



Coin toss experiment to demonstrate the concept of half-life in radioactive decay: In this demonstration, each student is given a penny. All the pennies begin with the head side up. Then all the students toss their pennies and the number of remaining heads is recorded and projected on the lecture screen using MathCad (software for mathematical modeling and plotting). The toss is repeated for the coins that are still heads, and the new number of remaining heads is recorded and plotted. The data are then fitted to an exponential decay, that is used to determine the half-life (the number of tosses required for half the pennies to still remain as heads) of the tossed pennies. Above is an actual experiment/demo that involved 83 students in Physics 207 the spring of 2003. The data fit the theoretical curve quite well and the result ($t = 1.3$) is within 10 % of the predicted result. This is one demo where having a large class is beneficial in minimizing statistical fluctuations.