**Control Charts for Attributes**

**Objective:** With given data use an Excel spreadsheet to create a process control chart for the problem. Add the document to your website along with sufficient discussion differentiating the use of control charts for variables vs. attributes. Typical uses of each, as well as the distributions used for each.

The P Chart is graphical representation of the number of defective parts in a given group. The graph serves to assist engineers in determining which subgroup is “out of control”. The P chart is also Binomial Distribution with calculated an Upper Control Limit (UCL) and Lower Control Limits (LCL).

![Figure 1 – P Chart](image)
The NP Chart is similar to the P Chart, but focuses on amount of Defects (per Part). The P Bar is calculated differently than the P bar in Figure 1. The P bar is calculated by the sum of the amount of defective parts if the sum of the sup group size. The NP Chart is also Binomial Distribution with calculated an Upper Control Limit (UCL) and Lower Control Limits (LCL).
The C Chart is used to illustrate the number of defects per part for a specific group. The C Chart includes an Upper Control Limit (UCL) and Lower Control Limits (LCL). However, the LCL is desired to be as close as possible to zero.

**Conclusion:**

1. What probability distribution is the p-chart based on?
   The P Chart is a Binomial Distribution.

2. When is an np chart typically used, rather than a p chart?
   NP Charts are used over P Charts, when the situation calls for a focus on the number of defective parts within a subgroup.