Spring 2017 Finite Midterm
Problems 2 and 7

Ryan Pennell

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Problem 2

There are three shades of blue and four shades of red. You paint the room and wish to use three different colors to paint the walls one color, the moldings another color and the ceiling a third. How many ways are there to paint your room if at least one shade of blue and one shade of red is used?

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Walls ceiling Molding

$$n(\text{sample}) = \underline{7} \times \underline{6} \times \underline{5} = 210$$

$$n(\text{Red}) = \underline{4} \times \underline{3} \times \underline{2} = 24$$

$$n(\text{Blue}) = \underline{3} \times \underline{2} \times \underline{1} = 6$$

$$210 - 24 - 6 = 180$$

Problem 7

You have 10 M&Ms in your pocket, of which 6 have peanuts and 4 are regular (without peanuts). Because the peanut M&Ms are bigger each one is 5 times more likely to be chosen than regular M&M. What is the probability the next time you reach into your pocket for an M&M that you get a peanut?

$$P+P+P+P+P+P+R+R+R+R=10$$

$$6P+4R=10$$

$$5R=P$$

$$30R+4R=1$$

$$R=\frac{1}{34}$$

$$P = 5R = 5(\frac{1}{34}) = \frac{5}{34}$$

Since there are six

$$6(\frac{5}{34}) = \frac{15}{17}$$