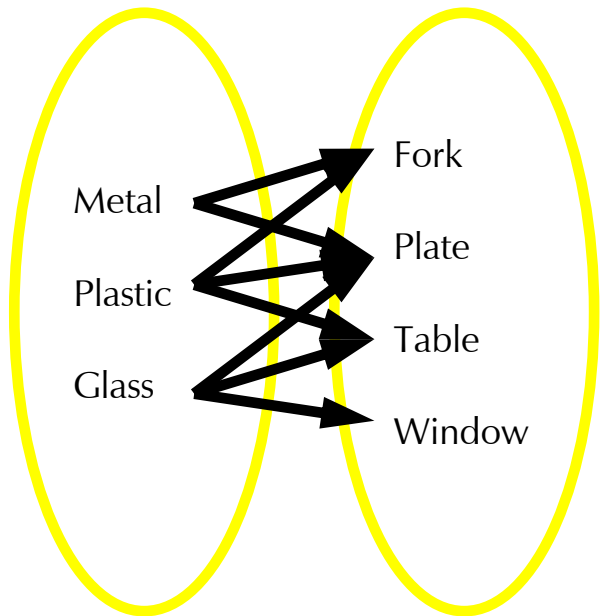
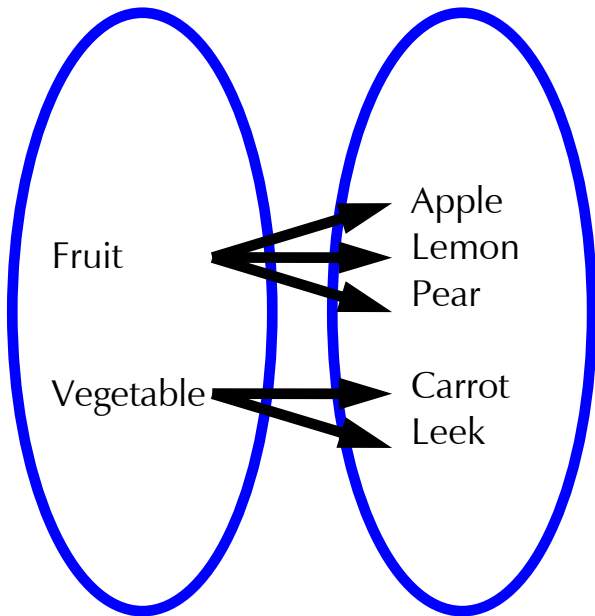
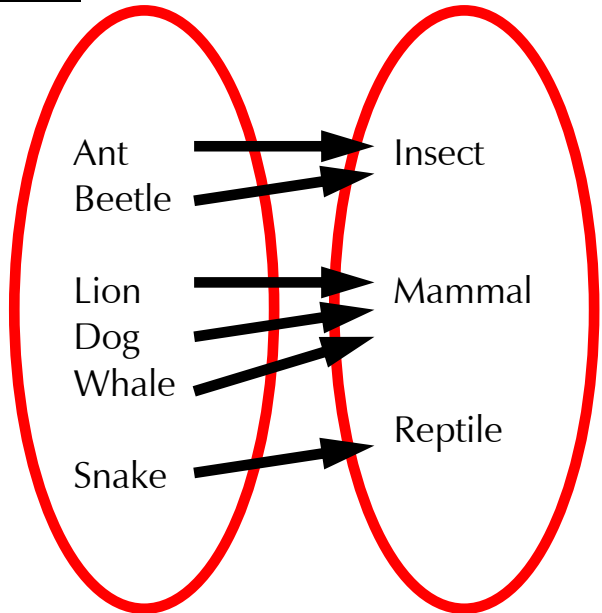
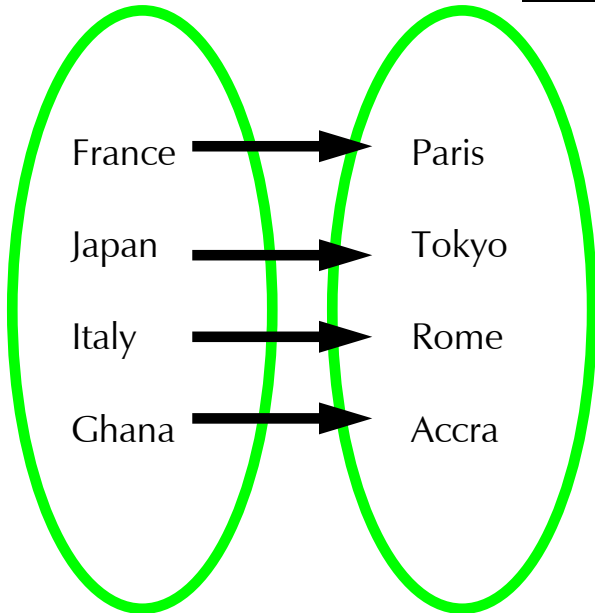


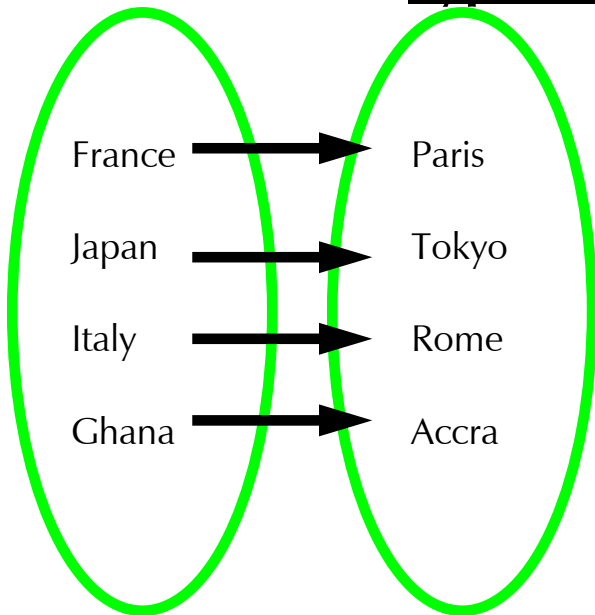
5:1a Relations and Mappings

Relations

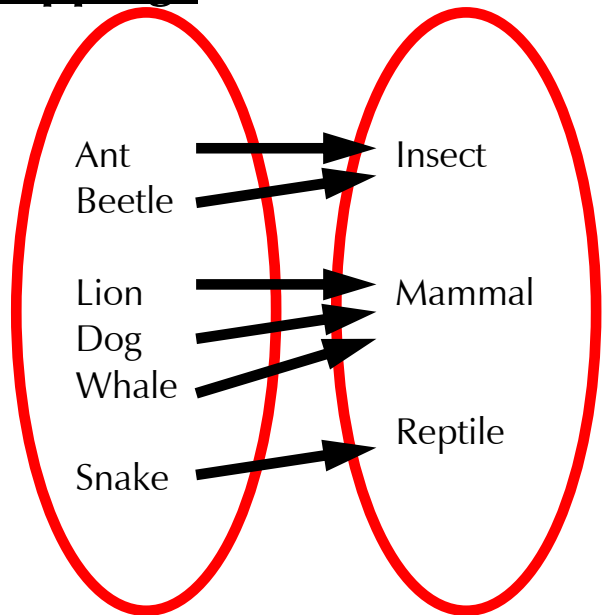


5:1b Relations and Mappings

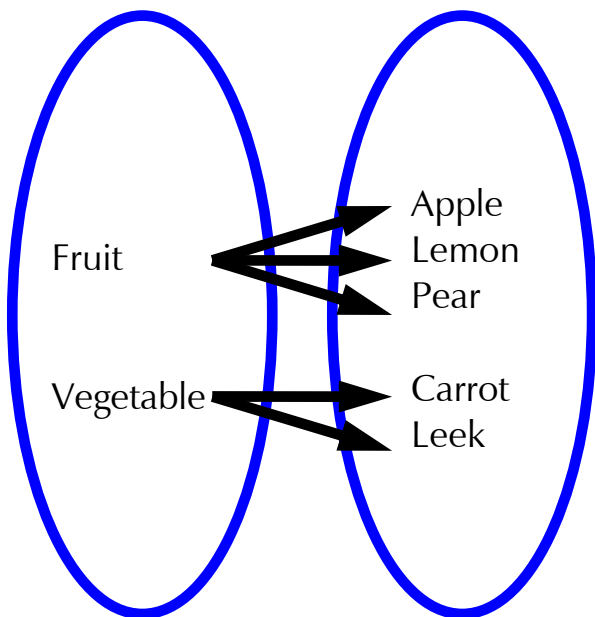
Types of Mappings



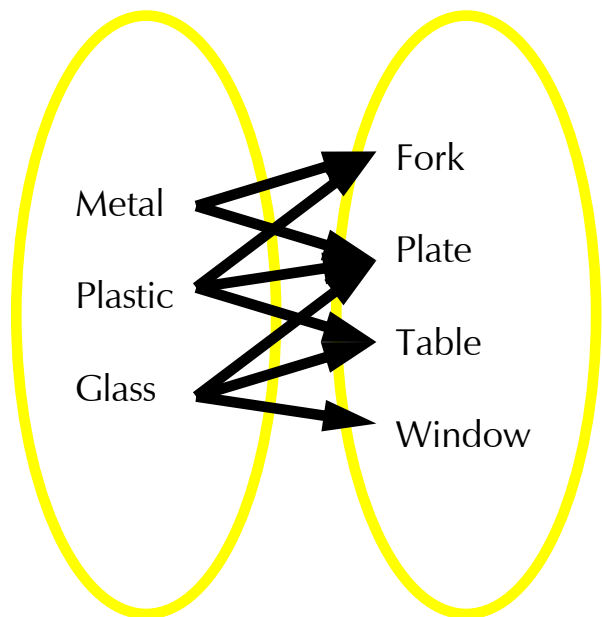
one-to-one



many-to-one



one-to-many

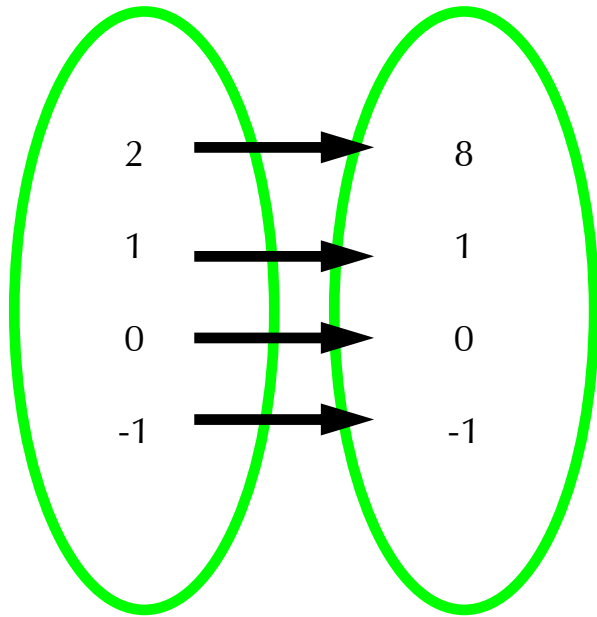


many-to-many

5:1c Relations and Mappings

Functions are **one-to-one** or **many-to-one** mappings.

For example:



This is the function x^3

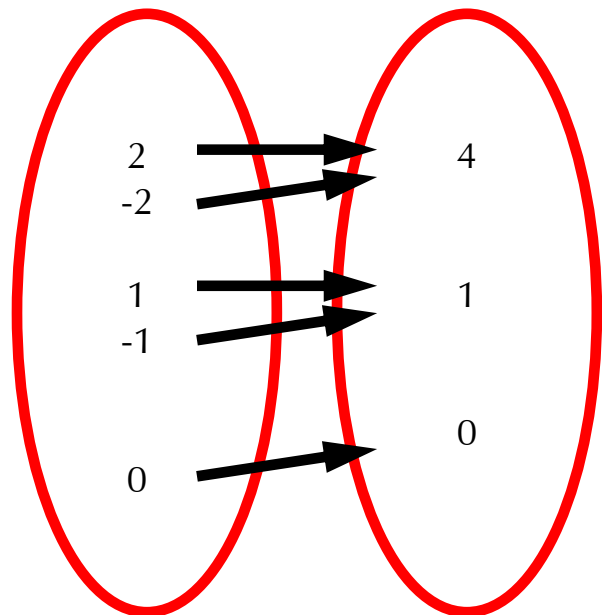
It is a **one-to-one** function

Every input value has a **unique** output value

This is the function x^2

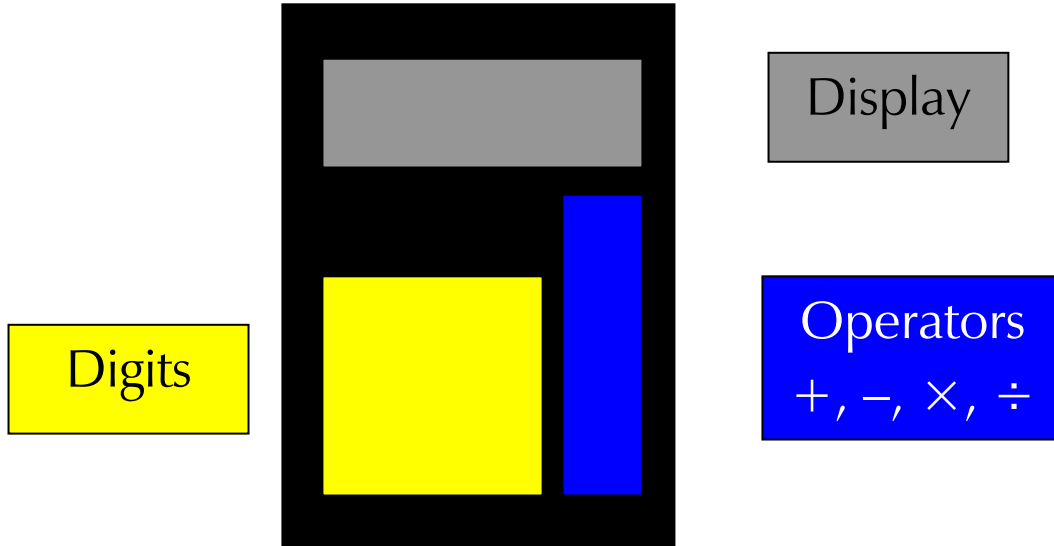
It is a **many-to-one** function

Again, every input value has a **unique** output value

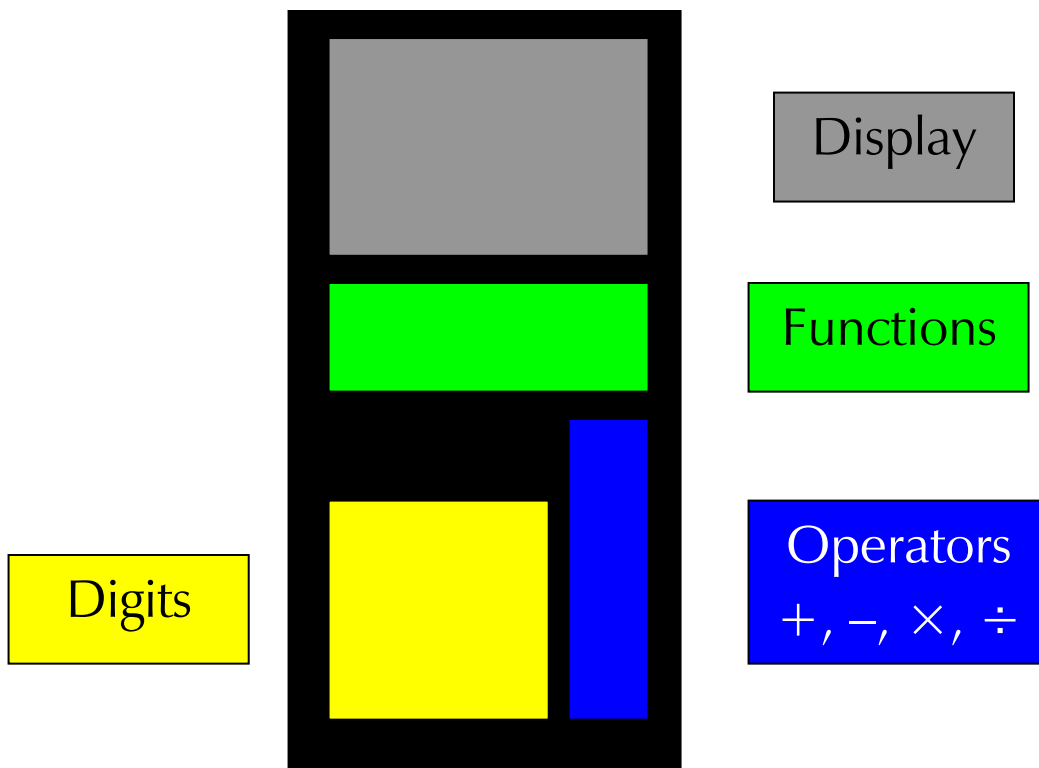


5:1d Relations and Mappings

Basic Calculator



Graphics/Scientific Calculator

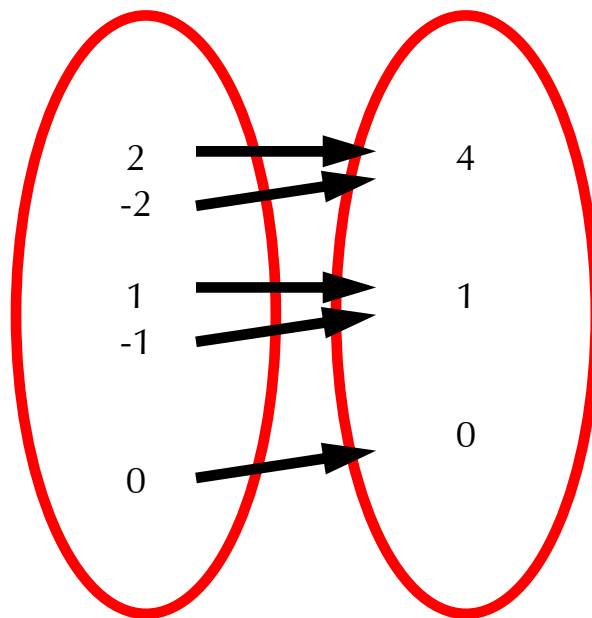


5:1e Relations and Mappings

Notation

Different ways of describing a mapping

1. Diagram



2. Words

'(input) squared is (output)'

3. Function Notation

$f(x) = x^2$ or $f: x \mapsto x^2$