

Name: \_\_\_\_\_ Hour: \_\_\_\_\_ Date: \_\_\_\_\_

## Lesson 7.1: Day 2: What was the real average for the Chapter 6 test?



How did the Chapter 6 test go? Today, we will be taking a **sample** from a **population**. We will use the average from the **sample** to estimate the average for the **population**.

Yesterday we looked at a very small class of students as the population. In reality there were many students who took the test. Take a random sample of 5 students and record their scores. Then find the mean. Repeat this for a total of 4 times.

Scores: \_\_\_\_\_ Mean: \_\_\_\_\_      Scores: \_\_\_\_\_ Mean: \_\_\_\_\_  
Scores: \_\_\_\_\_ Mean: \_\_\_\_\_      Scores: \_\_\_\_\_ Mean: \_\_\_\_\_

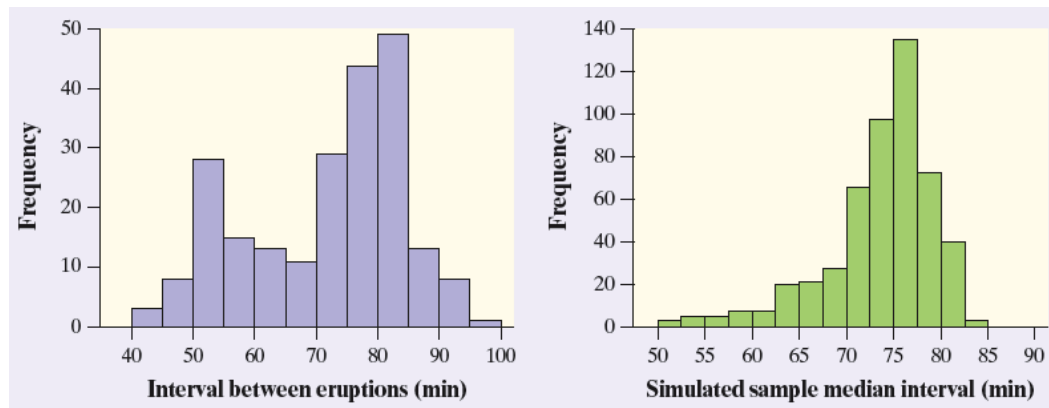
1. Write each mean on a different sticker and put the stickers in the appropriate location on the poster at the front of the room. Copy down the dotplot that is created on the poster.
2. What does each dot on the poster represent?
3. What do you think the true Chapter 6 test average is?
4. A **sampling distribution** shows the means calculated from all of the possible samples of size 5 from the population. Is the above dotplot a sampling distribution? Explain.
5. We took a random sample of 5 midterm scores at Rockford high school and got a mean of 68. Is this convincing evidence that Rockford students did worse than students at our school?

## Lesson 7.1 Day 2– Biased and Unbiased Estimators

Important ideas:

### Check Your Understanding

The histogram on the left shows the interval (in minutes) between eruptions of the Old Faithful geyser for all 222 recorded eruptions during a particular month. For this population, the median is 75 minutes. We used technology to take 500 SRSs of size 10 from the population. The 500 values of the sample median are displayed in the histogram on the right. The mean of these 500 values is 73.5.



1. Is the sample median an unbiased estimator of the population median? Justify your answer.
  
2. Suppose we had taken samples of size 20 instead of size 10. Would the variability of the sampling distribution of the sample median be larger, smaller, or about the same? Justify your answer.
  
3. Describe the shape of the sampling distribution of the sample median.