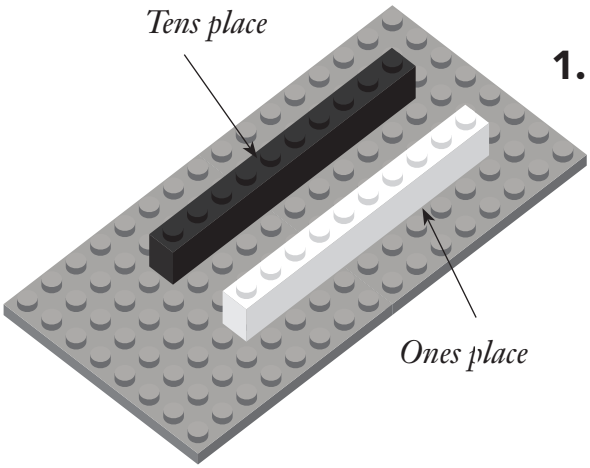
Brick Math Lesson of the Month
April 2023
Decomposing Numbers
From Addition Using LEGO® Bricks
Teacher Lesson Guide

Part 1: Show Them How



1. Build the model shown using two 1x10 bricks or the equivalent in smaller bricks, and show it to the students.

Explain that the strip on the right represents the ones place and the strip on the left represents the tens place.

Have students build this model and draw the outlines of each brick strip on baseplate paper.

2. Describe this contextual situation to students: John has 4 cookies and Samantha has 9 cookies. How many cookies do John and Samantha have altogether?

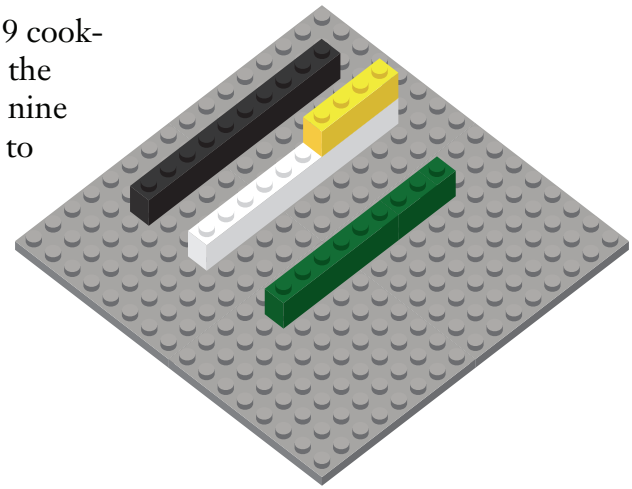
Ask students to write the math sentence for this problem.

Students should write $4 + 9 = \square$. Use the vocabulary and explain that 4 and 9 are *addends*.

3. Ask students to use the ones strip and build a model with bricks that show the number of John's cookies.

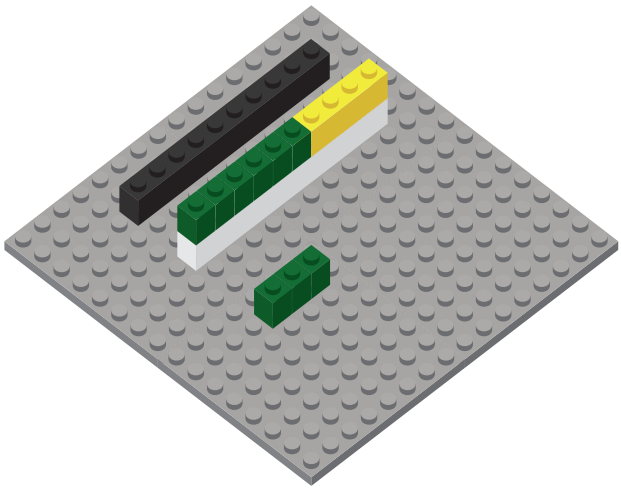
Students should place four 1x1 bricks (or two 1x2 bricks to represent 4 if they have mastered one-to-one correspondence) on the ones place strip to show John's 4 cookies. Have students draw their model of John's cookies.

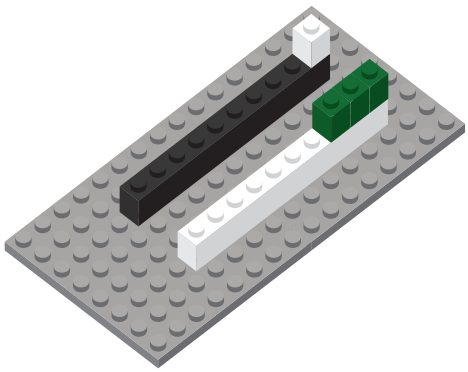
Ask students to find bricks to model Samantha's 9 cookies in the problem and place them to the side on the baseplate, not on the strips. Students can choose nine 1x1 bricks or a combination of bricks equivalent to nine studs.



Note: It is helpful if students choose different color bricks to represent John's and Samantha's cookies.

4. Ask students to add Samantha's cookies to John's cookies in the model by counting them forward or adding on. When the strip is full, explain that they now have ten and the number has to be "decomposed" to make 1 ten on the tens strip.





5. Remove the ten studs on the ones strip and decompose it into one set of ten displayed by one 1x1 brick on the tens place strip. Move the 3 bricks left over from Samantha's 9 cookies to the ones strip. Explain to the students that the model now shows 1 ten and 3 ones.

Have students draw the final solution model and explain their thinking. Be sure they record the total number of cookies John and Samantha have altogether. Students should write the math sentence 4 + 9 = 13.

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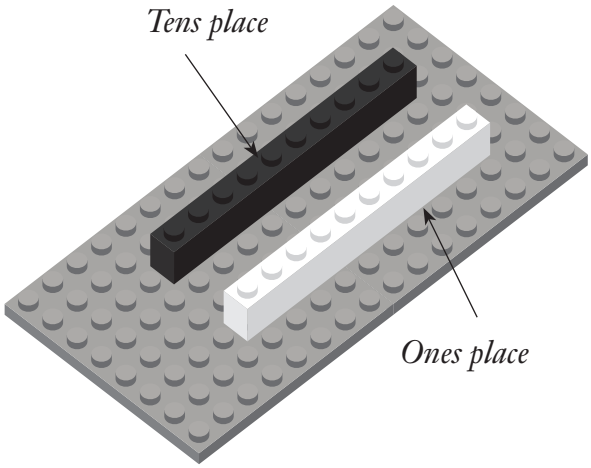
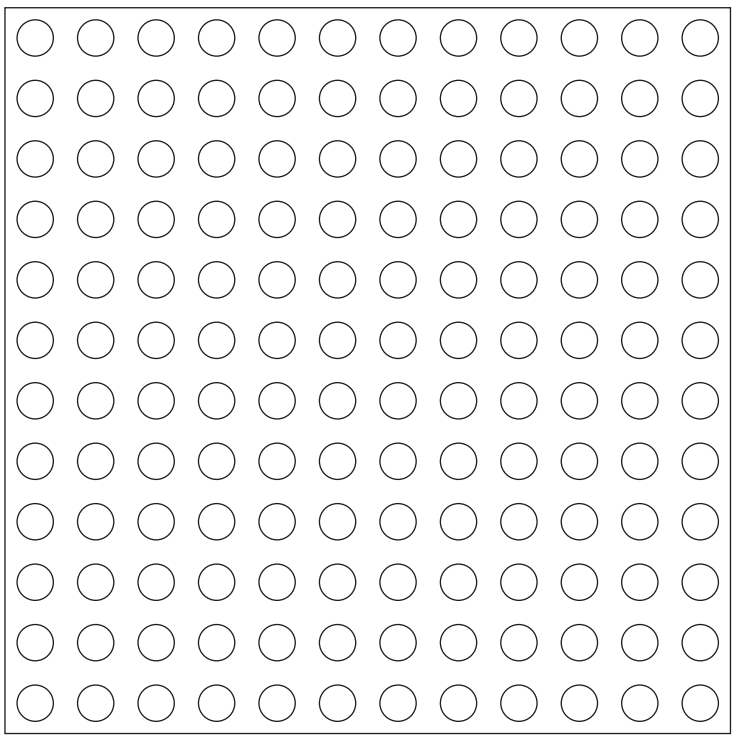
Student Workbook Pages

DECOMPOSING NUMBERS

Part 1

1. Build the place value strip model shown using two 1x10 bricks or the equivalent in smaller bricks. Draw the outlines of this model.





2. Problem: John has 4 cookies and Samantha has 9 cookies. How many cookies do John and Samantha have altogether?

Write the math sentence for this problem:

_____

These two numbers (4 and 9) are called _____.

3. Model the problem using 1x1 bricks to show the number of cookies each person has.

Choose one color of 1x1 bricks to model John's cookies and select that many bricks. Place these bricks on your baseplate (not on the place value strip model yet). Choose another color of 1x1 bricks to model Samantha's cookies and place these bricks on your baseplate (also not on the place value strip model yet).

Draw your models of the cookies on the baseplate. Label each addend.

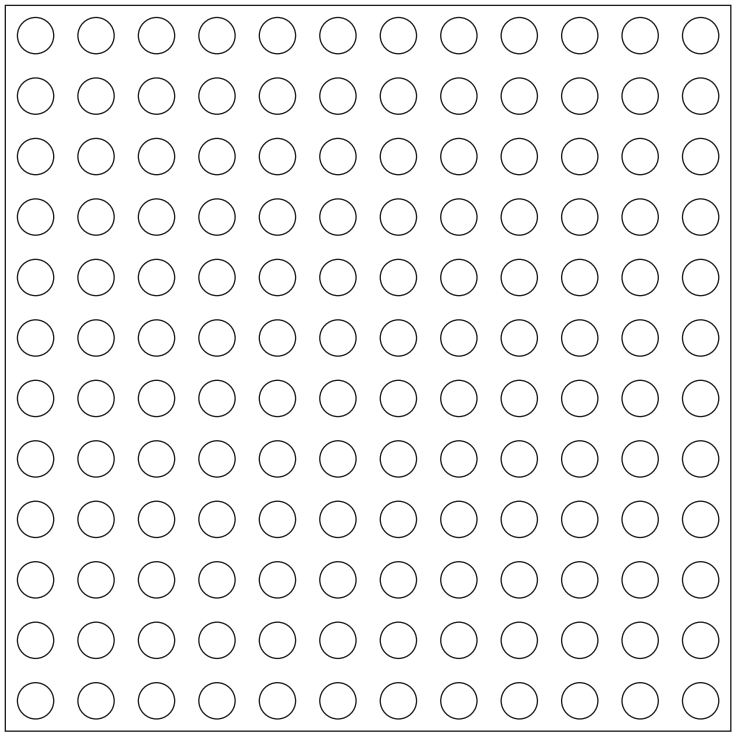
4. Move the bricks representing John's cookies to the place value strip model of the ones place. Add the bricks representing Samantha's cookies to the place value strip model of the ones place until you have no more room. What happens when you try to place all the bricks on the ones strip?

_____

_____

_____

5. Trade the ten 1x1 bricks now on the ones strip for one 1x1 brick of a different color. Place this 1x1 brick on the tens strip. Place the rest of the bricks representing Samantha's cookies on the ones strip. Draw your model.



What is the total number of tens and ones in the solution shown on the place value strips?
_____ tens and _____ ones

What is the solution to the problem? _____