

October 20, 2009

# 1

(8), Spring 05.

For this problem we know the first green is selected within the first six choices, so at the seventh step there are only four balls in the jar and one of them is green. So the probability of getting the second green in the seventh is  $\frac{1}{4}$ . For the first six steps, say I got the first green in the first choice, then the probability of getting “green red red red red red” is

$$\frac{2}{10} \frac{8}{9} \frac{7}{8} \frac{6}{7} \frac{5}{6} \frac{4}{5}$$

Alternatively, Say for the first six I get “red green red red red red”, then the probability is

$$\frac{9}{10} \frac{2}{9} \frac{7}{8} \frac{6}{7} \frac{5}{6} \frac{4}{5}$$

I just permute the order of the numerators. In total I can have  $C_6^1$  places the get the first green, so the probability is

$$C_6^1 \frac{2}{10} \frac{8}{9} \frac{7}{8} \frac{6}{7} \frac{5}{6} \frac{4}{5} = \frac{2}{15}$$