principal component analysis (PCA) is a statistical procedure that uses an orthogonal transformation to convert a set of observations of possibly correlated variables into a set of values of linearly uncorrelated variables called principal components. If there are observations with variables, then the number of distinct principal components is equal to the number of observations minus one. Password requirements: 6 to 30 characters long, ASCII characters only (characters found on a standard US keyboard), must contain at least 4 different symbols. Monte Carlo methods or Monte Carlo experiments are a broad class of computational algorithms that rely on repeated random sampling to obtain numerical results. Their essential idea is using randomness to solve problems that might be deterministic in principle. They are often used in physical and mathematical problems and are most useful when it is difficult or impossible to use other approaches.