

## Phase 3 : Quantifiers land Mathematical Notation

### Example 1 : Quantifiers

(a)

$$\forall x : \mathbb{N} \bullet x \geq 0$$

(b)

$$\exists y : \mathbb{N} \bullet y = 0$$

(c)

$$\forall n : \mathbb{N} \bullet n \geq 0 \wedge n < 100$$

### Example 2 : Subscripts land Superscripts

(a)

$$x^2$$

(b)

$$a_1$$

(c)

$$x_{-i^2}$$

### Example 3 : Comparison Operators

(a)

$$x < 10$$

(b)

$$x \geq 0 \wedge x \leq 100$$

(c)

$$y > 5 \vee y = 0$$

### Example 4 : Set Operators

(a)

$$x \in \mathbb{N}$$

(b)

$$A \subseteq B$$

(c)

$$A \cup B \cap C$$

## Example 5 : Complex Expressions

(a)

$$\begin{aligned} & \forall x : \mathbb{N} \bullet x \in \mathbb{N} \wedge x \geq 0 \\ & \Leftrightarrow \forall x : \mathbb{N} \bullet x \geq 0 \end{aligned}$$

(b)

$$\forall i : \mathbb{N} \bullet a_{-i} > 0 \Rightarrow a_{-i^2} > 0$$

(c)

$p$	$q$	$\mathbf{p} \Rightarrow \mathbf{q}$
$t$	$t$	$\mathbf{t}$
$t$	$f$	$\mathbf{f}$
$f$	$t$	$\mathbf{t}$
$f$	$f$	$\mathbf{t}$