ABSTRACT. A sharp affine  $L_p$  Sobolev inequality for functions on Euclidean n-space is established. This new inequality is significantly stronger than (and directly implies) the classical sharp  $L_n$ Sobolev inequality of Aubin and Talenti, even though it uses only the vector space structure and standard Lebesgue measure on  $\mathbb{R}^n$ . For the new inequality, no inner product, norm, or conformal structure is needed; the inequality is invariant under all affine transformations of  $\mathbb{R}^n$ .