Calculate the variance for the following population. 1,2, 4,6,6,6,8,11,13

Calculate the variance of the following sample. 1,4,8, 9, 9, 10, 14, 18

In probability theory and statistics, the variance is a measure of how far a set of numbers is spread out. It is one of several descriptors of a probability distribution, describing how far the numbers lie from the mean (expected value).

The variance of a set of n equally likely values can be written as

$Var(x) = \frac{1}{n}\sum_{i=1}^{n}(x_i - \mu)^2$

where μ is the expected value, $\mu = \frac{1}{n}\sum_{i=1}^{n} x_i$

1. Population: 1,2, 4,6,6,6,8,11,13
   expected value $\mu = \frac{1}{9}(1 + 2 + 4 + 6 + 6 + 6 + 8 + 11 + 13) = \frac{19}{3} = 6.33$
   variance: $Var(x) = \frac{1}{9}\sum_{i=1}^{9}(x_i - 6.33)^2 = \frac{122}{9} = 13.56$
   Answer: 13.56

2. Sample: 1,4,8, 9, 9, 10, 14, 18
   expected value $\mu = \frac{1}{8}(1 + 4 + 8 + 9 + 9 + 10 + 14 + 18) = \frac{73}{8} = 9.125$
   variance: $Var(x) = \frac{1}{8}\sum_{i=1}^{8}(x_i - 9.125)^2 = 24.61$
   Answer: 24.61