Homework 7

1. Calculate the number of integers divisible by 4 between 50 and 500, inclusive. (20 points)

2. Hexadecimal digits are formed using either a numeric decimal digit or a letter from A to F. How many possible digits can be chosen? Did you use the sum rule or the product rule? (20 points)

3. A combination lock requires three numbers from 1 to 25. How many combinations are possible? Did you use the sum rule or the product rule? (Note that although we use the term *combination* with locks, order matters.) (20 points)

4. Use the permutation formula to calculate the number permutations of the set {a, b, c, d} taken two at a time. Also list these permutations. (20 points)

5. Using the pigeonhole principle, show that any 11 digit decimal number must contain two instances of some decimal digit. (20 points)

Grading Rubric:

Question	Meets	Does not Meet
Question 1	**20 points** Innovative and correct method of solution. Calculations and supporting evidence are complete and correct for the problem. Solution is neat, well-organized and well-written.	**0 points** Solution not described, or not correct. Calculations and supporting evidence are incorrect or not present. Solution is unorganized and poorly written.
Question 2	**20 points** Innovative and correct method of solution.	**0 points** Solution not described, or not correct.

	Calculations and supporting evidence are complete and correct for the problem. Solution is neat, well-organized and well-written.	Calculations and supporting evidence are incorrect or not present. Solution is unorganized and poorly written.
Question 3	**20 points** Innovative and correct method of solution. Calculations and supporting evidence are complete and correct for the problem. Solution is neat, well-organized and well-written.	**0 points** Solution not described, or not correct. Calculations and supporting evidence are incorrect or not present. Solution is unorganized and poorly written.
Question 4	**20 points** Innovative and correct method of solution. Calculations and supporting evidence are complete and correct for the problem. Solution is neat, well-organized and well-written.	**0 points** Solution not described, or not correct. Calculations and supporting evidence are incorrect or not present. Solution is unorganized and poorly written.
Question 5	**20 points** Innovative and correct method of solution. Calculations and supporting evidence are complete and correct for the problem. Solution is neat, well-organized and well-written.	**0 points** Solution not described, or not correct. Calculations and supporting evidence are incorrect or not present. Solution is unorganized and poorly written.