenth.
- A medium square represents 1 hundredth.
- A small rectangle represents 1 thousandth.
- A small square represents 1 ten-thousandth.



1. Here is the diagram that Priya drew to represent 0.13. Draw a different diagram that represents 0.13. Explain why both diagrams represent the same number.



2. Here is the diagram that Han drew to represent 0.025. Draw a different diagram that represents 0.025. Explain why both diagrams represent the same number.



3. For each number, draw or describe two different diagrams that represent it.

a. 0.1

b. 0.02

c. 0.004

4. Use diagrams of base-ten units to represent each sum. Think about how you could use as few units as possible to represent each number.

a.  $0.03 + 0.05$

b.  $0.006 + 0.007$

c.  $0.4 + 0.7$

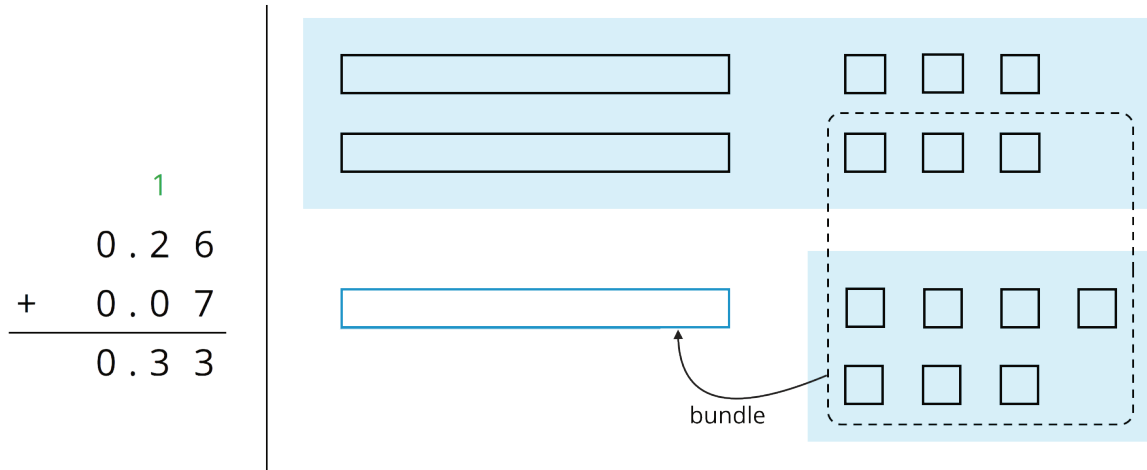
### 3 Finding Sums in Different Ways (Optional)

#### 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.

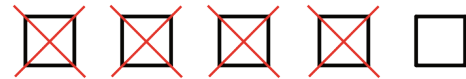
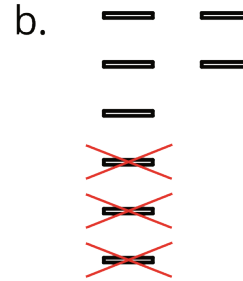
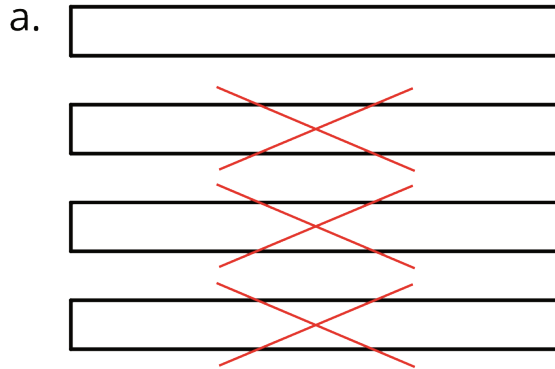
b.

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

## 4 Representing Subtraction (Optional)

### Student Task Statement

1. Here are diagrams that represent differences. Removed pieces are marked with Xs. The larger rectangle represents 1 tenth. For each diagram, write a numerical subtraction expression and determine the value of the expression.



2. Express each subtraction in words.

a.  $0.05 - 0.02$

b.  $0.024 - 0.003$

c.  $1.26 - 0.14$

3. Find each difference by drawing a diagram and by calculating with numbers. Make sure the answers from both methods match. If not, check your diagram and your numerical calculation.

a.  $0.05 - 0.02$

b.  $0.024 - 0.003$

c.  $1.26 - 0.14$