Name: _____ Hour: _____ Date: _____

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 <u>all</u> 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 test 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 or is it possible the Rockford has the same average?

What is a Sampling Distribution? Day 2

Important ideas:

Check Your Understanding

Pennies made prior to 1982 were made of 95% copper. Because of their copper content, these pennies are worth about $0.023 each. Pennies made after 1982 are only 2.5% copper. Jenna reads online that 13.2% of pennies in circulation are pre-1982 copper pennies. Jenna has a large container of pennies at home. She selects a random sample of 50 pennies from the container and finds that 11 are pre-1982 copper pennies. Does this provide convincing evidence that the proportion of pennies in her container that are pre-1982 copper pennies is greater than 0.132?

1. Identify the population, parameter, sample and statistic.

   Population: _____   Parameter: _____

   Sample: _____   Statistic: _____

2. Does Jenna have some evidence that more than 13.2% of her pennies are pre-1982 copper pennies?

3. Provide two explanations for the evidence described in #2.

We used technology to simulate selecting 100 SRSs of size $n = 50$ from a population of pennies in which 13.2% are pre-1982 copper pennies. The dotplot shows $\hat{p}$ = the sample proportion of copper pennies for each of the 100 samples.

Simulated sample percent of Copper Pennies
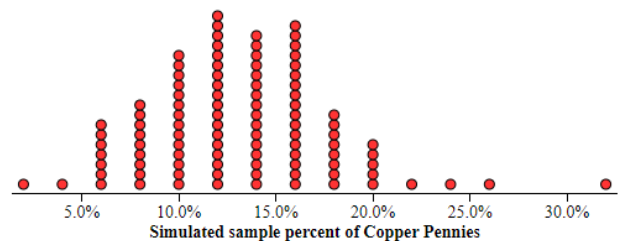
4. There is one dot on the graph at 0.22 (or 22%). Explain what this dot represents.

5. Assuming that 13.2% of pennies in circulation are pre-1982 copper pennies, is it surprising to randomly select 50 pennies for which $\hat{p} = 11/50 = 22\%$ or greater? Justify your answer.

6. Based on your previous answers, is there convincing evidence that more than 13.2% of pennies in Jenna's container are pre-1982 copper pennies? Explain your reasoning.

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