

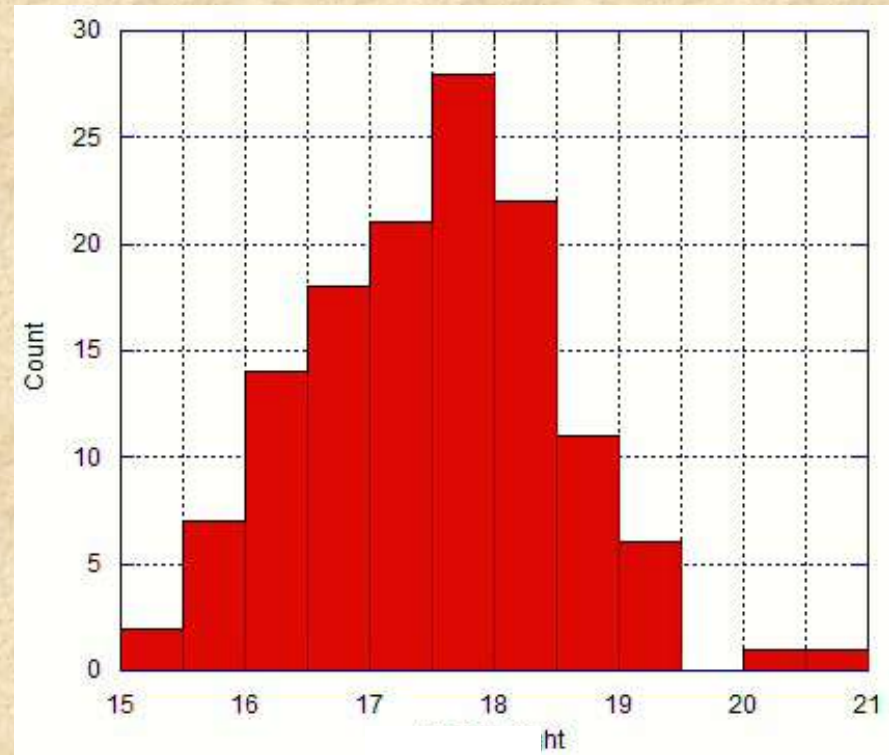
A particular manufacturer produces AA batteries that are designed to last an average of 17 hours with a standard deviation of 0.8 hours. Quality control inspectors select a random sample of 50 batteries during each hour of production, and they drain them under conditions that mimic normal use. The lifetimes (in hours) are recorded and the average lifetime of the sample of 50 is taken.

If the goal of the Quality Control Inspector is to find the true lifetime average for the entire population of all the batteries produced, would this be an appropriate method? Is there a better way?



Using a sample to draw conclusions about a larger population is an example of STATISTICAL INFERENCE.

If we were to take another sample of 50 batteries, the average lifetime would mostly likely be different. The collection of all the different sample statistics of a sample size (n) is called a SAMPLING DISTRIBUTION.



Finding the German Tanks

During World War II, the Allies captured several German tanks. Each tank had a serial number on it (1, 2, 3, 4, ...)

Allied commanders wanted to know how many tanks the Germans actually had in order to allocate their forces appropriately. They sent the serial numbers to mathematicians in Washington, D.C. and asked for an estimate of the total number of German tanks. You are those mathematicians....



