**Problem 1**

Let Di , i = 1, 2, ... denote the number of items of a certain kind sold on days 1,2,..., with the support of each day’s sales being {1,2,3}. Suppose data show that if a day’s demand is 1 or 2, the next day’s sales will be 1, 2 or 3 with probability 1/3 each. But on high-demand days, i.e., those on which 3 items are sold, the number sold the next day will be 1, 2 or 3, with probability 0.2, 0.2 and 0.6, respectively; in other words, the high demand has “momentum,” with one 3-item day more likely to be followed by another.

1. Say today 3 items were sold. Findiing the expected number for tomorrow
2. But what should our forecast be for M, the sales two days from now?

**Problem 2**

A class has 68 students, 48 of whom are computer science majors. The 68 students will be randomly assigned to groups of 4.

1. Find the probability that a random group of 4 has exactly 2 CS majors.
2. Find the expected number of computer science students in the four-person group.

**Problem 3**

1. What is the expected value of a N(50,32)?
2. What is the value of E(X2)? Use (a)
3. What is the value of E(X1/2+3)? Use (a)

**Problem 4**

Suponga que la ganancia de un vendedor de mascarillas es N(50, 32). Si gana menos de 30, el vendedor gasta en almuerzo 5 soles. Si gana más de 30 pero menos de 70, el vendedor gasta en almuerzo 10 soles. Si gana más de 70, el vendedor gasta en almuerzo 15 soles.

1. ¿Cuál es el gasto promedio en almuerzo que realiza el vendedor?
2. ¿Cuál es la variancia?
3. ¿Cuál es la desviación estándar?
4. ¿Cuál es el coeficiente de variabilidad?