The hidden subgroup problem is at present the keystone problem in quantum computation. We are given a function $f: G \rightarrow S$, with the property that $f$ is constant on cosets of an unknown subgroup $H \triangleleft G$, and distinct on distinct cosets. Here $f$ is given as an oracle or as an efficient classical program, and $S$ is an arbitrary set. The problem is to determine the hidden subgroup $H$. (A closely related problem, the “stabilizer problem”, was formulated by Kitaev [6].) The difficulty of the task depends on the type of group $G$. The abelian case can be effectively computed with a quantum computer by repetition of coset state preparation and Fourier sampling (the “standard method” developed by Simon [11] and Shor [10]. In particular this method is the heart of Shor’s solution of the discrete logarithm and factoring problems.