* 1. b
  2. c
  3. d
  4. a
  5. b
  6. a
  7. c
  8. d
  9. a
  10. c

2.1 

2.2 S->aS|bS|Sa|Sb|e

3.1 S->aSbb|e

3.2 S->aSa|bSb|c|e

4.

Diagram

Description automatically generated

5.

Text, letter

Description automatically generated

6.

Suppose on the contrary that is CFG, then there exists some sufficiently large number N, for any , we have such that .

Pick and consider . , so, there are x different possibilities.

Suppose the pumping length N=2, then for any cases, the string uv^2xy^2z would not belong to the L, thus, L is not context-free.

7. S->aSb|bSa|a|b|e