

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

Warm Up

1. $\frac{1}{4} \times \frac{1}{3} \times \frac{13}{3}$

5. $11\frac{1}{2} \times \frac{1}{4} \times \frac{4}{11}$

2. $\frac{5}{6} \times \frac{9}{5} \times \frac{19}{10}$

6. $3\frac{1}{7} \times \frac{1}{2} \times 1\frac{1}{2}$

3. $4\frac{1}{3} \times \frac{15}{2} \times \frac{1}{10}$

7. $1\frac{4}{7} \times \frac{7}{8} \times 1\frac{7}{9}$

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Warm Up Answers

$$1. \frac{1}{4} \times \frac{1}{3} \times \frac{13}{3} \\ = \frac{13}{36}$$

$$5. 11\frac{1}{2} \times \frac{1}{4} \times \frac{4}{11} \\ = \frac{23}{22} = 1\frac{1}{22}$$

$$2. \frac{5}{6} \times \frac{9}{5} \times \frac{19}{10} \\ = \frac{57}{20} = 2\frac{17}{20}$$

$$6. 3\frac{1}{7} \times \frac{1}{2} \times 1\frac{1}{2} \\ = \frac{33}{14} = 2\frac{5}{14}$$

$$3. 4\frac{1}{3} \times \frac{15}{2} \times \frac{1}{10} \\ = \frac{13}{4} = 3\frac{1}{4}$$

$$7. 1\frac{4}{7} \times \frac{7}{8} \times 1\frac{7}{9} \\ = \frac{22}{9} = 2\frac{4}{9}$$

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Homework Answers

3.3 Record and Practice Journal

Tell which property illustrates the statement.

1. $x \cdot 1 = x$

Multiplication Property of One

2. $4.8 + k = k + 4.8$

Commutative Property of Addition

Simplify the expression. Explain each step.

3. $8 + (7 + x)$

$15 + x$

4. $10(11a)$

$110a$

Complete the statement using the specified property.

Property	Statement
5. Addition Property of Zero	$(b + 0) + 6 = b + 6$
6. Commutative Property of Multiplication	$3 \cdot (n \cdot 5) = 3 \cdot (5 \cdot n)$

7. You earn 10 points for every coin you collect in a video game. Then you find a star that triples your score.

a. Write an expression for the number of points you earn from the coins.

$10c$

b. Write and simplify an expression for the total number of points you earn.

$3(10c) = 30c$

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Lesson 3.4

November 22, 2016

Essential Question:

How do you use mental math to multiply two numbers?

Lesson 3.4

November 22, 2016

Lesson Objective:

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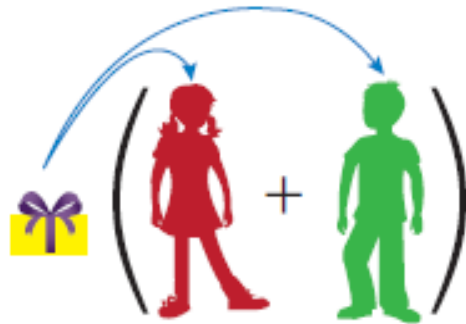
Self-Evaluation Scale

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.
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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.



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

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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.

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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 $2 + \frac{3}{4}$.

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

$$= 1 + \frac{3}{8} \quad \text{Multiply.}$$

$$= 1\frac{3}{8} \quad \text{Add.}$$

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OYO!

Use the Distributive Property to find the product.

1. 5×41

2. 9×19

3. $6(37)$

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

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

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

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OYO! Answers

1. 205

2. 171

3. 222

4. 1

5. $1\frac{1}{20}$

6. $1\frac{1}{14}$

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3 Simplifying Algebraic Expressions

Use the Distributive Property to simplify the expression.

a. $4(n + 5)$

$$\begin{aligned} 4(n + 5) &= 4(n) + 4(5) && \text{Distributive Property} \\ &= 4n + 20 && \text{Multiply.} \end{aligned}$$

b. $12(2y - 3)$

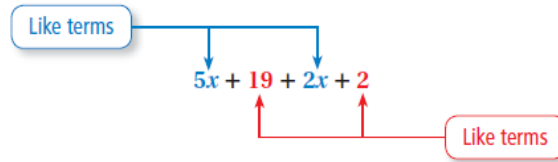
$$\begin{aligned} 12(2y - 3) &= 12(2y) - 12(3) && \text{Distributive Property} \\ &= 24y - 36 && \text{Multiply.} \end{aligned}$$

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

$$\begin{aligned} 9(6 + x + 2) &= 9(6) + 9(x) + 9(2) && \text{Distributive Property} \\ &= 54 + 9x + 18 && \text{Multiply.} \\ &= 9x + 54 + 18 && \text{Commutative Property of Addition} \\ &= 9x + 72 && \text{Add 54 and 18.} \end{aligned}$$

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



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5 Combining Like Terms

Simplify each expression.

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

$$\begin{aligned} 3x + 9 + 2x - 5 &= 3x + 2x + 9 - 5 && \text{Commutative Property of Addition} \\ &= (3 + 2)x + 9 - 5 && \text{Distributive Property} \\ &= 5x + 4 && \text{Simplify.} \end{aligned}$$

b. $y + y + y$

$$\begin{aligned} y + y + y &= 1y + 1y + 1y && \text{Multiplication Property of One} \\ &= (1 + 1 + 1)y && \text{Distributive Property} \\ &= 3y && \text{Add coefficients.} \end{aligned}$$

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

$$\begin{aligned} 7z + 2(z - 5y) &= 7z + 2(z) - 2(5y) && \text{Distributive Property} \\ &= 7z + 2z - 10y && \text{Multiply.} \\ &= (7 + 2)z - 10y && \text{Distributive Property} \\ &= 9z - 10y && \text{Add coefficients.} \end{aligned}$$

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OYO!

Simplify the expression.

11. $8 + 3z - z$

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

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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.

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Homework

In your Big Ideas Record and Practice Journal
page 72.

