f: X -> Y is one-one if x, y in X with x #y, then f(x) # f(y).

OR

f: X -> Y is one-one if x, y in X such that f(x) = f(y) => x = y.

|S1| = n1, |S2| = n2.... |Sk| = nk

|S1 U S2 U ... Sk| = (|S1| + |S2| + ... + |Sk|) - (...) ....

E = set of all even integers = subset of Z
O = set of all odd integers = subset of Z
A = {5x | x is a positive integer} = subset of Z

f: N -> A

f(n) = 5n, n in N

A1 = A – {a1}
A2 = A1 – {a2} = A – {a1, a2}
.....

2 -> 1
4 -> 2
6-> 3
.....

2n -> n
....

1 -> 0
3 -> -1
5-> -2
7 -> -3
.....

N x N is countable [0.0001, 0.5, 0.9998.., 0.25, 0.75, ...]
x1 x3 x5... x2 x4

f: N -> N x N

g: (a, b) -> (0, 1)

g(a,b) = w = (x-a)/(b-a).

(0, 1) -> [0, 1) -> (0, 1] -> [0, 1]

(0.0001, 0.0002, ...)