Extra Notes

(28) Backus-Naur Form / Extended Backus-Naur Form

This is a syntax to write down the specification of context-free grammar.

~~Usefulness~~ Use: In NUS, Prog. Lang mods (e.g. CS2104) & in general to specify Programming Languages. See Source (CS1101S) Language Specification for example.

An attempt to define a well-formed formula, for example: (Taken from Tut 2).
(Literals are written in red)

proposition_variable = x | y | ...
atomic_formula = P(proposition_variable , { proposition_variable })
| Q(proposition_variable , { proposition_variable })
...
(can't be well defined)
(also cannot be well defined)

quantifier := ∀ | ∃;
wff := true | false
| proposition_variable
| atomic_formula
| ~wff | wff ∧ wff | wff ∨ wff | wff → wff | wff ↔ wff
| quantifier , proposition_variable , wff;

proposition_variable := ? variables that take true / false values? ;
atomic_formula := ? predicate name followed by a list of proposition variables? ;

In which,
:= is "defined as"
| is "or"
?...? is to define specially (e.g. cannot be defined explicitly)
; is end of statement.

This is a small subset of EBNF syntax you can come across in an actual language definition.