1) Under normal conditions, a factory produces 112 parts per hour with a standard deviation of 32. The owner of the factory decides to test whether these historical measurements still hold. If the owner measures production over 16 hours, what is the 95% confidence interval for the average parts produced per hour during this time period if the old conditions still apply?

Questions 2 & 3 refer to the following information:

A vendor at the Pearl Market in Beijing sells men's neckties. Every sale is a negotiation; hence, the selling price of each necktie at this vendor's stall is normally distributed with a mean price of $4.25 and a standard deviation of $1.52.

2) If the vendor sells 100 neckties in one day, what is the probability that the average sales price for the ties sold that day will exceed $4.00?

3) Of the 100 neckties sold, what is the probability that at least ten will sell for $6.75 or more?

4) A retail store conducts a satisfaction survey with 961 randomly-selected customers. If the true dissatisfaction rate of the store's customers is 8.8%, what is the probability that more than 10% of the returned surveys express dissatisfaction?

Questions 5-7 refer to the following information:

A parcel shipping company offers a single, standard-sized (12" x 12" x 6"), flat rate box which its customers may use to send shipments of any weight anywhere in the country for $20. When filled, the average weight of these boxes is 36 ounces, normally distributed, with a standard deviation of 9 ounces. For air transport, the company packs the boxes into 72" x 72" x 72" shipping containers which weigh 60 pounds (1 pound = 16 ounces) when empty. Each shipping container is completely filled with boxes for transport.

5) What is the 98% confidence interval for the average weight of the boxes in one of the shipping containers?

6) What is the 98% confidence interval for the weight of one of the shipping containers when filled?

7) If one of the company's cargo planes holds 9 of these shipping containers, what is the probability that the total weight of all 9 filled containers will exceed 9,315 pounds?

8) A new study (commissioned by an escalator company) claims that, based upon random building inspections, they have evidence to show with 99% certainty that between 60% and 64% of all elevators in U.S. commercial buildings do not meet basic safety standards. How many elevators would they need to have inspected in order for this statement to be accurate?

9) A Fish and Game study catches, measures, and releases 26 brook trout from Lake Superior. The average length of the caught fish is 18 inches with a standard deviation of 2 inches. Assuming that the fish used by the study are a representative sample of the overall population of fish in the lake, what is the 90% confidence interval for the true average length of all brook trout in Lake Superior?

10) You are interested in determining the percentage of voters who would support a possible ballot measure. How many voters' opinions do you need to sample in order to ensure, with 95% confidence, that your prediction of the percentage of voters who would support the measure is accurate to within 3%?