

## Phase 3 : Quantifiers and Mathematical Notation

### Example 1 : Quantifiers

- (a)  $\forall x: N \bullet x \geq 0$
- (b)  $\exists y: N \bullet y = 0$
- (c)  $\forall n: N \bullet n \geq 0 \wedge n < 100$

### Example 2 : Subscripts and 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)  $x \in N$
- (b)  $A \subseteq B$
- (c)  $A \cup B \cap C$

### Example 5 : Complex Expressions

- (a)

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

$$(b) \forall i: N \bullet a_i > 0 \Rightarrow a_i^2 > 0$$

- (c)

$p$	$q$	$p \Rightarrow q$
T	T	T
T	F	F
F	T	T
F	F	T