

## Lean Six Sigma Module 1 Revision Questions

### 1. Sample Sizes

1. What sample size is required to estimate the mean queue time to within  $\pm 0.1$ m? Standard deviation = 3.4m.
2. What is the sample size for mortgage processing times given a standard deviation of 23 minutes and a requirement to be accurate to  $\pm 5$  minutes.
3. What is the sample size required to establish if people prefer TV3 to TV1? We want the answer to be accurate to  $\pm 3\%$ . Assume that, historically, the two stations have been equally popular.
4. What is the sample size required to estimate the number of people who prefer branch banking to online banking to an accuracy of  $\pm 5\%$ ? This has historically been 10%.

### 2. Baseline calculations

Baseline the following situations to find the sigma level and DPMO (assume a long term drift of 1.5 sigma when converting short term sigma to long term sigma and vice versa):

1. A process has 7 steps with the following first time yields in the long term:  
  
70%, 85%, 90%, 99%, 80%, 95%, 95%
2. Long term unacceptable lead times for resolving transaction disputes = 959 out of 1000 analysed. There are 5 process steps.

3. The office temperature has a mean of 20.2 degrees and a standard deviation of 1.5 degrees measured over 365 days (normal distribution). The specification range is 20 degrees +/- 2.7 degrees.
4. A 12 stage process creates an average of 12 defects for every 150 items processed over a period of 2 years.
5. A process measured over a year has a DPU of 0.11. The following is a description of the process scope:
  1. Inspect incoming documents
  2. Enter customer details in the database
  3. Update customer credit rating
  4. Check for errors
  5. Call customer with response