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Erdős conjectured that every k -chromatic triangle-free graph contains cycles of at least $k^{2-o(1)}$ distinct lengths. In this talk, we prove this conjecture in a strong form, showing that there exists a constant $c > 0$ such that every k -chromatic triangle-free graph contains cycles of at least $ck^2 \log k$ distinct lengths. This result is best possible up to the value of the constant c , and part of a more general result which connects Ramsey Theory to k -chromatic graphs which do not contain certain prescribed subgraphs. (Received January 24, 2016)