In the Quaternary, especially in the early Pleistocene, enormous volcanic activity and active tectonic movement occurred in the region of Suwa and Mt Yatsugatake. We have determined the K-Ar ages for two lava samples collected from Kirigamine Volcano in the Suwa region. The K-Ar ages are measured for separated groundmass from the lavas. Based on the newly obtained ages, previously reported radiometric ages, and volcanostratigraphic data, we identify activity periods of 1.3 to 0.75Ma for Kirigamine Volcano. And we estimate that Oiwake Rift Valley covered by the Kirigamine Volcano formed rapidly at ca 0.85Ma.