Skill Drill 6.1 Counting Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

1. Passcodes are of length 5 and can be made up of letters or numbers, but the first symbol can’t be a vowel and the last symbol must be an even number. How many passcodes are possible?
2. Passwords of length 4 or 5 made up of letters where repeats are not allowed.
3. Passwords of length 6 made up of letters where the first letter is an A or the last letter is a Z.
4. Passwords of length 3 made up of letters or numbers with at least one letter.

Skill drill 6.2 – pigeonhole principle NAME:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

1. How many people must be together to guarantee at least 5 come from the same state?
2. If 320 people are together, how many are guaranteed to be born in the same month?
3. If 5 numbers are chosen from the first 8 positive integers, you are guaranteed that two must add to 9. Use pigeon-hole principle to explain why.