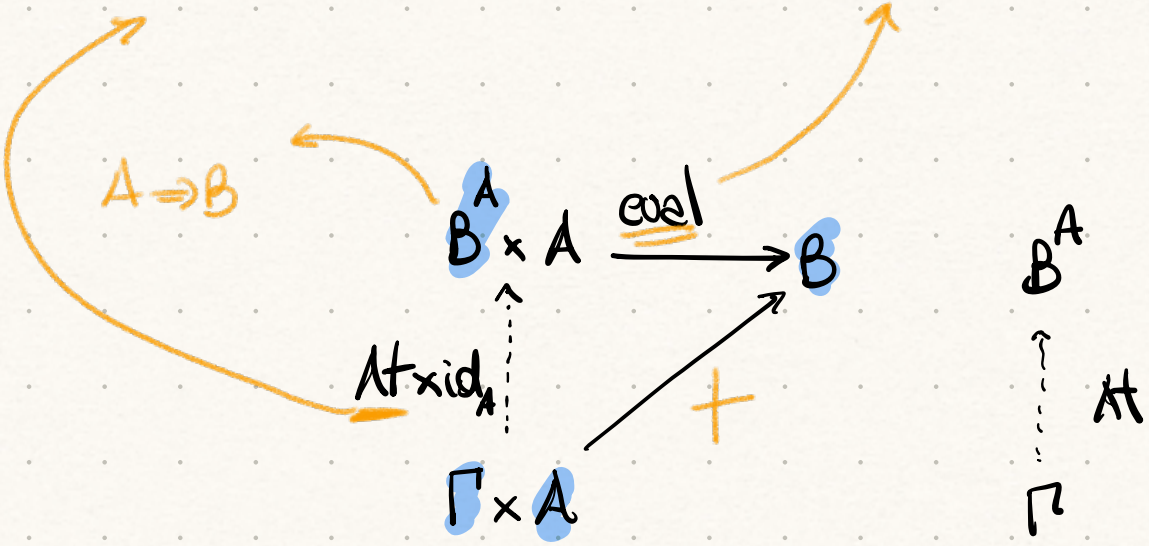
$\mathbb{N}$, $\times$, $+$, 0, 1, $\to$

Exponentials

$$\frac{\Gamma, x:A \vdash t : B}{\Gamma \vdash \lambda x.t : A \to B}\ \text{Intro} \qquad \frac{\Gamma \vdash t_1 : A \to B \quad \Gamma \vdash t_2 : A}{\Gamma \vdash t_1 t_2 : B}\ \text{Elim (Modus Ponens)}$$



$$\Gamma \times A \xrightarrow{t} B \iff \Gamma \xrightarrow{\Lambda t} B^A$$

$$\Gamma \times A \xrightarrow{\forall f} B \iff \Gamma \xrightarrow{f} B^A$$

Given a locally small category $\mathbb{C}$

the hom-set $\mathbb{C}(A,B)$ is the set of morphisms from A to B

$$\text{curry} : \mathbb{C}(\Gamma \times A, B) \cong \mathbb{C}(\Gamma, B^A) : \text{uncurry}$$

curry: λ / $\lfloor - \rfloor$ — uncurry: $\forall$ / $\lceil - \rceil$

$$B^A$$

$$B^2 = B \times B \cong 2 \to B$$

$$X^2 \xrightarrow{f} Y$$

$$X \times X \longrightarrow Y$$

$$X^A \longrightarrow Y$$