

**HONS 195N: CRYPTOGRAPHY
WORKSHEET, DAY #14**

Problem 1. There are 3 highways from Knoxville to Nashville, and 4 from Nashville to Memphis. How many roundtrip itineraries are there from Knoxville to Memphis via Nashville? How many itineraries are there if one never travels the same highway?

Problem 2. How many even, 3 digit numbers are there having no repeated digits?

Problem 3. How many subsets of the set $\{1, 2, \dots, 10\}$ contain at least one odd integer?

Problem 4. In how many ways can seven people be seated in a circle if two arrangements are considered the same whenever each person has the same neighbors (not necessarily on the same side)?

Problem 5. There are four men and six women. Each man marries one of the women. In how many ways can this be done?

Problem 6. Ten people split up into five groups of two each. In how many ways can this be done?

Problem 7. In how many different ways can the letters of the word MISSISSIPPI be arranged if the four S's cannot appear consecutively?

Problem 8. A box is filled with three blue socks, three red socks, and four chartreuse socks. Eight socks are pulled out, one at a time. In how many ways can this be done? (Socks of the same color are indistinguishable.)