Page 64, #9.

There are $\binom{10}{5}$ ways for the cars remaining (other than his) to occupy the spots not adjacent to his. There are $\binom{12}{5}$ ways for them to occupy the spaces other than his. So $P(\text{Empty spaces next to Jeff}) = \binom{10}{5}/\binom{12}{5} =$

$$= \frac{10\cdot 9\cdot 8\cdot 7\cdot 6}{12\cdot 11\cdot 10\cdot 9\cdot 8} = \frac{7\cdot 6}{12\cdot 11} = \frac{7}{22}$$

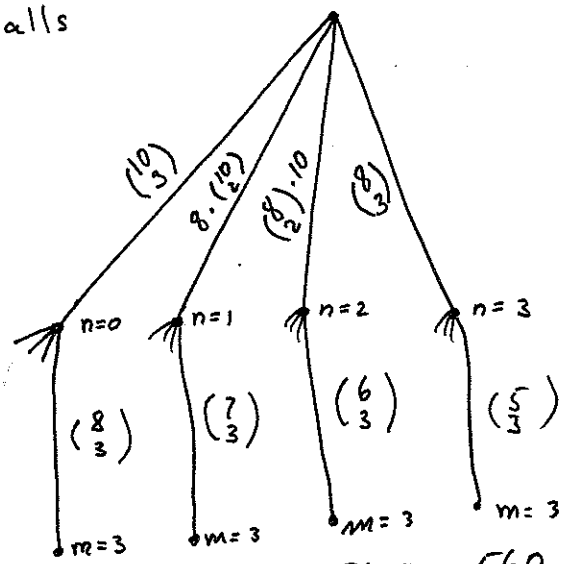
P96 #19

We start with 10 used & 8 new balls

we draw 3 balls, and wind up with n new balls and 3-n used ones. The number of ways of getting each possible n are noted.

Then we return the 3 balls (after using them), and draw 3 more. The number of ways of drawing 3 new balls are noted. (m = number of new balls on second draw.)

(There are branches that we do not explore.).



The numbers at the bottom show the number of ways of following the branch. The total is 25480.

The total number of ways of drawing 3 balls twice is $\binom{18}{3}^2 = 665,856$.

The probability that all are new on second draw is

$$\frac{25,480}{665,856} \approx .03826$$