

Warm-up

Mon wf 3

1. Find the difference.

a) $-65 - (-59)$
 $-65 + 59$
 -6

b) $3/4 - (-9/4)$
 $\frac{3}{4} + \frac{9}{4} = \frac{12}{4}$
 $= 3$

c) $15 - |-6|$
 $15 - 6$
 9

2. Find the sum.

a) $-13 + (-6)$
 -19

b) $-4 + 6$
 2

3. Evaluate the function $y = x - 8$ for the values of x : $-2, -1, 0,$ and 1 , using a table.

x	y
-2	-10
-1	-9
0	-8
1	-7

$y = (-2) - 8 = -10$
 $(-1) - 8 = -9$
 $0 - 8 = -8$
 $1 - 8 = -7$

Homework Questions?

On the top of your paper (by your name) rate yourself for this section:

4 - I can summarize the concepts and explain it to others

3 - I can apply the concept to answer questions correctly

2 - I can apply the concepts but with some mistakes

1 - I need help and know how to apply the concept

0 - I can't apply the concept, even with help

Rating of 0-2 is a warning signal to me that you need help

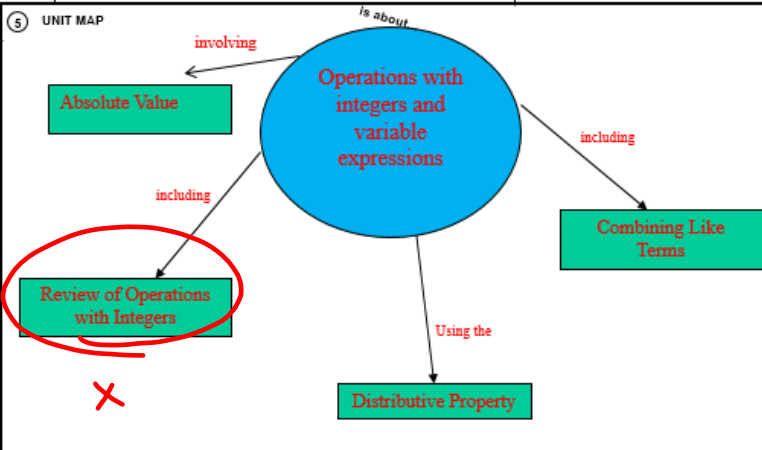
2.5 Multiplying Real Numbers

Goals: • Multiply real numbers using the rule for the sign of a product

EQ: How can you determine if the answer of a product is going to be positive or negative?

The Unit Organizer NAME _____
DATE _____ Mo/Date/Year

④ BIGGER PICTURE **Algebra 9/Algebra 9 Concepts**

② LAST UNIT Experience None	① CURRENT UNIT Properties of Real Numbers	③ NEXT UNIT Experience Solving Linear Equations
⑧ Student Activities or Assignments 2.1 2.2 2.3 2.4 2.5 2.6 2.7	⑤ UNIT MAP 	⑥ UNIT RELATIONSHIPS Simplify Calculate Compare and contrast
⑦ UNIT SELF-TEST QUESTIONS 1. How do you add, subtract, and multiply integers? 2. How do you use the distributive property to evaluate and simplify variable expressions? 3. How do you simplify a variable expression by combining like terms? 4. How can absolute value be used to evaluate expressions?		

RULES FOR THE SIGN OF A PRODUCT OF NONZERO NUMBERS

- A product is negative if it has an odd number of negative factors.
- A product is positive if it has an even number of negative factors.

$$\begin{array}{l}
 (-)(+) = (-) \qquad (+)(-) = (-) \\
 (-)(-) = (+) \qquad (+)(+) = (+) \\
 (\ominus)(\ominus)(\ominus)(\ominus)(-) \rightarrow (+)
 \end{array}$$

Example 1: Multiply Real Numbers

a. $4(-6)$

$$-24$$

b. $7(-7)(-2)$

$$-49(-2)$$
$$98$$

c. $-1(-2)(-4)$

$$2(-4) = -8$$

d. $-3^2(-5)$

$$1 \cdot 3 \cdot 3 \cdot 5 = 45$$
$$9 \cdot 5 = 45$$
$$-1 \cdot 3 \cdot 3$$

*Note: In Example 1(d), be sure you understand that -3^2 is not the same as $(-3)^2$

$$-3 \cdot -3 = 9$$

$$(-3^2)$$
$$-1 \cdot 3 \cdot 3$$

PROPERTIES OF MULTIPLICATION

CLOSURE PROPERTY The product of any two real numbers is a unique real number.

ab is a unique real number

Example: $4 \cdot 2 = 8$

COMMUTATIVE PROPERTY The order in which two numbers are multiplied does not change the product.

$$ab = ba$$

Example: $3(-2) = (-2)3$

ASSOCIATIVE PROPERTY The way you group three numbers when multiplying does not change the product.

$$(ab)c = a(bc)$$

Example: $(-6 \cdot 2)3 = -6(2 \cdot 3)$

IDENTITY PROPERTY The product of a number and 1 is the number.

$$1 \cdot a = a$$

Example: $1 \cdot (-4) = -4$

PROPERTY OF ZERO The product of a number and 0 is 0.

$$0 \cdot a = 0$$

Example: $0 \cdot (-2) = 0$

PROPERTY OF NEGATIVE ONE The product of a number and -1 is the opposite of the number.

$$-1 \cdot a = -a$$

Example: $-1 \cdot (-3) = 3$

$$\begin{aligned} -1 \cdot 4 &= -4 \\ -1 \cdot -4 &= 4 \end{aligned}$$

Example 2: Products with Variable Factors

Simplify the expression.

a. $x(-y)$

$$-xy$$

b. $1(6a)(6a)(6a)$

$$1a^3$$

$$a^3$$

c. $9(-2)(-a)^2(-b)$

$$9 \cdot 2 \cdot a \cdot a \cdot b$$

$$18a^2b$$

Neg. sign, #, variables

Try It

Simplify the expression.

1. $6(-8t)(t)$

$$48t^2$$

2. $(x)(x)(2)(-4)$

$$-8x^2$$

3. $7(-4y)(-y)(-y)^2$

$$7 \cdot 4 \cdot y \cdot y \cdot y \cdot y$$

$$28y^4$$

Example 3: Evaluate a Variable ExpressionEvaluate the expression when $x = -3$.** when you substitute, put value in ()*

a. $-4x$

$$-4(-3)$$

$$12$$

b. $-2x^2$

$$-2(-3)^2$$

$$= 2 \cdot 3 \cdot -3$$

$$= 6 \cdot -3$$
$$= -18$$

Try It Evaluate the expression when $x = -1$

4. $-2x$

5. $-5(-x)(-x)$

6. $4(-x)^2$

7. $-3(-x)^2$

2.5 Summary

EQ: How can you determine if the answer of a product is going to be positive or negative?

Look at # of negatives

odd # $\rightarrow (-)$

even # $\rightarrow (+)$

$$(-)(-) = (+)$$

2.5 Homework

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