Example.

<Expression> → <Expression> + <Term> | <Term>

<Term> → <Term> x <Factor> | <Factor>

<Factor> → (<Expression>) | a

$\Sigma = \{a, +, x, (, )\}$.

Example.

<Sentence> → <Noun-phrase> <Verb-phrase>

<Noun-phrase> → <Complex-Noun> |
<Complex-Noun> <Prep-Phrase>

<Verb-phrase> → <Complex-Verb> |
<complex-Verb> <prep-phrase>

<prep-phrase> → <Prep> <Complex-Noun>

<complex-Verb> → <Verb> | <verb> <Noun-phrase>

<complex-Noun> → <Article> <Noun>

<Article> → a | the

<Noun> → boy | girl | flower

<Verb> → beats | likes | sees

<prep> → with

Definition.

A context-free grammar is a 4-tuple $\langle V, \Sigma, R, S \rangle$ such that

1. $V$ is a finite set of variables.
2. $\Sigma$ is a finite set of terminals.
   $V \cap \Sigma = \phi$.
3. $R$ is a finite set of rules.
4. $S \in V$ is the start variable.

Example.

$$S \longrightarrow 0A1$$
$$A \longrightarrow B$$
$$B \longrightarrow \lambda$$

$V = \{S, A, B\}$, $\Sigma = \{0, 1, \lambda\}$

$V \cap \Sigma = \phi$