Injections, Surjections, Bijections

A function $f: A \to B$ ("from A to B") is:

- surjective if every element of B is assigned to at least one element of A. More concisely, f is surjective iff f(A) = B (that is, if the range of f is the codomain of f).
- *injective* if every element of B is mapped at most once, and
- *bijective* if it is surjective and injective.

Given any two sets A and B, we say that:

- $|A| \ge |B|$ iff there is a surjection from A to B
- $|A| \leq |B|$ iff there is an injection from A to B
- |A| = |B| iff there is a bijection between A and B