Activity #3

The Cereal Box Problem

   Suppose that your favorite breakfast cereal now includes a prize in each
box. There are six possible prizes, and you really want to collect them all.
However, you would like to know how many boxes of cereal you will have to
eat before you collect all six prizes. Of course, the actual number is going to
depend on your luck that one time, but it would be nice to have some idea
of how many boxes you should expect to buy, on average.

   In today's activity, we will conduct experiments in class to simulate the
buying of cereal boxes. Your team will be provided with a die in order to
run the simulation. Do several runs, at least 10. We will then pool together
the results from each team in order to get a better estimate of the average
number of boxes that need to be bought in order to collect all six prizes.

   Before you start, discuss in your groups how you are going to run the
experiment. Why does it make sense to use a die to run the simulation?
What assuption are you making about the probability of finding a certain
prize in a given cereal box? Are the assuptions you are making realistic?

   Make a guess: how many boxes do you expect to buy before collecting all
six prizes?