Name _____ Class _____ Date _____

1-7 Reteaching

The Distributive Property states that the product of a sum and another factor can be rewritten as the sum of two products, each term in the sum multiplied by the other factor. For example, the Distributive Property can be used to rewrite the product $3(x + y)$ as the sum $3x + 3y$. Each term in the sum $x + y$ is multiplied by 3; then the new products are added.

Problem

What is the simplified form of each expression?

a. $4(x + 5)$
$= 4(x) + 4(5)$ Distributive Property
$= 4x + 20$ Simplify.

b. $(2x – 3)(– 3)$
$= 2x(–3) – 3(–3)$ Distributive Property
$= –6x + 9$ Simplify.

The Distributive Property can be used whether the factor being multiplied by a sum or difference is on the left or right.

The Distributive Property is sometimes referred to as the Distributive Property of Multiplication over Addition. It may be helpful to think of this longer name for the property, as it may remind you of the way in which the operations of multiplication and addition are related by the property.

Exercises

Use the Distributive Property to simplify each expression.

1. $6(z + 4)$ **2.** $2(–2 – k)$ **3.** $(5x + 1)4$ **4.** $(7 – 11n)10$

5. $(3 – 8w)4.5$ **6.** $(4p + 5)2.6$ **7.** $4(y + 4)$ **8.** $6(q – 2)$

Write each fraction as a sum or difference.

9. $\frac{2m - 5}{9}$ **10.** $\frac{8 + 7z}{11}$ **11.** $\frac{24f + 15}{9}$ **12.** $\frac{12d - 16}{6}$

Simplify each expression.

13. $–(6 + j)$ **14.** $–(–9h – 4)$ **15.** $–(–n + 11)$ **16.** $–(6 – 8f)$

(1) 6z + 24, (2) -4 – 2k, (3) 20x + 4, (4) 70 – 110n, (5) 13.5 – 36w, (6) 10.4p + 13, (7) 4y + 16, (8) 6q – 12, (9) $\frac{2m}{9} - \frac{5}{9}$*, (10)* $\frac{8}{11} + \frac{7k}{11}$*, (11)* $\frac{8f}{3} + \frac{5}{3}$ *,(12)* $2d - \frac{8}{3}$*, (13) –j -6, (14) 9h + 4, (15) n – 11, (16) 8f - 6*

Problem

How can the sum of like terms $15x + 6x$ be simplified using the Distributive Property?

Each term of $15x + 6x$ has a factor of x. Rewrite $15x + 6x$ as $15(x) + 6(x)$. Now use the Distributive Property in reverse to write $15(x) + 6(x)$ as $(15 + 6)x$, which simplifies to $21x$.

Exercises

Simplify each expression by combining like terms.

17. $16x + 12x$ **18.** $25n - 17n$ **19.** $-4p + 6p$

20. $-15a - 9a$ **21.** $-9k^2 - 5k^2$ **22.** $12t^2 - 20t^2$

By thinking of or rewriting numbers as sums or differences of other numbers that are easier to use in multiplication, the Distributive Property can be used to make calculations easier.

Problem

How can you multiply 78 by 101 using the Distributive Property and mental math?

78×101	Write the product.
$78 \times (100 + 1)$	Rewrite 101 as sum of two numbers that are easy to use in multiplication.
$78(100) + 78(1)$	Use the Distributive Property to write the product as a sum.
$7800 + 78$	Multiply.
7878	Simplify.

Exercises

Use mental math to find each product.

23. 5.1×7 **24.** 24.95×4 **25.** 999×11 **26.** 12×95

(17) 28x, (18) 8n, (19) 2p, (20) -24a, (21) $-14k^2$, (22) $-8t^2$, (23) 35.7, (24) 99.8, (25) 10,989, (26) 1,040

Lesson 1-7 Additional Practice

Use the Distributive Property to simplify each expression.

1. $-4(a + 3)$

2. $-12\left(\frac{1}{3}x - 1\right)$

3. $5 + 6(m + 1)$

4. $5(2 - j) + (2j - 3)$

5. $\frac{1}{3}(12 - 6r)$

6. $6\left(\frac{1}{2} - \frac{2}{3}y\right)$

7. Cereal is on sale for $3.95 per box. What is the cost of seven boxes? Use mental math.

(1) $-4a - 12$*, (2)* $-16x + 12$*, (3)* $6m + 11$*, (4)* $-3j + 7$*, (5)* $4 - 2r$*, (6)* $3 - 4y$*, (7) Seven boxes of cereal cost $27.65.*