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A sequence $b_1 b_2 \cdots b_k$ of integers is *alternating* if $b_1 > b_2 < b_3 > b_4 < \cdots < b_k$. Let $as_n(w)$ denote the length of the longest alternating subsequence of the permutation $w \in S_n$. We discuss various statistical properties of the function as_n . For instance, its mean is exactly $(4n + 1)/6$ for $n \geq 2$, and its variance is $(32n - 13)/180$ for $n \geq 4$. Contrast these results with those for longest *increasing* subsequences, where there are no such simple exact formulas. (Received September 09, 2005)