

Illustrations

1. $N = \{1, 2, 3, 4, \dots\}$ is the set of natural numbers, here $0 \notin N$.

2. $I = \{\dots, -3, -2, -1, 0, 1, 2, 3, \dots\}$ is the set of integers.

3. The set $S = \{11, 12, 13, 14, \dots\}$ may be written as
 $S = \{x: x \in N, x > 10\}$

4. The set $T = \{\dots, -15, -10, -5, 0, 5, 10, 15, \dots\}$ may be written as
 $T = \{5x: x \in I\}$

5. The set $S = \{x: x \in N \text{ and } 2 < x < 3\}$ is an empty set i.e. $S = \phi$

* 1.2 Some Standard Notations

Some standard notations such as $\Rightarrow, \Leftrightarrow, \forall, \exists, \wedge, \vee, \in$ and ϕ will be frequently used in this book. Let us explain these.

(a) $\Rightarrow$ means "implies that"

for example $x = 2 \Rightarrow x^2 = 4$

$x = 3 \Rightarrow x$ is an odd integer

(b) $\Leftrightarrow$ means "implies and implied by" or "if and only if" (iff)

for example, $x^2 = 4 \Leftrightarrow x = \pm 2$.

if P and Q are two statements, then $P \Leftrightarrow Q$ means that if P is true then Q is true and if Q is true then P is true.