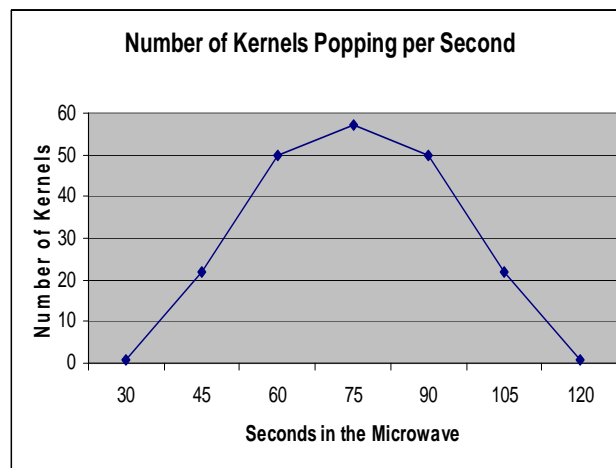# Counting Popcorn

There's no questioning the fact that Americans love the snack food known as popcorn. Early colonial settlers learned about popcorn from the Native Americans and quickly adapted to munching on the crunchy fluffy white snack. Originally cooked over an open fire, over three hundred years later Americans instead are enamored of the quick and easy cooking of microwave popcorn. Simply place the sealed paper bag of popcorn in the microwave, press the button and two minutes later the popcorn is ready to eat. Just the aroma of popping popcorn emanating from the microwave is enough to make the mouth water in anticipation of this delightful snack.

Besides the aroma, there's the characteristic sound of each individual small hard kernel of corn exploding and multiplying in size to create popped corn. When you fix microwave popcorn do you wait for the sound of the first kernel to pop? Have you ever listened carefully to the sound of popcorn popping? Obviously, there's the sound of the very first kernel to pop. Then more pop simultaneously as they heat up until there's furious popping which then tapers off until the last kernel pops.

In fact, the way in which kernels of popcorn in a simple bag of microwave popcorn illustrates an important principle of mathematical probability. Let's say that the first 30 seconds of the microwave cooking time are required for the bag to reach the temperature needed to pop the first kernel. Then, the time needed for each remaining kernel in the bag to pop is a random event that occurs in the next