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A shuffle of two words is a word obtained by concatenating the two original words in either order and then sliding any letters from the second word back past letters of the first word, in such a way that the letters of each original word remain spelled out in their original relative order. Examples of shuffles of the words $abcd$ and $efgh$ are, for instance, $aebcfghd$ and $eabcfgdh$. In this paper, I enumerate the distinct shuffles of two permutations of any two lengths, where the permutations are written as words in the letters $1, 2, 3, \dots, m$ and $1, 2, 3, \dots, n$, respectively. (Received September 15, 2008)