$J = \{ 1, 2, 3, 4, \ldots \}$ $\qquad$ $W = \{ 0, 1, 2, 3, 4, \ldots \}$

$J_n = \{ 1, 2, 3, \ldots, n \}$ $\qquad$ $n(S) = m$ means $S \approx J_m$

Suppose a, b are whole numbers. Let A and B be sets such that $n(A) = a$, $n(B) = b$ and $A \cap B = \varnothing$.

The addition and multiplication operations are defined as follows:

$$a + b = n(A \cup B) \quad \text{and} \quad a \cdot b = n(A \times B) \ .$$

Given any whole numbers a, b, and c,

1. $a + b = b + a$
2. $a + (b + c) = (a + b) + c$
3. $a + 0 = a$
4. $a \cdot b = b \cdot a$
5. $a \cdot (b \cdot c) = (a \cdot b) \cdot c$
6. $a \cdot 1 = a$
7. $a \cdot (b + c) = a \cdot b + a \cdot c$