

## Evaluation

- Have students create a set of ten multiplication problems similar to examples from the *Student Workbook* and then solve the problems and record the solutions on another sheet of paper. Students can trade problems with partners, write solutions, and then meet to compare their approaches. They should see that it's possible to vary the order in which a problem is solved, as well as the approach used.
- Listen as students verbalize their thinking processes when they encounter problems involving exponent laws. Can they explain the problem? Can they plan and apply an approach to finding a solution? Can they explain how to solve each problem without applying an exponent law?
- Observe students as they apply exponent laws to solve problems. Do they realize that these laws are to be applied only when powers are multiplied, not when they are added or subtracted? Do they quickly see which law applies in each problem? Do they add exponents when they should multiply or multiply when they should add? Do they recognize that an exponent only applies to the number immediately to its left, and not to a negative sign unless it is bracketed with the number?

## Remediation

- Review the vocabulary outlined in **Key Terms** at the beginning of this lesson. Some students may need to review other terms such as **common bases**, **squared**, **cubed**, and **substitution**.
- Use a chart similar to the one presented in the **Tutorial** to help students to recall the

exponent laws for products and powers. Reinforce that  $3^4$  is different from  $4^3$  by writing each in expanded form.

- Emphasize that powers are shorthand for multiplication. Exponent laws make it easy to solve problems in fewer steps, but it is still possible to solve problems without them.

Here are your results so far.

$$7^2 \times 7^3$$

$$7 \times 7 \times 7 \times 7 \times 7$$

Conclusion:  $7^2 \times 7^3 = 7^5$

$$7^6 \times 7^4$$

$$7 \times 7 \times 7 \times 7 \times 7 \times 7 \times 7 \times 7 \times 7 \times 7$$

Conclusion:  $7^6 \times 7^4 = 7^{10}$

What operation on the exponents gave you the exponent of the result?

addition

subtraction

multiplication

division

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Conclusion:  $7^2 \times 7^3 = 7^5$

$$7^6 \times 7^4$$

$$7 \times 7 \times 7 \times 7 \times 7 \times 7 \times 7 \times 7 \times 7 \times 7$$

Conclusion:  $7^6 \times 7^4 = 7^{10}$

Enter the exponent that makes each statement true.

$$7^7 \times 7^2 = 7^9$$

$$7^5 \times 7^{11} = 7^{16}$$

Based on the recognized pattern, complete the following statement.  
For any values of  $x$ ,  $m$  and  $n$ :

$x^m \times x^n = x^{\square}$

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