# On the rank of Coxeter groups

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We show that the standard generating set of a Coxeter group is a generating set of minimal size provided that the non-diagonal entries of the Coxeter matrix are sufficiently large. More precisely we prove

**Theorem 1.** *Let $S$ be a set of cardinality $n$ and $M = (m_{st})_{s,t \in S}$ a Coxeter matrix over $S$. Suppose that $m_{st} \geq 7.2^n$ for all $s \neq t \in S$. Then* $\operatorname{rank}(W(M)) = n$.

While the bound given in the above theorem is probably not the best possible it could at best be improved by replacing 7 by a smaller constant. Indeed there are Coxeter group where $m_{st} \geq 2^{n-2}$ for $s \neq t$ but the standard generating set is not of minimal size.