It is well known that the Ping Pong Lemma can be applied to many two-generated subgroups of SL(2,$\mathbb{R}$) (using the action by Möbius transformations on the hyperbolic plane) in order to determine properties such as freeness and/or discreteness. In particular, there is a practical algorithm of Eick, Kirschmer and Leedham-Green which, given any two elements of SL(2,$\mathbb{R}$), will determine after finitely many steps whether or not the subgroup generated by these elements is both discrete and free of rank two. In this talk, I will show that a similar algorithm exists for two-generated subgroups of SL(2,K), where K is a non-archimedean local field (for instance, the p-adic numbers). Such groups act by isometries on a Bruhat-Tits tree, and the algorithm proceeds by computing and comparing various translation lengths, in order to determine whether or not a given two-generated subgroup of SL(2,K) is both discrete and free.