

Disco I Worksheet #1

September 4 1998- Professor Broughton

Name: _____

Box #: _____

1. Shu - e and permutation notation

1. Three 8 card decks will be shu - ed in class. Write down the array notation, the list notation and the disjoint cycle notation for each one.

2. What are the cycle types for the three shu - es? Are there any fixed points or transpositions?

3. Write out the permutation in array notation corresponding to $(1; 2; 4)(3; 5)$

4. Write out all the cycle notations for $(1; 2; 4)(3; 5)$. Verify that two of them give the same array notation.

5. How many cycle notations are there for $(1; 2; 3)(5; 7)(4; 6)$

6. Thinking question. Suppose that we apply the first shu - e technique to the an eight card deck twice. What is the position of the top card. How can this question be answered from the associated permutation.

2. Shu - ing questions

7. Come up with at least two questions on shu - ing that you think might be reasonably investigated with permutations, e.g., average number of runs of 3 in a shu - ed deck. We will use these questions to generate problems that may be solve using discrete math methods.