Instructions: Print out this page, and write your solutions directly on it.

The zip car industry is booming in San Francisco! In the beginning there were three locations where you could pick up and drop off zip cars:

The Airport (SFO)
Berkeley
Downtown San Francisco

After one week, only ten percent of the cars from the airport are returned in Berkeley, fifty percent are returned downtown, and the rest are tourists who take them back to the airport when they are finished. Of the cars borrowed from Berkeley, 40% are returned to the same location, and the rest are split evenly between the other locations. A fourth of the cars borrowed from downtown are returned at the airport and twice as many cars are returned to downtown as to Berkeley.

Let \( a_0 \) represent the number of cars starting at the airport, \( b_0 \) be the number of cars starting at Berkeley, and \( d_0 \) be the number of cars starting in downtown San Francisco. Let \( a_1 \), \( b_1 \), and \( d_1 \) be the number of cars in each place after one week.

**Problem 1.1.** Draw a diagram that helps you visualize the information about where the zip cars will be in one week.

**Problem 1.2.** If there are 100 cars at each location, where will they be after one week?

**Bonus:** Write equations that describe where the zip cars will be after one week.

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1I will give this to you before the first exam. Put your section day and time and the TA’s name for now.

2While this is a real problem, I made some of the details up myself.