1. Consider splitting the Bernoulli process $X_1, X_2, \ldots$ by keeping successes with probability q and discarding them with probability $1 - q$. Then Y represents the number of successes in the split process during the first m trials. Since the split process is Bernoulli with parameter pq, it follows that Y is binomial with parameters m and pq.

2. Consider splitting a Poisson process with parameter λ by keeping arrivals with probability q and discarding them with probability $1 - q$. Then Y represents the number of arrivals in the split process during a unit interval. Since the split process is Poisson with parameter λp, it follows that Y is Poisson with parameter λp.