number

7

3+4

Python	Java		Logic
True	true	1	T
False	false	0	⊥
and	&&		∧
or	||		∨
not	!		¬

[1 , 2 , 4]

Code

$x = 3$

3

$x = 2$

2

$y = [1, 2, 4]$

$y[2] = 5$

mutable entry

main

$x = 3$

$x = 2$

Contradiction

Set

$$\{1, 2, 4 \quad \}$$

unordered

$7 = 7$

$$\{1, 2\} = \{2, 1\}$$

~~$\{1, 1, 2\}$~~

Sequences /tuple

$$(1, 2, 4)$$

order
repeat

$$(1, 2, 1, 1, 4) \neq (1, 1, 1, 2, 4)$$

$\{\{\{\{\{3\}\}\}\}\}$

Element **Sers** member
member

$4 \neq \{4\}$

$1 \in \{1, 2, 4\}$

$3 \in \{1, 2, 4\}$ (crossed out / false)

$\{1,2\} \in \{1, 2, 4\}$ (crossed out / false)

$\{1,2\} \in \{\{1,2\}, 4\}$ (true)

$\left| \{\{1,2\}, 3\} \right| = 2$

$\{1, \{1,2\}\} = \{\{1,2\}, 1\} = \{\{2,1\}, 1\} = \{1, \{2,1\}\}$

Set of integers
∞

$\mathbb{Z}$ = ser of integers

$\mathbb{N}$ = natural numbers
integer ≥ 0

$\mathbb{Q}$ = rational

$\mathbb{R}$ = reals

Cardinality of a ser
= number of distinct
members of set

$\left| \{1, 2, 4\} \right| = 3$

the empty set $\{\}$ $|\{\}| = 0$ $\emptyset$

$A = B$
if and only if
every mbr of A
is also a member of B
and
every number of B
is also a member of A

$\{1, \{\}\} \neq \{1\}$

$|\{1, \{\}\}| = 2$ $|\{1\}| = 1$

$$\frac{T}{\{\} \in \{1, \{\}\}}$$

$$\frac{\bot}{\{\} \in \{1\}}$$

$\{1, \{1\}, \{\}, (1,2),$
$\{1,2\}, \{\{1\}\}\}| = 6$

$\{\{1\}\}$

$X\begin{bmatrix}0\end{bmatrix}$

$\{1,1\}$ ~~crossed out~~

$\{\{1,2\}, \{2,1\}\}$ ~~crossed out~~

$\{\{\}, \{\} , 1\}$ ~~crossed out~~

$$x + 0 = x \qquad x * 0 = 0$$

$$4 + 3 = 7$$

$$\{1, 2\} \cap \{\} = \{\quad\} \qquad \{1, 2\} \cup \{2, 4\} = \{1, 2, 4\} \qquad \text{Union (any)}$$

$$X \cup \{\} = X$$

$$\{1, 2\} \cap \{2, 4\} = \{2\} \qquad \text{intersection (all)}$$

$$A \cup (B \cap C) \qquad X \cap \{\} = \{\}$$