1. Assume X is a random variable representing the outcome of rolling a standard, fair 10-sided die.
   (a) What are all the possible values X could hold?
   (b) What is the expected value of X ($E[X]$)?
   (c) What is the variance of X?
   (d) What is $P(X < 6)$?
   (e) What is $P(X < 11)$?
   (f) What is $P(X = E[X])$?

2. Find the mean, median, mode, and range of the following set of numbers. Does the distribution look familiar?

   7, 5, 6, 7, 6, 2, 4, 3, 5, 2, 7, 5, 9, 9, 7, 12, 5, 5, 9, 8, 9, 4, 7, 10, 7, 3, 8, 9, 5, 4, 7, 7, 2, 11, 8, 5, 9, 8, 8, 11, 3, 6, 4, 7, 8, 8, 12, 6, 5, 7

3. Write a function to calculate the mean of a list of numbers, and a function that would calculate the median of a set of numbers. Feel free to use this function to determine the answers to problem 1.

4. Find the prime factorization of the following numbers
   (a) 456
   (b) 2024
   (c) 2970
   (d) 8910
   (e) 2197

5. Compute the following:
   (a) $501_8 + 427_8$
   (b) $324_7 + 324_7$
   (c) 412_7 - 362_7
   (d) $324_7 \cdot 2_7$
   (e) $324_7 \cdot 10_7$

6. Find a divisibility rule for numbers divisible by 6 in
   (a) Base 5
   (b) Base 6
   (c) Base 7