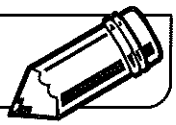
Name Date Time

LESSON 2·8

Model the Partial-Products Method



Materials ☐ array grid (*Math Masters,* pp. 416 and 417)

☐ base-10 blocks

Directions

- Draw a line around rows and columns on the grid to model each problem.
- Cover the array you made using as few base-10 blocks as possible.
- Solve using the partial-products method.
- Then match each part of the array with a partial product.
- Record the solution, filling in the sentences to match the blocks you used.

1. 6 * 23 = _____

In each of 6 rows there are...	_____ longs, so there are _____ cubes. _____ cubes, so there are _____ cubes. There are _____ cubes in all.	Write the problem showing the partial products. _____

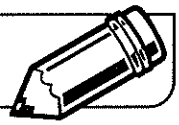
2. 26 * 18 = _____

In each of 20 rows there are...	_____ longs, so there are _____ cubes. _____ cubes, so there are _____ cubes.	Write the problem showing the partial products. _____ _____
In each of 6 rows there are...	_____ longs, so there are _____ cubes. _____ cubes, so there are _____ cubes. There are _____ cubes in all.	

Name Date Time

LESSON 2·8

A Mental Calculation Strategy



When you multiply a number that ends in 9, you can simplify the calculation by changing it into an easier problem. Then adjust the result.

Example 1: $2 * 99 = ?$

- Change $2 * 99$ into $2 * 100$.
- Find the answer: $2 * 100 = 200$
- Ask: *How is the answer to $2 * 100$ different from the answer to $2 * 99$?*
  100 is 1 more than 99, and you multiplied by 2.
  So 200 is 2 more than the answer to $2 * 99$.
- Adjust the answer to $2 * 100$ to find the answer to $2 * 99$:
  $200 - 2 = 198$. So $2 * 99 = 198$.

Example 2: $3 * 149 = ?$

- Change $3 * 149$ into $3 * 150$.
- Find the answer: $3 * 150 = (3 * 100) + (3 * 50) = 450$.
- Ask: *How is the answer to $3 * 150$ different from the answer to $3 * 149$?*
  150 is 1 more than 149, and you multiplied by 3.
  So 450 is 3 more than the answer to $3 * 149$.
- Adjust: $450 - 3 = 447$. So $3 * 149 = 447$.

Use this strategy to calculate these products mentally.

1. $5 * 49$ _____ **2.** $5 * 99$ _____

3. $8 * 99$ _____ **4.** $4 * 199$ _____

5. $2 * 119$ _____ **6.** $3 * 98$ _____