Questions 1 & 2 refer to the following information:

Based on recent financial data, a major movie studio concludes that their animated features bring in an average net income of $20 million with a standard deviation of $15 million and normal distribution.

1) Based on this information, what is the 99% confidence interval for the net income of their next animated movie?

2) How many of their next 15 animated features would you expect to bring in between $7.376m and $32.624m in net income?

Questions 3 & 4 refer to the following information:

On a peach farm, half the trees hold between 159 and 217 fruit. This is the middle 50% range.

3) What is the expected number of fruit on any given tree?

4) What is the standard deviation for number of fruit on a tree?

5) The standard deviation of home sale prices in a neighborhood is $75,000 and the prices of homes are normally distributed. If the next home to go on the market sells for $350,000, provide a range within which you are 95% confident that the true average sale price for all homes in the neighborhood will fall.

Questions 6 & 7 refer to the following information:

You own 60 shares of company A and 20 shares of company B. In one year's time, the value of one share of company A is expected to be $53 with a standard deviation of $3. In the same timeframe, a single share of company B has an expected value of $84 with a standard deviation of $9. Predictions for both firms' future stock prices are normally distributed and the correlation between the two company's stock prices is -0.17.

6) What is the variance of the value of your portfolio in a year from now?

7) What is the probability that your portfolio will exceed $5,000 in value?

8) The starting center and power forward on a WNBA team average 12.9 and 16.3 points per game, respectively. The center's scoring has a standard deviation of 4.1 points, and the power forward's has a standard deviation of 5.2. Their combined scoring per game has a standard deviation of 6.0. What is the correlation of their scoring?

Questions 9 & 10 refer to the following information:

A husband and wife both leave work at the same time in order to meet at home before going out to dinner. The husband has a 30-minute evening commute with a standard deviation of 8 minutes. The wife has commute of 25 minutes with a standard deviation of 6 minutes. The duration of both commutes is normally distributed.

9) Assuming that the couple's commuting times are independent of one another, what is the probability that the husband arrives home before his wife?

10) If the couple's commuting times actually have a correlation of 0.198 because they share some of the same city traffic, now what is the probability that the husband arrives home before his wife?