1086-05-490 **Alexandr Kostochka** and **Matthew Yancey*** (yancey1@illinois.edu). *Ore's Conjecture on color-critical graphs is almost true.*

A graph G is k-*critical* if it has chromatic number k, but every proper subgraph of G is $(k-1)$–colorable. Let $f_k(n)$ denote the minimum number of edges in an n-vertex k-critical graph. We give a lower bound, $f_k(n) \geq F(k,n)$, that is sharp for every $n = 1 \pmod{k-1}$. It is also sharp for $k = 4$ and every $n \geq 6$. The result improves the classical bounds by Gallai and Dirac and subsequent bounds by Krivelevich and Kostochka and Stiebitz. It establishes the asymptotics of $f_k(n)$ for every fixed k. It also proves that the conjecture by Ore from 1967 that for every $k \geq 4$ and $n \geq k+2$, $f_k(n+k-1) = f(n) + \frac{k-1}{2}(k - \frac{2}{k-1})$ holds for each $k \geq 4$ for all but at most $k^3/12$ values of n. We will also characterize all k-critical graphs for which $|E(G)| = F(k, |V(G)|)$. (Received September 04, 2012)