Answer on Question #45168 – Math - Statistics and Probability

Suppose we have a population of size N=5 consisting of the abe: 6,8,10,12,and 14. Take sample of size 2 without replacement and construct sampling distribution of the sample mean.

Solution

List all possible samples of size 2 that can be taken without replacement from this finite population:

{6,8}, {6,10},{6,12},{6,14},{8,10},{8,12},{8,14},{10,12},{10,14},{12,14}.

The mean of each sample in the same order as our list is

 7, 8, 9, 10, 9, 10,11,11,12,13.

These are the 10 possible values of the random variable $\bar{X}$ each occurring with equal probability $\frac{1}{10}$.

Sample Mean	7	8	9	10	11	12	13
Probability	$\frac{1}{10}$	$\frac{1}{10}$	$\frac{2}{10}$	$\frac{2}{10}$	$\frac{2}{10}$	$\frac{1}{10}$	$\frac{1}{10}$