Expressions and Equivalence

Lesson 10 Distributing a Factor

Standards 6.EE.A.3

Learning target I can use distribution to generate an equivalent expression.

Materials Algebra tiles or rectangle models, pencils, expression cards.

Lesson Flow 50 Minutes

0–5 Activate prior knowledge. Read the learning target. Ask students what they already know about distributing a factor. Use a quick model or estimate to make their starting ideas visible.

5–17 Teach and model. Multiply the factor outside parentheses by every term inside. The two expressions have the same value for every allowed input. An area model can show how one rectangle splits into smaller rectangles. Work through the two examples on the attached instruction page. Have students name the first step before showing it.

17–22 Guided practice. Revisit worked Example 2 with its solution covered. Students propose the next step and explain why it is valid; uncover and compare with the worked solution.

22–45 Independent classwork. Assign the attached 10 questions in order. Check items 1–3 for entry-level understanding, 4–6 for connected procedures, 7–8 for representation and explanation, and 9–10 for application or justification. Ask students to use the instruction-page notes area or extra grids for longer work.

45–50 Check understanding. Use classwork question 10 as an exit discussion: Expand 8(6x + 3). Verify your result at x = 2. Compare the result with the answer key and ask a student to defend the method.

Support and Extension

Support Model item 1 together with the listed tools, then have students attempt item 2 independently. Watch exponents versus multiplication, operation order, and distributing to every term.

Extension Ask students to solve a final item another way, draw a second representation, or create a related problem with a checked answer.

Next step Record which students can explain the target independently. Begin the next teaching session with a brief correction for any recurring error.

Name _____ Date _____

Expressions and Equivalence

Lesson 10 Distributing a Factor

Standards 6.EE.A.3

Learning target I can use distribution to generate an equivalent expression.

Learn and Discuss

Multiply the factor outside parentheses by every term inside. The two expressions have the same value for every allowed input. An area model can show how one rectangle splits into smaller rectangles.

Example 1 Expand 7(x + 4).
Solution 7x + 28. Multiply the outside factor by every inside term, including the constant.
Example 2 Expand 3(7x + 4). Verify your result at x = 2.
Solution 21x + 12; both give 54 at x = 2. Multiply the outside factor by every inside term, including the constant.

Classwork Show Your Work

Complete the 10 problems on the following page. Refer to the examples, draw models, and check your results.

My Notes or Second Method

Lesson 10 Distributing a Factor

Name _____ Show calculations, models, and units.

1. Expand 5(x + 2).

2. Expand 8(x + 2).

3. Expand 7(x + 2).

4. Expand 3(4x + 6).

5. Expand 7(4x + 3).

6. Expand 7(4x + 2).

7. Expand 3(7x + 4). Verify your result at x = 2.

8. Expand 5(2x + 5). Verify your result at x = 2.

9. Expand 8(5x + 6). Verify your result at x = 2.

10. Expand 8(6x + 3). Verify your result at x = 2.

Distributing a Factor

Expressions and Equivalence

1. 5x + 10
Reasoning Multiply the outside factor by every inside term, including the constant.

2. 8x + 16
Reasoning Multiply the outside factor by every inside term, including the constant.

3. 7x + 14
Reasoning Multiply the outside factor by every inside term, including the constant.

4. 12x + 18
Reasoning Multiply the outside factor by every inside term, including the constant.

5. 28x + 21
Reasoning Multiply the outside factor by every inside term, including the constant.

6. 28x + 14
Reasoning Multiply the outside factor by every inside term, including the constant.

7. 21x + 12; both give 54 at x = 2
Reasoning Multiply the outside factor by every inside term, including the constant.

8. 10x + 25; both give 45 at x = 2
Reasoning Multiply the outside factor by every inside term, including the constant.

9. 40x + 48; both give 128 at x = 2
Reasoning Multiply the outside factor by every inside term, including the constant.

10. 48x + 24; both give 120 at x = 2
Reasoning Multiply the outside factor by every inside term, including the constant.