**What was the 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**.

Let’s start with a very simple example. My 5th hour is very small. There were only 4 students who took the chapter 6 test. Their scores were: 60 70 80 90.

1. Make a dotplot of the population distribution.
2. Take a sample of any 2 of the scores. Find the mean of your sample.
3. Figure out all of the possible samples of size 2. Calculate a sample mean for each sample of 2.
4. Make a dotplot using each of the means you found in #3.
5. What is the mean of the population? Label this on the dotplot above.

What is a Sampling Distribution? Day 1

Important ideas:

Check Your Understanding

The James family has five children: Jocelyn (age 8), Alyse (age 8), Michael (age 14), Erica (age 16), and Sarah (age 18).

1. Complete the table by listing the 10 possible samples of size *n* = 2 from this population and calculate the sample mean age for each sample. The first column is completed for you.

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| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Sample*n* = 2 | J, A |  |  |  |  |  |  |  |  |  |
|  | 8 |  |  |  |  |  |  |  |  |  |

1. Create a sampling distribution of the sample mean age of samples of size 2.
2. What is the mean of the sampling distribution of the sample mean? What is the mean of the population?
3. Is the sample mean an unbiased estimator of the population mean? Justify your answer.
4. Suppose we had taken samples of size 3 instead of size 2. Would the variability of the sampling distribution of the sample mean be larger, smaller, or about the same? Justify your answer.