CECS 228 Name:

Lab 10.1 ID: Date:  
Objective:

* Be able to use Basic Counting Principle

Exercise 1: Six different airlines fly from New York to Denver and seven fly from Denver to San Francisco. How many different pairs of airlines can you choose on which to book a trip from New York to San Francisco via Denver, when you pick an airline for the flight to Denver and an airline

for the continuation flight to San Francisco?

Exercise 2: How many strings of eight English letters are there

a) that contain no vowels, if letters can be repeated?

b) that start with a vowel, if letters can be repeated?

c) that contain at least one vowel, if letters can be repeated?

d) that start with X and contain at least one vowel, if letters can be repeated?

Exercise 3: How many positive integers between 100 and 999 inclusive

a) are divisible by 7?

b) are odd?

c) have the same three decimal digits?

d) are not divisible by 4?

e) are divisible by 3 or 4?

Exercise 4: The name of a variable in the JAVA programming language is a string of between 1 and 65,535 characters, inclusive, where each character can be an uppercase or a lowercase letter, a dollar sign, an underscore, or a digit, except that the first character must not be a digit. Determine the number of different variable names in JAVA.

Exercise 5: Use the principle of inclusion–exclusion to find the number of positive integers less than 1,000,000 that are not divisible by either 4 or by 6.

Exercise 6: How many one-to-one functions are there from a set with five elements to sets with the following number of elements?

a) 4

b) 5

c) 6

Exercise 7: In how many ways can a photographer at a wedding arrange six people in a row, including the bride and groom, if

a) the bride must be next to the groom?

b) the bride is not next to the groom?