

## Phase 11 c Function Type Arrows

*Total(function)*  
 $X \rightarrow Y$

*Partial(function)*  
 $\mathbb{N} \rightarrowtail \mathbb{N}$

*Total(injection)*  
 $A\text{Map} \rightarrowtail B\text{Map}$

*Partial(injection)*  
 $X \rightarrowtail Y$

*Total(surjection)*  
 $A\text{Map} \twoheadrightarrow B\text{Map}$

*Partial(surjection)*  
 $X \twoheadrightarrowtail Y$

*Bijection*  
 $A\text{Map} \xrightarrow{\sim} B\text{Map}$

*Higher(order)(function)(type)*  
 $(\mathbb{N} \rightarrow \mathbb{N}) \rightarrow \mathbb{N}$

*Right(associative)(function)(types)*  
 $A\text{Map} \rightarrow (B\text{Map} \rightarrow C)$   
 $X \rightarrow (Y \rightarrow Z)$

$[A\text{Map}, B\text{Map}]$

|  |  |
|--|--|
| $\text{square} : \mathbb{N} \rightarrow \mathbb{N}$            | $\text{square} : \mathbb{N} \rightarrow \mathbb{N}$            |
| $\text{pdiv} : \mathbb{N} \rightarrowtail \mathbb{N}$          | $\text{pdiv} : \mathbb{N} \rightarrowtail \mathbb{N}$          |
| $\text{bmap} : A\text{Map} \twoheadrightarrowtail B\text{Map}$ | $\text{bmap} : A\text{Map} \twoheadrightarrowtail B\text{Map}$ |