

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)

$$\forall x: N \bullet x \in N \wedge x \geq 0 \\ \Leftrightarrow \forall x: N \bullet x \geq 0$$

- (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