Lesson 3.4   December 4, 2014

Essential Question:

How do you use mental math to multiply two numbers?

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Lesson Objective:

Students will be able to:

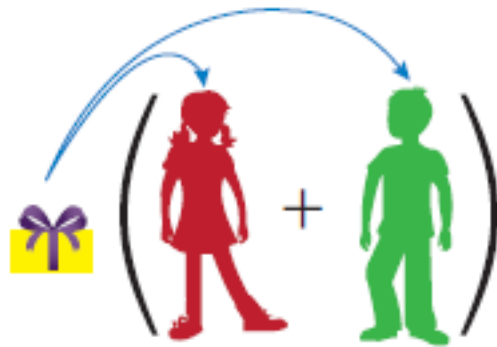use the Distributive Property to multiply numbers with more than one digit.

Self-Evaluation Scale

Score	Description
4	I can teach other students how to use the Distributive Property to multiply numbers with more than one digit.
3	I can use the Distributive Property to multiply numbers with more than one digit.
2	I recognize, but still need help to use the Distributive Property to multiply numbers with more than one digit.
1	I do not know how to use the Distributive Property to multiply numbers with more than one digit.

Learning Objective: Students will be able to use the Distributive Property to multiply numbers with more than one digit.

The Meaning of a Word ● Distribute

When you **distribute** something to each person in a group,

you give that thing to each person in the group.

Learning Objective: Students will be able to use the Distributive Property to multiply numbers with more than one digit.

Key Idea

Distributive Property

Words To multiply a sum or difference by a number, multiply each number in the sum or difference by the number outside the parentheses. Then evaluate.

Numbers $3(7 + 2) = 3 \times 7 + 3 \times 2$

$3(7 - 2) = 3 \times 7 - 3 \times 2$

Algebra $a(b + c) = ab + ac$

$a(b - c) = ab - ac$

Learning Objective: Students will be able to use the Distributive Property to multiply numbers with more than one digit.

1 Using Mental Math

Use the Distributive Property and mental math to find 8 × 53.

$8 \times 53 = 8(50 + 3)$	Write 53 as 50 + 3.
$= 8(50) + 8(3)$	Distributive Property
$= 400 + 24$	Multiply.
$= 424$	Add.

Learning Objective: Students will be able to use the Distributive Property to multiply numbers with more than one digit.

2 **Using the Distributive Property**

Use the Distributive Property to find $\frac{1}{2} \times 2\frac{3}{4}$.

$$\frac{1}{2} \times 2\frac{3}{4} = \frac{1}{2} \times \left(2 + \frac{3}{4}\right)$$

Rewrite $2\frac{3}{4}$ as the sum $2 + \frac{3}{4}$.

$$= \left(\frac{1}{2} \times 2\right) + \left(\frac{1}{2} \times \frac{3}{4}\right)$$

Distributive Property

$$= 1 + \frac{3}{8}$$

Multiply.

$$= 1\frac{3}{8}$$

Add.

Learning Objective: Students will be able to use the Distributive Property to multiply numbers with more than one digit.

OYO!

Use the Distributive Property to find the product.

1. 5×41

2. 9×19

3. $6(37)$

4. $\dfrac{2}{3} \times 1\dfrac{1}{2}$

5. $\dfrac{1}{4} \times 4\dfrac{1}{5}$

6. $\dfrac{2}{7} \times 3\dfrac{3}{4}$

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OYO! Answers

1. 205   2. 171

3. 222   4. 1

5. $1\dfrac{1}{20}$ 6. $1\dfrac{1}{14}$

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3 — Simplifying Algebraic Expressions

Use the Distributive Property to simplify the expression.

a. $4(n + 5)$

$$4(n + 5) = 4(n) + 4(5) \qquad \text{Distributive Property}$$

$$= 4n + 20 \qquad \text{Multiply.}$$

b. $12(2y - 3)$

$$12(2y - 3) = 12(2y) - 12(3) \qquad \text{Distributive Property}$$

$$= 24y - 36 \qquad \text{Multiply.}$$

c. $9(6 + x + 2)$

$$9(6 + x + 2) = 9(6) + 9(x) + 9(2) \qquad \text{Distributive Property}$$

$$= 54 + 9x + 18 \qquad \text{Multiply.}$$

$$= 9x + 54 + 18 \qquad \text{Commutative Property of Addition}$$

$$= 9x + 72 \qquad \text{Add 54 and 18.}$$

$$x + x + x + x + x$$

In an algebraic expression, **like terms** are terms that have the same variables raised to the same exponents. Constant terms are also like terms.

Like terms

$$5x + 19 + 2x + 2$$
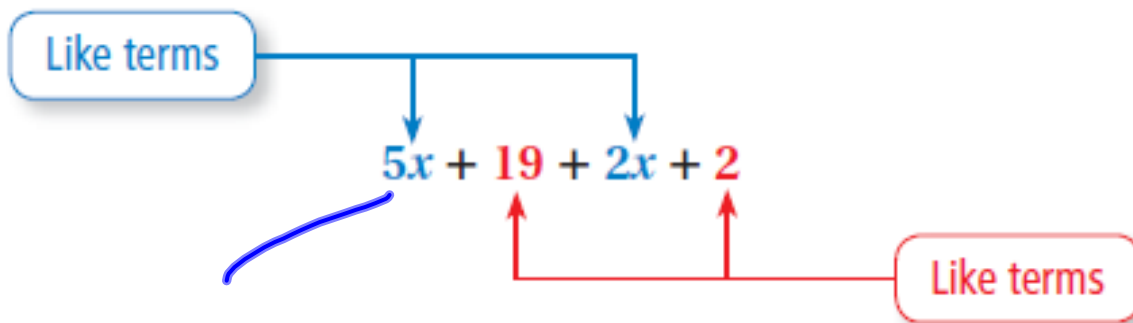
Like terms

$$x + x + x + x + x + 19 + x + x + 2$$

$$7x + 21$$

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5 Combining Like Terms

Simplify each expression.

$x + x + x + 9 + x + x - 5$

a. $3x + 9 + 2x - 5$

$3x + 9 + 2x - 5 = 3x + 2x + 9 - 5$	Commutative Property of Addition
$= (3 + 2)x + 9 - 5$	Distributive Property
$= 5x + 4$	Simplify.

b. $y + y + y$

$y + y + y = 1y + 1y + 1y$	Multiplication Property of One
$= (1 + 1 + 1)y$	Distributive Property
$= 3y$	Add coefficients.

c. $7z + 2(z - 5y)$

$7z + 2(z - 5y) = 7z + 2(z) - 2(5y)$	Distributive Property
$= 7z + 2z - 10y$	Multiply.
$= (7 + 2)z - 10y$	Distributive Property
$= 9z - 10y$	Add coefficients.

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OYO!

Simplify the expression.

11. $8 + 3z - z$

$8 + z + z + z - z$

$8 + 2z$

12. $3(b + 5) + b + 2$

$3b + 15 + b + 2$

$4b + 17$

Learning Objective: Students will be able to use the Distributive Property to multiply numbers with more than one digit.

OYO! Answers

11. $8 + 2z$

12. $4b + 17$

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Assignment

Complete problems 6, 8, 14, 16, 20, 22, 40, 44, 46, 60, & 64 on pages 137 - 139 in your Big Ideas Text Book.

$8 + z + z + z - z$

$8 + 2z$

$36 + 15 + 6 + 2$

$46 + 17$

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Homework

In your Big Ideas Record and Practice Journal page 72.