

Name: Key
Date: _____

Mr. Johnson
Math 8

Lesson 2.2 – Developing Rules to Multiply Integers

Investigate:

Fill in the products (answer to a multiplication question) that you know best. Think back to using your manipulatives.

Hint: Use any pattern you see to help you complete the table.

X	-5	-4	-3	-2	-1	0	+1	+2	+3	+4	+5
-5	25	20	15	10	5	0	-5	-10	-15	-20	-25
-4	20	16	12	8	4	0	-4	-8	-12	-16	-20
-3	15	12	9	6	3	0	-3	-6	-9	-12	-15
-2	10	8	6	4	2	0	-2	-4	-6	-8	-10
-1	5	4	3	2	1	0	-1	-2	-3	-4	-5
0	0	0	0	0	0	0	0	0	0	0	0
1	-5	-4	-3	-2	-1	0	1	2	3	4	5
2	-10	-8	-6	-4	-2	0	2	4	6	8	10
3	-15	-12	-9	-6	-3	0	3	6	9	12	15
4	-20	-16	-12	-8	-4	0	4	8	12	16	20
5	-25	-20	-15	-10	-5	0	5	10	15	20	25

Notes:

Integer Properties

Zero Property (Multiplying by 0):

$$2 \times 0 = 0 \text{ and } 0 \times 2 = 0$$

$$\therefore, (-2) \times 0 = 0 \text{ and } 0 \times (-3) = 0$$

Multiplicative Identity (Multiplying by 1):

$$4 \times 1 = 4 \text{ and } 1 \times 4 = 4$$

$$\therefore, (-4) \times 1 = -4 \text{ and } 1 \times (-4) = -4$$

When any # is multiplied by itself the identity of the number does not change.

Commutative Property:

$$2 \times 3 = 6 \text{ and } 3 \times 2 = 6$$

$$\therefore, (-2) \times 3 = -6 \text{ and } 3 \times (-2) = -6$$

Distributive Property:

$$\begin{aligned} 3 \times (2+3) &= 3 \times 2 + 3 \times 3 \\ &= 6 + 9 \\ &= 15 \end{aligned}$$

Known as feeding
the chickens
 $\begin{matrix} \text{ } & \swarrow & \searrow \\ \text{ } & \text{ } & \text{ } \\ \text{ } & \uparrow & \text{ } \\ \text{ } & \text{face} & \text{ } \end{matrix}$

$$\begin{aligned} \therefore 3 \times (-2 + (-3)) &= 3 \times (-2) + 3 \times (-3) \\ &= -6 + (-9) \\ &= -15 \end{aligned}$$

MULTIPLICATION RULES

Rules we know about multiplying positive and negative integers

Positive number X Positive number = Positive number

Positive number X Negative number = Negative number

Negative number X Positive number = Negative number

Negative number X Negative number = Positive number

REMEMBER THESE!!!!!!!!!!!!!!!!!!!!!!!!!!!!!! (or else.....)

Examples:

1. $(20) \times (-16) = -320$

2. $(-15) \times (-15) = +225$

3. $(-9) \times (12) = -108$

4. $(-10) \times (-9) \times (-3) = -270$

Quick Tidbit:

The product of integers can be written many different ways:

Assignment:

Pg.73-75
#’s 1-11, 13, 17

$$\begin{aligned} -3 \times -3 &= 9 \\ (-3) \times (-3) &= 9 \\ (-3)(-3) &= 9 \\ -3(-3) &= 9 \\ -3 \cdot -3 &= 9 \end{aligned}$$

