Homework 6

Problem of the week.

Let Bernoulli trials occur at equal time intervals, e.g. every Δ seconds. This time interval Δ is called a **frame**. We say that $\lambda = \frac{p}{\Delta}$ is the **arrival rate**.

Now suppose that customers of an internet service provider connect to the internet at the average rate of 12 new connections per minute. Connections are modeled by a Binomial counting process. What frame length Δ gives the probability 0.15 of an arrival during any given frame?

Solution We are given that $\lambda = 12/min = 0.2/sec$ and $p = 0.15$. Hence, $\Delta = p/\lambda = 0.15/(0.2sec^{-1}) = 0.75$ seconds.

This problem is similar, for example, to the practice problem # 3 in Chapter 3 of MB.