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The problem of representing a large integer n in the form $n = m^2 + x^3 + y^5$ has been studied by a number of authors in the past decades. In this talk, we restrict m to square-free integers, and x, y to primes, and show that there is such a representation for all $n \leq N$ with at most $O(N^{1-\frac{2}{105}+\epsilon})$ exceptions. We also improve the recent results of Z. Liu and C. Bauer on related problems. (Received August 29, 2012)