This worksheet is worth ten points (two points each) and will be counted among your quiz grades. Please submit one worksheet per group. **Group size is limited to three.**

1. A Master Lock combination lock has a dial with 40 numbers on it (0–39). The combination consists of three numbers. The lock is opened by turning right three revolutions to the first number, turning left past the first number to the second and then turning right to the last number. How many different “combinations” are available? Would it be more appropriate to call it a “permutation lock” or a “counting principle lock” (or would people just think we’re weird)?

2. Lambda, Lambda, Lambda fraternity has 18 members. How many different ways can the Tri-Lambs elect their four executive officers? Of the remaining members, five are chosen to serve on an advisory committee. How many ways can the committee be formed? Finally, how many total different ways can the Tri-Lambs elect officers and select an advisory committee?
3. Indiana’s standard license plates consist of three numerals followed by three letters. If 245 letter arrangements are not allowed, how many plates can Indiana issue?

4. Suppose you flip a coin and keep a record of the results. In how many ways could you obtain at least one tail, if you flip the coin six times?

5. In the game of Clue, there are nine rooms, six weapons and six people. If the murder could have occurred in any room, using any weapon, by any of the six people, how many ways could I have met my demise for assigning this worksheet?