

# Disco I Magma Session

September 10, 1998- Professor Broughton

Name: \_\_\_\_\_

Box #: \_\_\_\_\_

Download the scripts  
fixpnts.mgm, fixpntsR.mgm, adj.mgm, adjr.mgm  
from the webpage:  
<http://www.rose-hulman.edu/~brought/courses/ma215/scripts/>

## 1. Overview

In the Magma session we will work on some statistical measures of a well-shuffled deck brought out by our discussion on shuffling and the suggested definitions supplied by the class. In particular, let us look at fixed points, adjacencies and runs of three. Work in pairs and hand the worksheet in on Tuesday, Sept 15.

## 2. Fixed Points

1. Remember that a fixed point is a card that is not moved during a shuffle. Make a table of expected number of fixed points and probability of getting a fixed point for several card shuffle sizes. Make a prediction for large deck size. Use the scripts fixpnts.mgm and fixpntsR.mgm.

### 3. Adjacencies

You should use your results here to complete worksheet 2.

2. Do the same for adjacencies as in problem #1 using `adj.mgm`, `adj.r.mgm`.

### 4. Runs of Three

3. Repeat #1 for runs of 3. You will have to modify the code of the other scripts.