Name: ____________________________

Directions: MAKE SURE TO COPY YOUR ANSWERS TO A SEPARATE SHEET FOR SENDING ME AN ELECTRONIC COPY LATER.

1. (10) Suppose X is the length of a random rod, in inches, and $Var(X) = 2.6$. Let Y denote the length in feet. Find $Var(Y)$.

2. (10) In the board game, Sec. 2.11, suppose we start at square 3 (no bonus, since we *start* there rather than *landing* there). Let X denote the square we land on after one turn. Find EX.

3. This problem concerns the Monty Hall example, pp.40ff.

(a) (15) Give the numbers of the "mailing tubes" in (3.1) and (3.2), respectively. Use a comma and/or spaces to separate the two equation numbers, e.g. "(2.1) (2.3)".

(b) (15) Consider (3.1). Say we change the left-hand side to $P(A = 2 \mid C = 2, H = 1)$. What would be the new numerical value of the numerator on the right-hand side?

4. (20) Look at the simulation code on p.26. Say we wish to find the expected value of S^2, where S is the sum of the **d** dice. Give a line of code, to replace line 11.

5. Consider the Preferential Attachment Graph model, Sec. 2.13.1..

(a) (10) Give the number of the "mailing tube" justifying (2.69).

(b) (10) Find $P(N_3 = 1 \mid N_4 = 1)$.

(c) (10) Find $P(N_4 = 3)$.

Solutions:

1.

$$(\frac{1}{12})^2 \cdot 2.6$$

2.

$$4 \cdot \frac{1}{6} + 5 \cdot \frac{1}{6} + 6 \cdot \frac{1}{6} + 7 \cdot \frac{1}{6} + 0 \cdot \frac{1}{6} + 1 \cdot \frac{1}{6}$$

3.a (2.8), (2.7)

3.b

$$(\frac{1}{3})(\frac{1}{3})(\frac{1}{2})$$

4.

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mean(sums^2)
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5.a (2.2)

5.b

$$(1/2)(2/4) \ / \ ((1/2)(2/4) + (1/2)(1/4))$$

5.c

$$(1/2)(1/4) + (1/2)(1/4)$$