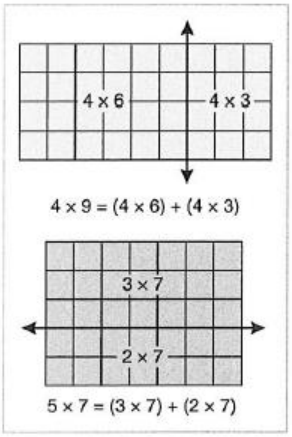
N5.3

Distributive Property. The distributive property of multiplication over addition refers to the idea that either of the two factors in a product can be split (decomposed) into two or more parts and each part is multiplied separately and then added. The result is the same as when the original factors are multiplied. For example, to find the number of yogurts in 9 six-packs, use the logic that 9×6 is the same as $(5 \times 6) + (4 \times 6)$. The 9 has been split into 5 six-packs and 4 six-packs. The concept involved is very useful in relating one basic fact to another, and it is also involved in the development of two-digit computation. Figure 8.11 illustrates how the array model can be used to demonstrate that a product can be broken up into two parts. The next activity is designed to help students discover how to partition factors or, in other words, learn about the distributive property of multiplication over addition.

Figure 8.11
Models for the distributive property of multiplication over addition.



Activity 8.6 DIVIDE IT UP

Supply students with several sheets of centimeter grid paper or color tiles to represent a small garden that will be planted with two different kinds of vegetables. Assign each pair of students a product—a garden plot size, such as 6 × 8. Garden sizes (products) can vary across the class to differentiate for varying skill levels or they can all be the same. The task is to find all of the different ways to make a single slice or cut through the rectangle to divide the plot for the two different seeds. For each slice, students write an equation. For a slice that results in one row of 8, students would write $6 \times 8 = (5 \times 8) + (1 \times 8)$. The individual products can be written in the arrays as was done in Figure 8.11. Although the order of operations is not in the CCSS standards until sixth grade, this might be a good time to discuss how grouping symbols should be considered first.

From Van de Walle et. al. (2014). *Teaching Student-Centered Mathematics Grades: Developmentally Appropriate Instruction for Grades 3 – 5 (2nd Ed.)*. Toronto: Pearson Education, Inc. (p. 119).