Abstract. Suppose that $A$ is a subset of an abelian group $G$. To know the 3-deck of $A$ is to know the number of occurrences in $A$ of translates of each possible multiset $\{0, a, b\}$. The concept of the 3-deck of a set is naturally extended to $L^1$ functions on $G$. In this paper we study when the 3-deck of a function determines the function up to translations. The method is to look at the Fourier Transform of the function. Our emphasis is on the real line and the cyclic groups.