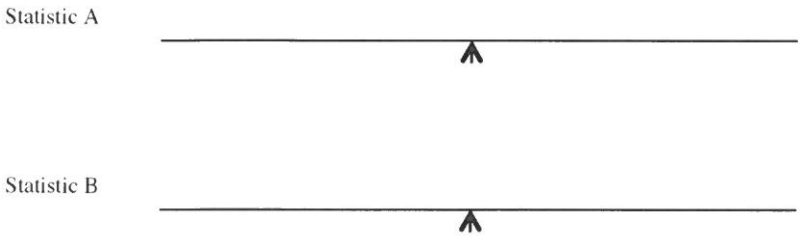
Quiz 7.1B AP Statistics Name:

1. For each description below, identify each underlined number as a parameter or statistic. Use appropriate notation to describe each number, e.g., $\hat{p} = 0.96$.

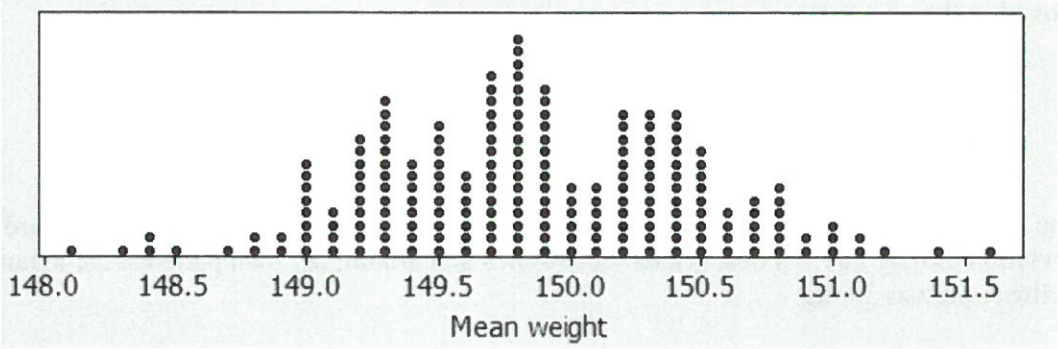
(a) Nationwide, 84% of people are living in the same house they were living in one year ago. The town council of Pleasant Valley surveys 100 residents and find that 75% of them have not moved in the past year.

(b) The mean birthweight of infants in the United States in 2006 was 3.3 kg with a standard deviation of 0.57 kg. An obstetrician determines that among her own patients, the mean birthweight was 3.6 kg.

2. Suppose two different statistics—call them Statistic A and Statistic B—can be used to estimate the same population parameter. Statistic A has lower bias than B, and A also has low variability compared to B. On the two axes below, draw two parallel dotplots showing 8 values of each statistic that are consistent with these characteristics. Assume that the parameter value is at the arrow on the axes.



3. Inexpensive bathroom scales are not consistently accurate. A manufacturer of bathroom scales says that when a 150 pound weight is placed on all the scales produced in his factory, the weight indicated by the scales is Normally distributed with a mean of 150 pounds and a standard deviation of 2 pounds. A consumer advocacy group acquires a randomly-selected group of 12 scales from the manufacturer and weighs a 150 weight on each one. They get a mean weight of 151 pounds, which makes them suspicious about the company's claim. To test this, they use a computer to simulate 200 samples of 12 scales from a population with a mean of 150 pounds and standard deviation 2 pounds. Below is a dotplot of the means from these 200 samples.



(a) What is the population in this situation, and what population parameters have we been given?

(b) The distribution of one sample is described in the opening paragraph. What information have we been given about this sample?

(c) Is the dotplot above a sampling distribution? Explain.

(d) Do you think the manufacturer is being honest about the accuracy of its bathroom scales? Justify your answer.