Solutions to Problem 1.

a. $\Pr\{S_1 = 2 \,|\, S_0 = 1\} = p_{12} = 0.4$

b. $\Pr\{S_2 = 1 \text{ and } S_1 = 1 \,|\, S_0 = 2\} = p_{21}p_{11} = 0.48$

c. $\Pr\{S_2 = 1 \,|\, S_0 = 1\} = p_{11}p_{11} + p_{12}p_{21} = (0.6)(0.6) + (0.4)(0.8) = 0.68$
(We need to consider <u>all</u> the ways to go from state 1 to state 1 in <u>2 steps</u>: 1, 1, 1 and 1, 2, 1)

Solutions to Problem 2.