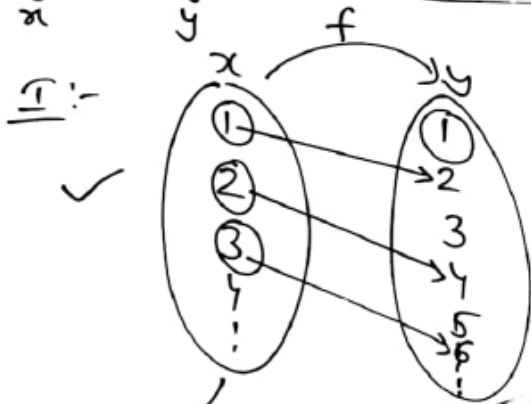


Relation & function

given by $f(x) = 2x$ is one-one or many-one & onto or into.

Sol:- $f: \mathbb{N} \rightarrow \mathbb{N}$ \Rightarrow $f(x) = 2x \Rightarrow y = 2x$

a func. is onto if and only if $f(x) = y$



II:- Let: $f(x_1) = f(x_2) \Rightarrow x_1 = x_2$
 $\Rightarrow 2x_1 = 2x_2$
 $\Rightarrow x_1 = x_2$
 So it is one-one funⁿ.

I: it is into function

ii) $\because f(x) = 2x \Rightarrow y = 2x \Rightarrow x = y/2$
 Let: $y = 1 \Rightarrow x = 1/2 \notin \mathbb{N} \Rightarrow f(x) \neq y$
 So it is into function.

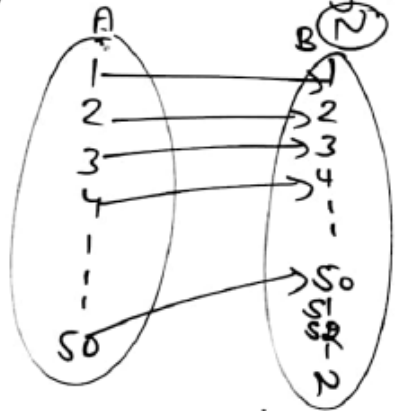
Relation & function

ex 1- $A = \{ 50 \text{ students} \}$ of class-10th

$f(n_1) = f(n_2) \Rightarrow f(n) = n^2$

$f: A \rightarrow \mathbb{N} \rightarrow f(n) = \text{roll no. of the student of class 10th.}$

\rightarrow one-one or many-one? | onto or into?



Range $\Rightarrow \{ 1, 2, \dots, 50 \}$
 Co-domain $\Rightarrow \{ 1, 2, \dots, N \}$

$\because f(n) = \text{roll no. of stu.}$
 \therefore for 1 to 50 stud. there is a unique image in \mathbb{N} . so it is one-one.
 but when the roll no. become 51 then for 51 $\rightarrow \mathbb{N} \notin A$
 so! - it is not onto function.

Co-domain $\Rightarrow \mathbb{N}$
 \Rightarrow Co-domain \neq Range