Section 2.4 Multiplication with Negative Numbers

1. Definition of Multiplication: Multiplication is repeated addition. Thus 3•5 means 5 + 5 + 5 or 3 + 3 + 3 + 3 + 3.

Example: Write each of the given multiplication problems as an equivalent addition problem and then simplify.

a. $6 \bullet 4$

b. $6(-4)$

c. $7(-3)$

d. $(-2)(7)$

2. Rule for Multiplying with Positive and Negative Numbers: To multiply any two numbers:
- Multiply their absolute values.
- The answer is positive if both the original numbers have the same sign.
- The answer is negative if the original numbers have different signs.

In other words,
- A positive number times a positive number gives a positive number.
- A negative number times a negative number gives a positive number.
- A positive number times a negative number gives a negative number.

Example: Simplify each of the following:

a. $17(-10)$

b. $(-8)(-5)$

c. $(-3)(-10)$

d. $4(-10+7)$

e. $-15(-2)+(-4)$

f. $-3\cdot 6+(-7)$

g. $(-5)^2$

h. -5^2

i. -7^2

j. $-3(-4)^2$