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Gauss was an early master of constructive mathematics. In the *Disquisitiones Arithmeticae* he proposed methods to analyze and reduce binary quadratic forms. Here we continue our implementation of his procedures using Waterloo Maple. In particular, we study his calculation of reduced forms and of the decomposition of primes  $p \equiv 1 \pmod{4}$  as the sum of two squares. (Received September 22, 2005)