Cheat Sheet

Page	Expression	Name	Say	Meaning
5	$\mathcal{P}$	Script P	Proposition	Something to be proved
5	$\mathcal{P}(a)$	Script P of a	Proposition about tree a	Something to be proved about AST a
5	$\mathcal{O}$	Script O	Operator	An operator that can be used in an AST
5	$\mathcal{O}(a)$	Script O of a	Operator of arity a	An operator of a given arity
5	$\mathcal{X}_s$	Script X sub s	Variables x of sort s	Variables x of sort s
5	S	S	A set of sorts	A set of sorts
5	$\{X_s\}_{s\in\mathcal{S}}$	Family	Family X of s	a sort-indexed family of disjoint finite sets X_s of variables x of sort s
6	$[b/x]\,a$	Substitution	Substitute b for x in a	Substitute b for x in a
7	$x_1, ..., x_n.a$	Abstractor	Bind variables x_n to expression a	Bind variables x_n to expression a
8	$\overrightarrow{x}$	X arrow	List of xs	$x_1, ..., x_n$
8	$\rho : \overrightarrow{x} \leftrightarrow \overrightarrow{x}'$	Fresh renaming	Freshen x using renaming ρ	A bijection between $\overrightarrow{x}$ and $\overrightarrow{x}'$ where $\overrightarrow{x}'$ is fresh.
8	$\widehat{\rho_i}(a_i)$	Rho hat sub i	Rename result	The result of applying the renaming ρ_i to a_i
8	$x =_\alpha y$	Equal alpha	*α-equivalence*	Trees x and y equal up to renaming
9	$x \triangleq^{\Delta} y$	Delta equals	Replacement	Replace expression x with expression y
13	τ type	Type	Type τ	Judgement that τ is a type
13	$e : \tau$	Colon	e is of type τ	Judgement that expression e is of type τ
13	$e \Downarrow v$	Down arrow	e has value v	Judgement that expression e has value v
14	$\dfrac{J_1 ... J_k}{J}$	Surfboard	Infers	Judgements $J_1 ... J_k$ infer judgement J
23	$J_1 ... J_k \vdash_{\mathcal{R}} \mathcal{K}$	Turnstile	Entails	Given $\mathcal{R}$ and J infer $\mathcal{K}$
23	Γ	Gamma	Judgements Gamma	A finite set of judgements
23	Δ	Delta	Judgements Delta	A finite set of judgements
25	$\Gamma \models_R J$	Double turnstile	Admissible	$\vdash_R \Gamma$ implies $\vdash_R J$
28	$\bigtriangledown$	Down triangle	Generic derivation	Generic derivation
36	$n ::= s$	Colon colon equals	The syntax of n is s	Specifies the syntax of n
36	;	Semicolon	And	Separates arguments to expressionsin abstact notation
41	$s \longmapsto s'$	Bar arrow	Transistion	State s transitions to state s'
42	$s \longmapsto^* s'$	Bar arrow star	Iterated transistion	State s transitions to state s' over more than zero transitions
42	$s \longmapsto^n s'$	Bar arrow n	N times iterated transistion	State s transitions to state s' over n transitions
44	$\mathcal{E}$	Script E	Expression context	Expression context
45	$\circ$	Circle	Hole	Placeholder to put an instruction
46	$e \equiv e'$	Equivalent	Definitional equivalence	e is definitionally equivalent to e'
58	e??	Wrong	E goes wrong	Expression e goes wrong

Page	Expression	Name	Say	Meaning
58	$e \Downarrow^k v$	Downarrow k	E evaluates in k steps	Expression e evaluates to v in k steps
63	$\{f\}$	Brace brackets	Function	Surround function f in abstract notation
63	$f.e$	Dot	Dot	Introduces the scope e of a function f in abstract notation
64	$f(\tau_1) : \tau_2$	Function	Function definition	A function taking an argument of type τ_1 and returning a value of type τ_2
64	$\|[x/e/f]\|e'$	Script bracket	Function substitution	Function substitution
65	$\tau_1 \to \tau_2$	Right arrow	Maps to	A total function that maps elements of type τ_1 to elements of type τ_2
65	λ	Lambda	Lambda	Abstraction
71	$\hookrightarrow$	Hook arrow	If	Choice selector
71	$\|$	Bar	Either	A choice
71	$\overline{n}$	Overline	Succession	The the succession expression corresponding to the number n
76	$\lceil n \rceil$	Divided hat	Gödel numbering	Gödel numbering
166	$\mapsto$	Short bar arrow	Maps to	Function definition
166	$\bot$	Bottom	Bottom	Totally undefined partial function
167	$\tau_1 \rightharpoonup \tau_2$	Harpoon	Partial function	Partial function
175	$\simeq$	Tilde equal	Isomorphism	Isomorphism
177	$\_$	Underscore	Underscore	Unfree variable