Bijection Principle

'We cannot solve our problems with the same thinking we used when we created them.' — Albert Einstein.

Injective and Surjective Mappings

$$f : A \to B$$

B is the codomain.

Injective mappings:

$$(\forall x, y \in A)\,(f(x) = f(y) \implies x = y)$$

$$(\forall x, y \in A)\,(f(x) \neq f(y) \implies x \neq y)$$

Onto:

$$(\forall b \in B,\, \exists a \in A)\, f(a) = b$$

Bijection:

$$|A| = |B|$$