Unit 10 Discussion Example - Initial Post

A venture capitalist has just given you several million dollars to develop your dream product! Explain in detail what this product is and why people would buy it. (Think Steve Jobs and the iPhone - did people really think we needed "smartphones" back in 2007?)

Now it has gone into production and the manager is asking you, as the statistical expert, to use statistical methods to ensure quality control.

1. Describe your product, its use and societal value in at least one paragraph. Humor is encouraged.

2. You will generate a random dataset of N samples of defective proportions by completing the following steps:

      a) You will start with a random number by combining the last 2 digits of the year in which you were born plus the day of the month in which you were born. For example, if you were born October 3, 1990, your number would be 90 + 3 = 93. (If your number exceeds 100, subtract 100 from the total.) Call this X and it will seed your random number generation.
      b) Choose a number of samples, N. N should be between 5 and 10.
      c) In Excel, type =RAND()*X in a cell. Repeat N times. This will generate the proportion of defective products (out of 100) for your N samples.

3. Use Excel QM to create a p-chart for a sample size, 100, and the number of samples, N. Share your p-chart.

4. Share Lower Control Limit (LCL) and Upper Control Limit (UCL).

5. Is the product in control? If not in control, what sample(s) was outside of the limits, ie below LCL or above UCL?

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1. My dream product is a TV that can change between a computer monitor and a TV or video display. Wouldn't it be great to have a computer monitor the size of your TV screen? Oh, also it will be touch sensitive. After all, a computer mouse is a thing of the past!   I will call this product the "Do-It-All-Display"!

2. So, we are now in production mode and the first line of "Do-It-All-Display" products have been made!! I will create an imaginary random dataset to represent the number of defective Displays out of N samples. My year is 1962 and month day is 1. (January, 16, 1962)
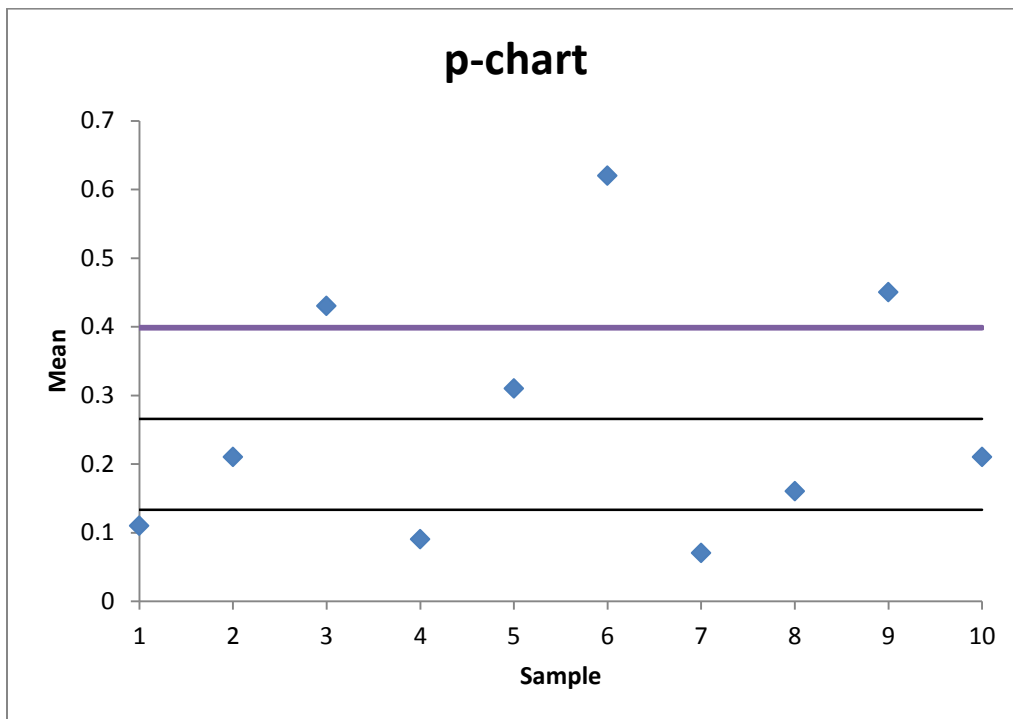   a) X = 62+1 = 63
      b) N = 10

Using RAND()*63, my 10 sample proportions are:

38
49
12
56
7
37
17
53
21
5

3. p-chart:

p-chart

(Scatter chart with y-axis labeled "Mean" from 0 to 0.7, x-axis labeled "Sample" from 1 to 10. A purple horizontal line at ~0.40, with black control limit lines at ~0.27 and ~0.13.)

4. Upper Control Limit = 39.88%

Lower Control Limit = 13.36%

Quality Control		p chart			
Number of samples	10				
Sample size	100				
Data				Results	
	# Defects	% Defects		Total Sample Size	1000
Sample 1	11	11% Below LCL		Total Defects	266.2358
Sample 2	21	21%		Percentage defects	0.266236
Sample 3	43	43% Above UCL		Std dev of p-bar	0.044199
Sample 4	9	9% Below LCL		z value	3
Sample 5	31	31%			
Sample 6	62	62% Above UCL		**Upper Control Limit**	39.88%
Sample 7	7	7% Below LCL		**Center Line**	26.62%
Sample 8	16	16%		**Lower Control Limit**	13.36%
Sample 9	45	45% Above UCL			
Sample 10	21	21%			

5. The process is not in control. There are 3 samples that are above the acceptable % defective. In this case, it is okay that there are 3 samples that have a defective % less than the lower control limit, since less defective products is okay!