Notes

Name: _____

Date: _____ Period: _____

MULTIPLYING AND DIVIDING INTEGERS –Guided Notes

- *Target Objective 1: Multiply, and divide integers*
- *Target Objective 2: Describe situations involving arithmetic operations with integers*
- *Target Objective 3: Describe and solve situations represented by integers and absolute value*

I. Review of Multiplication Symbols

- There are 4 symbols that are generally used to represent multiplication:

traditional _____ Ex) $2 \times 2 = 4$

dot _____ Ex) $3 \bullet 2 = 6$

parentheses _____ Ex) $4(2) = 8$ or $(4)2 = 8$ or $(4)(2) = 8$

asterisk _____ Ex) $5 * 2 = 10$

II. Rules for Multiplying and Dividing Integers

-When multiplying/dividing two integers with the ***same sign*** (two positives or two negatives), the answer is always *positive*.

Examples: $3 \times 6 = 18$ $-5 \times (-4) = 20$ $6(2) = 12$

- When multiplying/dividing two integers with ***different signs*** (positive and negative), the answer is always *negative*.

Examples: $-4 * 6 = -24$ $10 \times (-8) = -80$ $-3(9) = -27$

Examples

Ex) $2 \times (-12)$ Ex) $2 \bullet (-3)$ Ex) $3(-5)$ Ex) $(4)(-8)$

Ex) $-4 \times (-4)$ Ex) $-3 \bullet (-2)$ Ex) 4×5 Ex) $1 \bullet 8$

Ex) $16 \div (-4)$ Ex) $72 \div (-9)$ Ex) $\frac{14}{-2}$ Ex) $\frac{18}{-6}$

Ex) $-24 \div (-8)$ Ex) $-81 \div (-9)$ Ex) $\frac{-36}{-4}$ Ex) $\frac{-3}{-1}$

C. Division Involving Zero

- When you have ___zero_____ divided by some number, then it is equal to _____zero_____.

Ex) $0 \div 10 = 0$ Ex) $0 \div (-9) = 0$ Ex) $\frac{0}{12} = 0$ Ex) $\frac{0}{-7} = 0$

- When you divide a number by ___zero_____, then it is equal to ___'not possible'_____.

Ex) $10 \div 0 =$ n.p. Ex) $-5 \div 0 =$ Ex) $\frac{2}{0} =$ n.p. Ex) $\frac{-6}{0} =$

*Example: Let's say you have 10 apples. Mrs. Watkins tells you to divide the group of apples up into 0 groups. Is this task possible or impossible?

II. Real-Life Applications of Integers

- Integers are used to describe some of the following real-life situations:
  - Depth (below sea level) / Elevation (above sea level)
  - Football
  - Money (or Stock Market)
  - Temperature
  - Time
  - Weight
  - Winning/ Losing

- For each situation, look for certain key words that will signal whether you are talking about positive integers or negative integers:

Situation	**Positive Integer**	**Example (Positive Integer)**	**Negative Integer**	**Example (Negative Integer)**
Depth/ Elevation or Altitude	"above" "ascend"	10 meters *above* sea level = +10 *ascend* 10 meters = +10	"below" "descend"	10 meters *below* sea level = -10 *descend* 10 meters = -10
Football	"gain"	10 yard *gain* = +10	"loss"	10 yard *loss* = -10
Money	"profit" "earn" "deposit" "stock went up"	*profit* of $10 = +10 *earn* $10 = +10 *deposit* $10 = +10 *stock went up* $10 = +10	"debt" "owe" "withdraw" "stock went down"	*debt* of $10 = -10 *owe $10* = -10 *withdraw* $10 = -10 *stock went down* $10 = -10
Temperature	"above zero"	10°F *above zero* = +10	"below zero"	10°F *below zero* = -10
Time	"after"	10 seconds *after* take off = +10	"before"	10 seconds *before* take off = -10
Weight	"gain"	*gain* 10 pounds = +10	"lose"	*lose* 10 pounds = -10
Winning/ Losing	"win"	*win* by 10 points = +10	"lose"	*lose* by 10 points = -10