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 would people just think we’re weird)?

2. An organization of 100 members has seven different committees. How many ways can each committee be assigned a chairwoman? If each committee consists of five members (excluding the chair), how many different committees can be formed? How many different arrangements of chairwomen and committees are possible?
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 four 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?