Given a grammar $G$, with non-terminals $N$ and terminals $T$.

1 First Sets:

To generate: FIRST($X$) for all $X \in N \cup T$.

1. If $X \in T$, FIRST($X$) = \{X\}.
2. If $X \rightarrow \varepsilon$ is a production, add $\varepsilon$ to FIRST($X$).
3. If $X \rightarrow Y_1Y_2\ldots Y_i\ldots Y_k$ is a production: Base case $i = 1$. Induction: add everything in FIRST($Y_i$) except $\varepsilon$ to FIRST($X$), then if $\varepsilon$ is in FIRST($Y_i$) increment $i$ and repeat; else stop. If $i > k$ add $\varepsilon$ to FIRST($X$) and stop. Repeat for all productions.
4. Repeat step 3 until there is no change to any of the FIRST sets.

2 Follow Sets:

To generate: FOLLOW($X$) for all $X \in N$.

Add end marker $\$ \notin N \cup T$ to symbol set.

1. Place $\$ \in$ FOLLOW($S$), where $S$ is the start symbol in $G$.
2. If $A \rightarrow \alpha B\beta$ is a production, add everything in FIRST($\beta$) except $\varepsilon$ to FOLLOW($B$). Repeat for every production and every variable that is not at the end of the production.
3. If $A \rightarrow \alpha B\beta$ and $\varepsilon$ is in FIRST($\beta$), or $A \rightarrow \alpha B$ is a production, add everything in FOLLOW($A$) to FOLLOW($B$).
4. Repeat step 3 for every non-terminal in every production until nothing new is added to any of the FOLLOW sets.