



## Lesson 10: Writing and Expanding Multiplication Expressions

### Student Outcomes

- Students identify parts of an expression using mathematical terms for multiplication. They view one or more parts of an expression as a single entity.

$$w + y - 6$$

$$a + 6 - 11$$

Feb 18-5:43 AM

### Classwork

#### Example 1

Write each expression using the fewest number of symbols and characters. Use math terms to describe the expressions and parts of the expression.

a.  $6 \times b$

$6b = \text{product}$

$6 = \text{coefficient/factor}$

$b = \text{variable/factor}$

**Coefficient** = a factor that multiplies the variable.

b.  $4 \cdot 3 \cdot h$

$12h = \text{product}$

$12 = \text{coefficient/factor}$

$h = \text{variable/factor}$

**Factor** = a # or a variable that is multiplied to get a product.

c.  $2 \times 2 \times 2 \times a \times b$

$8ab = \text{product}$

$8 = \text{coefficient/factor}$

$a \& b = \text{variable/factor}$

**Variable** = a letter used to replace a #.

d.  $5 \times m \times 3 \times p$

$5 \cdot 3 \cdot m \cdot p = 15mp = \text{product}$

$15 = \text{coefficient/factor}$

$m \& p = \text{variable/factor}$

e.  $1 \times g \times w$

$gw \text{ or } gw$

Feb 18-5:45 AM

## Example 2

To expand multiplication expressions we will rewrite the expressions by including the "•" back into the expressions.

a.  $5g$

$$5 \cdot g$$

b.  $7abc$

$$7 \cdot a \cdot b \cdot c$$

c.  $12g$

$$12 \cdot g \text{ or } 2 \cdot 2 \cdot 3 \cdot g$$

d.  $3h \cdot 8$

$$3 \cdot h \cdot 8$$

e.  $7g \cdot 9h$

$$7 \cdot g \cdot 9 \cdot h$$

Feb 18-5:56 AM

## Example 3

a. Find the product of  $4f \cdot 7g$ .

$$4f \cdot 7g$$

$$4 \cdot 7 \cdot f \cdot g = 28fg$$

b. Multiply  $3de \cdot 9yz$ .

$$3 \cdot d \cdot e \cdot 9 \cdot y \cdot z$$

$$3 \cdot 9 \cdot d \cdot e \cdot y \cdot z = 27deyz$$


c. Double the product of  $6y$  and  $3bc$ .

$$36bcy$$

$$6 \cdot 3 \cdot b \cdot c \cdot y$$

$$18bcy \cdot 2$$

Feb 18-5:57 AM

	<del>10m</del> <del>25m</del>	<del>8.3m</del> <del>24m</del>		
		31mpt	10mp.4t	
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Feb 18-6:07 AM

## Lesson Summary

**An Expression in Expanded Form:** An expression that is written as sums (and/or differences) of products whose factors are numbers, variables, or variables raised to whole number powers is said to be in *expanded form*. A single number, variable, or a single product of numbers and/or variables is also considered to be in expanded form.

## Problem Set

- Rewrite the expression using the fewest number of symbols and characters possible.
  - $5 \cdot y$
  - $7 \cdot d \cdot e$
  - $5 \cdot 2 \cdot 2 \cdot y \cdot z$
  - $3 \cdot 3 \cdot 2 \cdot 5 \cdot d$
- Expand the following expressions.
  - $3g$
  - $11mp$
  - $20yz$
  - $15abc$
- Find the product.
  - $5d \cdot 7g$
  - $12ab \cdot 3cd$

Feb 18-5:58 AM