5.2 Multiplication and Division of Integers

Properties for Integers with Multiplication

1. Closure

2. Commutativity

3. Associativity

4. Additive Identity

5. Distributivity

6. Zero Multiplication Property

1. How would you properly read these statements? And can you explain why these are true?

(a) $(-1)a = -a = a(-1)$

(b) $-a(b) = -(ab) = a(-b)$

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

2. A little more about absolute value. Fill in the blank with <, =, or >.

(a) $|a| + |b|$ _____ $|a + b|$

(b) $|a|\,(|b|)$ _____ $|a(b)|$

(c) $|a| - |b|$ _____ $|a - b|$

(d) $|a| \div |b|$ _____ $|a \div b|$

Multiplication of Integers--various models/algorithms

1. Set Model
2. Measurement (number line)
3. Pattern
4. Repeated Addition
5. Area Model

Examples:

1. -2(5)

2. 3(-4)

3. -5(-6)

4. Make up a story problem that would produce this computation.
   8(-9)

Division of Integers--various models/algorithms

$a \div b = ?$ is equivalent to $a = b(?)$ (assuming b is not zero)

1. Set Model
2. Measurement (number line)
3. Pattern
4. Missing Factor

Examples:

1. $8 \div (-2)$

2. $-12 \div 6$

3. $-15 \div (-3)$

4. $-10 \div (-(-(-2)))$ (show on the number line)

5. Make up a story problem that would produce this computation.

   $-25 \div 5$

Ordering Integers

1. If $a < b$ and $b < c$, then a ___ c.

2. If $a < b$, then $a + c$ ____ $b + c$.

3. If $a < b$, then ap ____ bp, assuming $p > 0$.

4. If $a < b$, then an ____ bn, assuming $n < 0$.