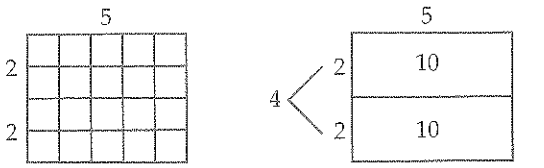
Minilesson: A Multiplication String (10–15 minutes)

This mental-math minilesson uses a string of quick images (Appendix C) designed to encourage students to use partial products to find the products of larger arrays. Show one image at a time briefly on an overhead projector and then turn off the light on the projector or cover the image as you ask students to determine how many truffles could fit into that array, and to share how they know. Record the strategy shared on an open array, delineating the smaller arrays used. For example, if a student says for the third problem, "I saw two 2 × 5 boxes. I knew that was 10 and 10, so the answer is 20," use the quick image shown to highlight the strategy. Be sure to indicate (or ask) where the "10" is and what the dimensions of the new array would be (how 2 × 5 + 2 × 5 = 4 × 5).

- Work on a string of quick images designed to encourage students to use partial products to find the products of larger arrays.
- Use the open array to record students' strategies, delineating the smaller arrays used.



Quick image → Using the open array to model the solution

String of related quick images:

2 × 5

1 × 5

4 × 5
(made with two 2 × 5 boxes)

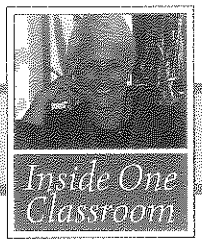
5 × 5
(made with two 2 × 5 boxes and one 1 × 5 box)

2 × 10
(made with two 2 × 5 boxes)

4 × 10
(made with four 2 × 5 boxes)

Behind the Numbers

The numbers in the string were chosen to develop the idea that small arrays can be used to build larger arrays. The arrays have been kept small and only two are used, a 2 × 5 and a 1 × 5, to allow students to determine what is shown since the arrays are seen only briefly. The quick image technique encourages students to move away from counting by ones as a way of figuring out the dimensions of the array, and the number of square units resulting from multiplying those dimensions where truffles can be placed, and, instead, to consider other strategies, such as skip-counting and using partial products. The string also provides an opportunity to use the open array as a representation.



A Portion of the Minilesson

Toni (the teacher): I'm going to flash the image quickly. At the count of 3: 1, 2, 3. *(Flashes the 2 × 10 image.)* OK, thumbs-up when you're ready to share. Tanisha?

Tanisha: It was 20 truffles altogether.

Toni: And how did you know that?

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Author's Notes

Toni prepares the students for the quick image by counting to three. This ensures that everyone is ready.

Toni supports communication by asking the student to explain her thinking.