

Multiplying and Dividing Integers

1. Same Signs: If the numbers have the same sign, the product or quotient is positive.

Examples: a) $12(4) = 48$

b) $12 \div 4 = 3$

c) $(-12)(-4) = 48$

d) $-12 \div (-4) = 3$

Think: $(+)(+) = (+)$ and $(-)(-) = (+)$

2. Opposite Signs: If the numbers have opposite signs, the product or quotient is negative.

Examples: a) $-12(4) = -48$

b) $-12 \div 4 = -3$

c) $12(-4) = -48$

d) $12 \div (-4) = -3$

Think: $(+)(-) = (-)$ and $(-)(+) = (-)$

3. When multiplying more than two Integers, count the number of negative signs:

- a) If the number of negative signs is even, the product is always positive.

Example: $-4(-12)(-1)(-2) = 48(-1)(-2) = -48(-2) = 96$

- b) If the number of negative signs is odd, the product is always negative.

Example: $-4(-12)(-1) = 48(-1) = -48$

4. Exponents: To determine the sign of the product when a negative number is raised to a power, look at the power – is it even or odd?

- 1) A negative number raised to an even power is always positive.

Example: $(-2)^4 = (-2)(-2)(-2)(-2) = 16$

- 2) A negative number raised to an odd power is always negative.

Example: $(-2)^3 = (-2)(-2)(-2) = -8$

Note that $-2^4 \neq (-2)^4$. In the expression -2^4 , the base is 2, not -2 , and the negative sign is read as "find the opposite of." Because $2^4 = 16$ and the "opposite of" 16 is -16 ,

$$-2^4 = -(2 \cdot 2 \cdot 2 \cdot 2) = -16$$