1. Six sigma definitions:

* Six Sigma is lots of different things because it had different meanings over time, and also because it is now interpreted in increasingly different ways. And Six Sigma is still evolving.
* Six Sigma is a measure of the number of defects in a specific process or operation. Six Sigma is a set of strategies, techniques, and tools for process improvement. It was developed by Motorola in 1981.[1][2] Six Sigma became famous when Jack Welch made it central to his successful business strategy at General Electric in 1995,[3] Today, it is used in many industrial sectors.[4]
* we think about Six Sigma at three different levels:
* As a metric
* As a methodology
* As a management system

Essentially, Six Sigma is all three at the same time.

### The answer is that Six Sigma is lots of things. But following six sigma according to general electric

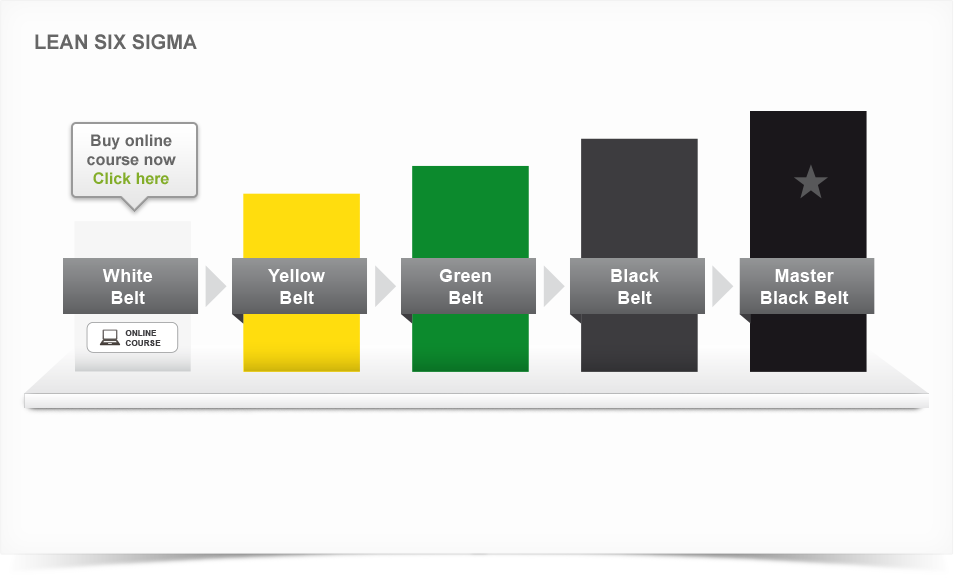
* Six Sigma is a highly disciplined process that helps us focus on developing and delivering near-perfect products and services. Why 'Sigma'? The word is a statistical term that measures how far a given process deviates from perfection. The central idea behind Six Sigma is that if you can measure how many 'defects' you have in a process, you can systematically figure out how to eliminate them and get as close to 'zero defects' as possible. To achieve Six Sigma Quality, a process must produce no more than 3.4 defects per million opportunities. An 'opportunity' is defined as a chance for nonconformance, or not meeting the required specifications. This means we need to be nearly flawless in executing our key processes."
* Six Sigma revolves around a few key concepts.
* Critical to Quality: Attributes most important to the customer
* Defect: Failing to deliver what the customer wants
* Process Capability: What your process can deliver
* Variation: What the customer sees and feels
* Stable Operations: Ensuring consistent, predictable processes to improve what the customer sees and feels
* Design for Six Sigma: Designing to meet customer needs and process capability.

One key innovation of Six Sigma involves the absolute "professionalizing" of quality management functions. Prior to Six Sigma, quality management in practice was largely relegated to the production floor and to [statisticians](http://en.wikipedia.org/wiki/Statistician) in a separate quality department. Formal Six Sigma programs adopt a kind of elite ranking terminology (similar to some martial arts systems, like Kung-Fu and Judo) to define a hierarchy (and special career path) that kicks across all business functions and levels.

Six Sigma identifies several key roles for its successful implementation.[[16]](http://en.wikipedia.org/wiki/Six_Sigma" \l "cite_note-mikel-16)

* *Executive Leadership* includes the CEO and other members of top management. They are responsible for setting up a vision for Six Sigma implementation. They also empower the other role holders with the freedom and resources to explore new ideas for breakthrough improvements.
* *Champions* take responsibility for Six Sigma implementation across the organization in an integrated manner. The Executive Leadership draws them from upper management. Champions also act as mentors to Black Belts.
* *Master Black Belts*, identified by champions, act as in-house coaches on Six Sigma. They devote 100% of their time to Six Sigma. They assist champions and guide Black Belts and Green Belts. Apart from statistical tasks, they spend their time on ensuring consistent application of Six Sigma across various functions and departments.
* *Black Belts* operate under Master Black Belts to apply Six Sigma methodology to specific projects. They devote 100% of their valued time to Six Sigma. They primarily focus on Six Sigma project execution and special leadership with special tasks, whereas Champions and Master Black Belts focus on identifying projects/functions for Six Sigma.
* *Green Belts* are the employees who take up Six Sigma implementation along with their other job responsibilities, operating under the guidance of Black Belts.

Some organizations use additional belt colours, such as *Yellow Belts*, for employees that have basic training in Six Sigma tools and generally participate in projects and "White belts" for those locally trained in the concepts but do not participate in the project team. "Orange belts" are also mentioned to be used for special cases.[[17]](http://en.wikipedia.org/wiki/Six_Sigma" \l "cite_note-HarryMann2011-17)





1. Why Six Sigma is Important

* Most companies operate at Three or Four Sigma. That means the losses they incur as a result of poor quality cost them 10 to 15 percent of their revenue. A company operating at Six Sigma. However, can generate considerable savings. According to one source, the savings as a percentage of revenue vary from 1.2 percent to 4.5 percent [source: ISix Sigma]. That means a company with revenues of $1 million could save up to $45,000, and a company with revenues of $1 billion could save up to $45,000,000.

1. Six Sigma Calculations

* To give such numbers meaning, the engineers at Motorola set up a scale to evaluate the quality of a process based on these defect calculations. At the top of the scale is Six Sigma, which equates to 3.4 DPMO, or 99.9997% defect-free. In other words, if you have a process running at Six Sigma, you've almost eliminated all defects -- it's nearly perfect. Of course, most processes don't run at Six Sigma. They run at Five Sigma, Four Sigma or worse. Here's the full scale to get an appreciation of the numbers involved:
* Five Sigma = 233 DPMO, or 99.98% defect-free
* Four Sigma = 6,210 DPMO, or 99.4% defect-free
* Three Sigma = 66,807 DPMO, or 93.3% defect-free
* Two Sigma = 308,538 DPMO, or 69.1% defect-free
* One Sigma = 691,462 DPMO, or 30.9% defect-free
* Indeed, as Six Sigma has evolved, it has become closely associated with other business strategy methodologies, such as Balanced Scorecard. That means different people at different times will define Six Sigma quite differently. Some will describe it as a metric, or a measurement of defects. Others will describe it as a methodology, a way to solve problems.

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| **Sigma level** | **Sigma (with 1.5σ shift)** | [**DPMO**](http://en.wikipedia.org/wiki/Defects_per_million_opportunities) | **Percent defective** | **Percentage yield** | **Short-term Cpk** | **Long-term Cpk** |
| 1 | -0.5 | 691,462 | 69% | 31% | 0.33 | –0.17 |
| 2 | 0.5 | 308,538 | 31% | 69% | 0.67 | 0.17 |
| 3 | 1.5 | 66,807 | 6.7% | 93.3% | 1.00 | 0.5 |
| 4 | 2.5 | 6,210 | 0.62% | 99.38% | 1.33 | 0.83 |
| 5 | 3.5 | 233 | 0.023% | 99.977% | 1.67 | 1.17 |
| **6** | **4.5** | **3.4** | **0.00034%** | **99.99966%** | **2.00** | **1.5** |
| 7 | 5.5 | 0.019 | 0.0000019% | 99.9999981% | 2.33 | 1.83 |