We interpret the random variables X_i and N as follows. We view the times X_1, $X_1 + X_2$, etc. as the arrival times in a Bernoulli process with parameter p (for the first part) or a Poisson process with parameter λ (for the second part). Each arrival is rejected with probability $1 - q$ and is accepted with probability q. We interpret N as the number of arrivals until the first acceptance.

1. The process of accepted arrivals is obtained by splitting a Bernoulli process and is therefore itself Bernoulli with parameter pq. The random variable $Y = X_1 + \cdots + X_N$ is the time of the first accepted arrival and is therefore geometric, with parameter pq.

2. The process of accepted arrivals is obtained by splitting a Poisson process and is therefore itself Poisson with parameter λp. The random variable $Y = X_1 + \cdots + X_N$ is the time of the first accepted arrival and is therefore exponential with parameter λp.