Solution:
To solve this question, we want to find a specific language $L$ and the size of its minimal CFG’s, then show there are two minimal CFG’s for $L$.

Consider $L = a^*$. Then any CFG for $L$ has size at least 2, because we need a start variable $S$ and at least one $a$ on the right-hand side. Now we consider all CFGs for $L$ that have size 3.

Note that we cannot generate $L$ with only one production. With $S \rightarrow Sa$ or $S \rightarrow aS$ or $S \rightarrow SS$ alone, the CFG does not generate any language. And with $S \rightarrow aa$ alone, the CFG generates a finite language, which cannot be $L$. So we need another production at least, say $X \rightarrow \gamma$, where $X$ can be the start variable $S$ or a new variable.

Also, if there are at least three productions, then the right-hand sides will have to be all $\epsilon$’s, which do not generate $L$. So now we only consider CFGs for $L$ that have size 3 and exactly two productions.

Suppose there is a size-3 CFG, $G$, for $L$ that has at least two productions:

$$S \rightarrow \beta$$
$$X \rightarrow \gamma$$

then $\beta$ and $\gamma$ have a total size of 1 and contain at least one $a$, which leads to two cases: (1) $\beta = a$ and $\gamma = \epsilon$; (2) $\beta = \epsilon$ and $\gamma = a$. Note we may insert more $\epsilon$’s to the right-hand sides to form different productions, but it would not change the language generated. It can be verified that in neither of the two cases $G$ generates $L$.

The CFG associated with the following productions has size 4, and this CFG generates $L$:

$$S \rightarrow \epsilon$$
$$S \rightarrow aS$$

So the minimal size is 4. We can swap $a$ and $S$ on the right-hand side of the second production to obtain a different CFG of the same minimal size that aslo generates $L$. Thus, the minimal CFG’s for $L$ are not unique.