

Answer on Question #62907 – Math – Statistics and Probability

A population consists of the following five values: 2, 2, 4, 4, and 8.

Question

a. List all samples of size 2 from left to right without replacement, and compute the mean of each sample.

Solution

	Sample Values	Sum	Mean
1	2,2	4	2
2	2,4	6	3
3	2,4	6	3
4	2,8	10	5
5	2,4	6	3
6	2,4	6	3
7	2,8	10	5
8	4,4	8	4
9	4,8	12	6
10	4,8	12	6

Question

b. Compute the mean of the distribution of sample means and the population mean. Compare the two values.

Solution

Mean of the distribution of the sample mean is

$$\frac{1}{10}(2 + 3 + 3 + 5 + 3 + 3 + 5 + 4 + 6 + 6) = 4$$

Population mean is

$$\frac{1}{5}(2 + 2 + 4 + 4 + 8) = 4$$

The mean of the distribution of sample means is equal to the population mean.

Question

c. Compare the dispersion in the population with that of the sample means.

Solution

Range of the population is

$$8 - 2 = 6$$

Range of the sample means is

$$6 - 2 = 4$$

The sample means are less dispersed than the population means.