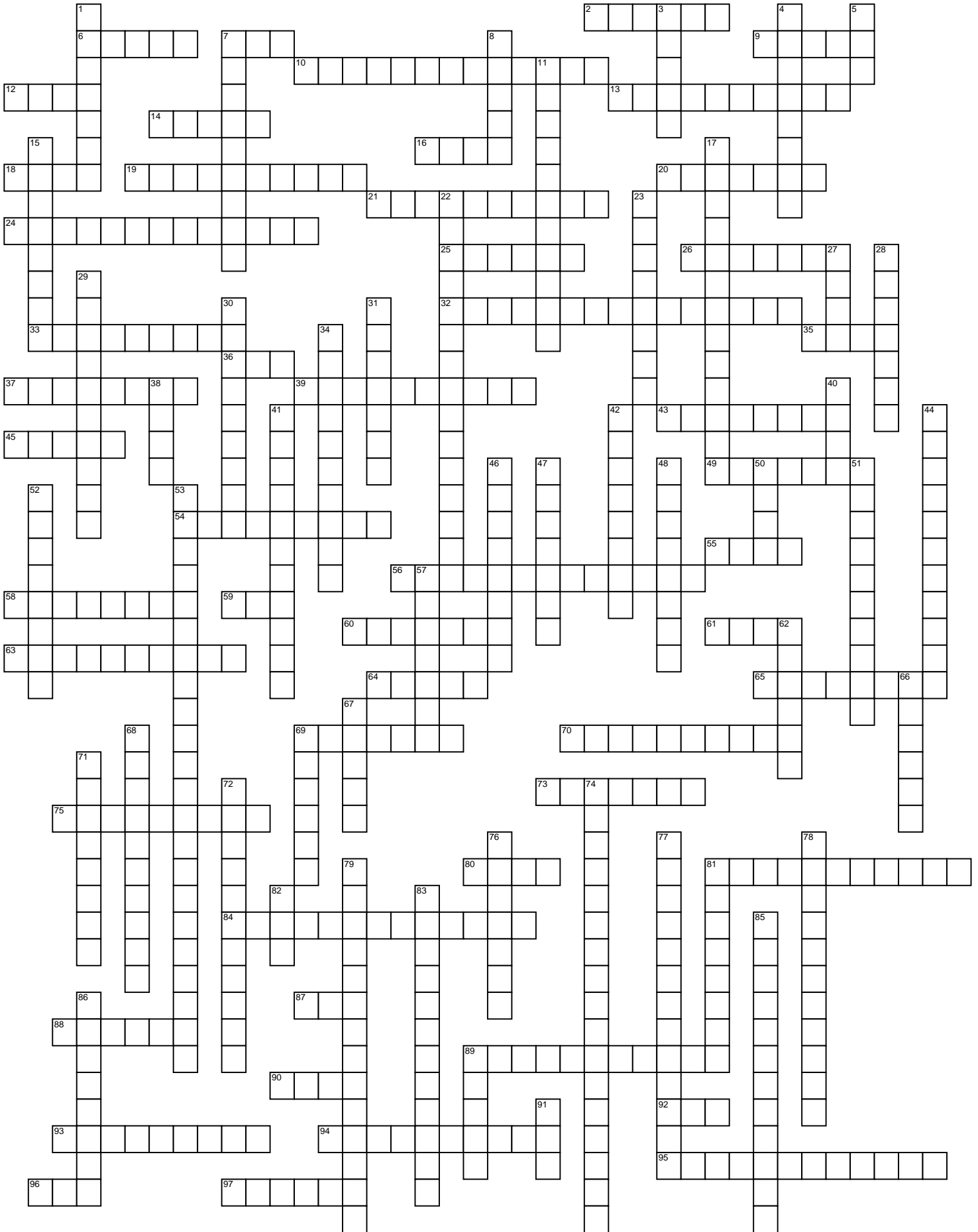


# Six Sigma Black Belt Crossword



**ACROSS**

- 2 A Kappa of zero indicates that the agreement is the same as expected by \_\_\_\_\_
- 6 The \_\_\_\_\_ is the distance between the extreme values of a data set, Highest - Lowest
- 7 A systematic series of tests in which various Input Variables (X's) are directly manipulated and the effects on the Output Variables (Y's) are observed (acronym)
- 9 Continuous variable data is a set of numbers that can potentially take on any \_\_\_\_\_
- 10 A process can be in statistical control and not capable of consistently producing good output within \_\_\_\_\_ limits
- 12 Kaizen can also be referred to as a \_\_\_\_\_ DMAIC
- 13 Xbar-R Charts are a way of \_\_\_\_\_ variables data
- 14 Second Law of Lean Six Sigma: The Law of \_\_\_\_\_
- 16 A structured approach to identifying the areas and ways in which a process or system can fail
- 18 If we measure process performance over time, many processes tend to follow a Normal Distribution or \_\_\_\_\_ shaped curve
- 19 Attribute and Ordinal measurements rely on \_\_\_\_\_ classifications or ratings
- 20 The output of a process
- 21 If a system is measured using an Ordinal Scale then \_\_\_\_\_ Correlation should be used
- 24 Xbar Chart shows changes in the average value of the process and is a \_\_\_\_\_ of the "Longer-Term Variation"
- 25 \_\_\_\_\_ Charts are a type of bar chart in which the horizontal axis represents categories of interest, rather than a continuous scale
- 26 20% of activities cause 80% of delays in a given \_\_\_\_\_
- 32 The variation in the average of the measurements made by different operators using the same measuring instrument when measuring the identical characteristic on the same part
- 33 Recognize, Define, Measure, Analyze, Improve, Control, Pre-Replication, Replication and Realization (RDMAICRR) are the Project \_\_\_\_\_
- 35 Speed + Low Cost + Flexibility is used to describe this
- 36 The I-MR chart (or XmR) is used when you are learning about a process with \_\_\_\_\_ data points and when sampling is very expensive
- 37 Attribute data can be thought of as having two main subsets, Binary Data and \_\_\_\_\_ Variable
- 39 ANOVA separates the total variation in the data into the \_\_\_\_\_ by calculating variances rather than ranges
- 43 Degrees of Freedom equals \_\_\_\_\_ in statistics, we earn a degree of freedom for every data point we collect and spend a degree of freedom for each parameter we estimate
- 45 The term Sigma is a \_\_\_\_\_ letter (s) used to describe variability and is an indicator of how likely errors are to occur
- 49 Analysis of Variance (ANOVA) is a

- statistical technique used to compare whether \_\_\_\_\_ are drawn from populations that have the same mean (average), or whether the population means are significantly different
- 54 R Chart: a look at \_\_\_\_\_, displays changes in the 'within' subgroup dispersion of the process. Often called "Short-Term Variation", must be "in control" before we can build or use the Xbar chart
- 55 The Xbar-R Chart is used with a sampling plan to monitor repetitive processes. The sub-group sizes are from two to \_\_\_\_\_ items
- 56 Compensate, correct, prevent are types of this (2 words)
- 58 This company was the first to advocate Six Sigma in the 1980's
- 59 This indicates capability against a Lower Specification Limit
- 60 A \_\_\_\_\_ hierarchy is a sampling strategy that takes advantage of a hierarchical structure in the process similar to a family tree
- 61 Develop new processes/ products that are capable (acronym)
- 63 The Xbar-R Chart is used with a sampling plan to monitor \_\_\_\_\_ processes. The sub-group sizes are from 2 to 9 items
- 64 Six Sigma is outwardly focused on the \_\_\_\_\_ of the Customer, inwardly focused on using statistical tools on projects that yield high return on investment
- 65 Width, diameter, temperature, weight, time, etc. are examples of \_\_\_\_\_ data
- 69 Our ability to assess the performance of a process we wish to improve is only as good as our ability to \_\_\_\_\_ it
- 70 Attribute/ordinal measurement systems utilize accept/reject criteria or ratings (such as 1 - 5) to determine if an \_\_\_\_\_ level of quality has been attained
- 73 \_\_\_\_\_ data scale contains numbers that have no basis by which they could be arranged in any order, nor can one make out any quantitative difference between them
- 75 The t-distributions comprise a family of distributions with one extra \_\_\_\_\_ ("degrees of freedom" or df, where df = sample size -1)
- 80 Multi-Vari Charts: Displays up to \_\_\_\_\_ sources of variation on one plot
- 81 A measure of linear association between two variables
- 84 The variation between successive measurements of the same part, same characteristic, by the same person using the same equipment (gage)
- 87 Where feasible, the objective for replication is to develop solutions that produce a Solution in a \_\_\_\_\_
- 88 This is calculated by listing the data in ascending order, and then finding the value that is in the middle of the list
- 89 Full factorials examine every possible \_\_\_\_\_ of factors at the levels tested
- 90 The Control Chart family can be broken into two groups based on the type of \_\_\_\_\_ we are charting: Continuous/Variable and Attribute/Discrete
- 92 The distance between the Third Quartile Line and the First Quartile Line of a Boxplot (acronym)
- 93 The number of observations in each interval are counted and their frequency plotted as the height of each

- bar in a \_\_\_\_\_
- 94 We estimate the population parameters with sample \_\_\_\_\_
- 95 \_\_\_\_\_ variation is not random and changes over time. It is a local workforce issue and can be handled by the workers involved in the process if they have the proper tools and operating environment (2 words)
- 96 The probability that a product will pass through the entire process without rework and without any defects (acronym)
- 97 A controlled or uncontrolled input variable

**DOWN**

- 1 \_\_\_\_\_ data scale contains numbers that can be ranked. This scale, however, cannot make an inference about the degree of difference between the numbers
- 3 Factors that are uncontrollable, difficult or too costly to control, or preferably not controlled
- 4 Average Squared Deviation of each data point from the Mean
- 5 The Xbar-S Chart is used with larger sample groups of \_\_\_\_\_ or more items
- 7 The Replication Package is the plan for replication developed by the Pilot Black Belt. The package is a set of \_\_\_\_\_ which transfers the knowledge of the pilot site to the replicating
- 8 \_\_\_\_\_ is an easy method to test how repeatable and reproducible a subjective measurement system is
- 11 This occurs when the effect of one factor on the response depends on the setting of another factor
- 15 The difference between predicted and actual values
- 17 These can tell us: When the process mean has shifted, process variability has changed, special causes are present or not (2 words)
- 22 The manipulation of controllable factors (independent variables) at different levels to see their effect on some response (dependent variable)
- 23 Precision + Accuracy + VOC is used to describe this (2 words)
- 27 The 2-Sample t Test is used to test whether or not the means of two samples are the \_\_\_\_\_
- 28 Six Sigma provides the \_\_\_\_\_ platform for improvement
- 29 Although OFAT may simplify the analysis of results, the experimental \_\_\_\_\_ given up is significant
- 30 Six Sigma Quality Level is said to equate to 3.4 PPM \_\_\_\_\_
- 31 A graph used to visualize both the median and the range of a process and allow for easy graphical comparison of multiple data sets
- 34 One of the most commonly used attribute charts is the P-Chart, which plots \_\_\_\_\_ defective
- 38 The null hypothesis is a statement you are testing in order to determine whether or not that statement is \_\_\_\_\_
- 40 The difference between Repeats and Replicates is the \_\_\_\_\_ of variation each is capturing
- 41 First Law of Lean Six Sigma: The Law of \_\_\_\_\_
- 42 A formal event that the project must pass through at each phase of the project
- 44 \_\_\_\_\_ variation is random, stable, and consistent over time (2

- words)
- 46 A measure of how unusual an X value is
- 47 For \_\_\_\_\_ products and systems, Six Sigma is necessary to produce or perform defect-free more than 90% of the time
- 48 Positional, sequential and \_\_\_\_\_ are the three families of noise
- 50 This is a measurement of central tendency, that is, where the "center" of most of the data is
- 51 Multi-Vari studies determine whether major variation is positional, \_\_\_\_\_, temporal or due to continuous inputs
- 52 According to Deming, eighty-five percent of the reasons for failure to meet customer expectations are related to deficiencies in systems and process...rather than the \_\_\_\_\_
- 53 Poor attribute measurement systems can almost always be traced to poor \_\_\_\_\_ (2 words)
- 57 Data point that is statistically unlikely
- 62 Data \_\_\_\_\_ are a method to represent the value of a variable
- 66 The Xbar-S Chart is used with \_\_\_\_\_ sample groups of 10 or more items
- 67 DOE is a key tool for establishing \_\_\_\_\_ and effect
- 68 The Standard Deviation is the \_\_\_\_\_ of the Variance (2 words)
- 69 Zeroeth Law of Lean Six Sigma: The Law of the \_\_\_\_\_
- 71 A Force-Field \_\_\_\_\_ is a tool to assist in examining the driving and restraining forces of change that will impact a situation
- 72 Repeatability, reproducibility, bias, discrimination, stability: The language of \_\_\_\_\_
- 74 Sometimes the X's are correlated (pairwise and more complex linear relationships), this condition is known as \_\_\_\_\_
- 76 An R Chart must be in \_\_\_\_\_ before we can build or use the Xbar chart
- 77 These are not related to standards! Nor are they specifications. They are a measure of what the process is doing/has done (2 words)
- 78 To take the Pilot solution and implement the clearly defined non-negotiables in every zone
- 79 They do not create data that does not already exist or analyze data (2 words, plural)
- 81 Six Sigma is a top-down program with executive and \_\_\_\_\_ support
- 82 This is the index used when a process has a "two-sided" specification
- 83 A collection of data forms a \_\_\_\_\_
- 85 Long-term sigma is determined by subtracting 1.5 sigma from our short-term sigma calculation to account for the \_\_\_\_\_ that is known to occur over time (2 words)
- 86 Third Law of Lean Six Sigma: The Law of \_\_\_\_\_
- 89 There is an optimum quality level beyond which the \_\_\_\_\_ of quality improvement exceed the expected cost savings from a reduced number of defects (plural)
- 91 Gage R&R and Audit (Sampling Validation) are types of this, the objective is to ensure that data used in the analyze phase is valid and reliable (acronym)

