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The  $f$ -vector of a  $d$ -dimensional polytope  $P$  stores the number of faces of each dimension. When  $P$  is simplicial, Dehn (in 1905) and Sommerville (in 1927) constructed a linear transformation that condenses the  $f$ -vector into the  $g$ -vector, which has length  $\lfloor d/2 \rfloor$ . Thus, to determine the  $f$ -vector of  $P$ , we only need to know half of its entries. This raises the question: Which  $\lfloor d/2 \rfloor$ -subsets of the  $f$ -vector of a general simplicial polytope are sufficient to determine the whole  $f$ -vector? We prove that these subsets are given by the bases of the Catalan matroid. (Received August 09, 2015)