



planetmath.org

Math for the people, by the people.

A.1.8 Identity types

Canonical name	A18IdentityTypes
Date of creation	2013-11-09 5:05:03
Last modified on	2013-11-09 5:05:03
Owner	PMBookProject (1000683)
Last modified by	PMBookProject (1000683)
Numerical id	1
Author	PMBookProject (1000683)
Entry type	Feature
Classification	msc 03B15

We introduce primitive constants $c_{=}$ and c_{refl} . We write $a =_A b$ for $c_{=}(A, a, b)$ and refl_a for $c_{\text{refl}}(A, a)$, when $a : A$ is understood:

- If $A : \mathcal{U}_n$, $a : A$, and $b : A$ then $a =_A b : \mathcal{U}_n$.
- If $a : A$ then $\text{refl}_a : a =_A a$.

Given $a : A$, if $y : A, z : a =_A y \vdash C : \mathcal{U}_m$ and $\vdash d : C[a, \text{refl}_a/y, z]$ then we can introduce a defined constant

$$f : \prod_{(y:A)} \prod_{(z:a=_A y)} C$$

with defining equation

$$f(a, \text{refl}_a) \equiv d.$$