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# **THE QUALITY IMPROVEMENT ASSOCIATE PRIMER**

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**WITH A LITTLE HELP FROM MY FRIENDS.**

**JOHN LENNON/PAUL McCARTNEY**

## **Acknowledgments**

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**We would appreciate any comments regarding improvement and errata. It is our concern to be accurate.**

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## CQIA Primer Question Contents

<u>Primer Section</u>	<u>Questions</u>			
	<u>% CQIA</u>	<u>Exam</u>	<u>Primer</u>	<u>CD ROM</u>
I. Certification Overview				
II. Quality Concepts	15%	15	60	150
III. Quality Benefits	15%	15	60	150
IV. Team Roles & Responsibilities	6%	6	24	60
V. Team Organization	~10%	~10	40	100
VI. Improvement Techniques	~12%	~12	48	120
VII. Process Improvement	~12%	~12	48	120
VIII. Quality Improvement Tools	~16%	~16	64	160
IX. Customer-Supplier Relations	14%	14	56	140
X. Appendix / Index				
<b>Total</b>	<b>100%</b>	<b>100</b>	<b>400</b>	<b>1000</b>

A full explanation for all questions is available through QCI in a *CQIA Solutions Text*.

If the student feels that additional questions would be of benefit, QCI offers a CD for sale with 600 additional (different) questions. These questions can be taken as a simulated test or in a variety of different formats. The tests are timed and are summarized by category upon completion. Explanations are provided.

### Alignment Comparison B/T the *CQIA Primer* & ASQ's BOK

Primer	II	III	IV	V	VI *	VII *	VIII	IX
ASQ BOK	I. A	I. B & C	II. A & B	II. C	III. B	III. A	III. C	IV./V.

\* Note that Sections VI and VII are flipped relative to the BOK.

**QUALITY IS ABOUT PASSION  
AND PRIDE**

**T. J. PETERS/N. AUSTIN (1986)**

## Quality Concepts

Quality Concepts (Basics) are presented in the following topic areas:

- Quality Defined
- Quality Plan
- Quality Systems
- Organizational Culture
- Employee Involvement
- Systems and Processes
- Variation
- Standardization

### Quality Defined \*

The awareness and pursuit of product and service quality has gained an unprecedented status in American companies. Stated as such, no one is against quality. However, the concept of “quality” is broad and open to varied interpretations. The tough part is defining quality, establishing clear cut quality standards and enforcing adherence to those standards in a consistent manner.

Let's begin with some definitions of quality:

- In most American companies “Beauty is in the eye of the beholder,” so quality is perceived by individuals in their own way.
- Dr. W. Edwards Deming (1986)<sup>4</sup> said that “Quality control does not mean achieving perfection. It means the efficient production of quality that the market expects.”
- Dr. Joseph M. Juran (1992)<sup>15</sup> defines quality as “Fitness for use.”
- Philip Crosby (1979)<sup>3</sup> defines quality as “Conformance to requirements.”
- Dr. Armand V. Feigenbaum (1991)<sup>6</sup> calls quality “The total composite product and service characteristics of marketing, engineering, manufacturing and maintenance through which the product and service in use will meet the expectations of the customer.”
- The American Society for Quality defines quality as “The totality of features and characteristics of a product that bear on its ability to satisfy a given need.”

\* Portions of this Section came from the *CMQ Primer* (Gee, 2019)<sup>8</sup>, *CQT Primer* (Wortman, 2018)<sup>22</sup> and *CQE Primer* (Wortman, 2018)<sup>23</sup>.

## Determinants of Quality

With any quality definition the needs of a customer must be understood and satisfied. Customers expect a product or service to match or exceed their expectations, supplied on-time, at a price they can afford to pay.

Listed below are some of the attributes and descriptors that consumers associate with quality:

### Products

Performance  
Features  
Reliability  
Conformance  
Durability  
Serviceability  
Aesthetics  
Perceived quality

### Services

Reliability  
Responsiveness  
Competence  
Access/Courtesy  
Communication  
Credibility  
Security/Safety  
Knowing the customer

The quality of a product or service should meet high quality standards for:

**Reliability** The product should perform for its rated life. The service should be predictable.

**Serviceability** The product should be repaired or replaced in an easy or convenient way. This is a composite product and service attribute.

**Maintainability** The repair of the product should be easy. Maintainability also impacts service.

**Safety** The product or service should be safe and provide security where applicable.

**Attractiveness** The customer may desire this attribute.

The above factors, broken down into more defined elements, may lead to strategic quality goals and plans. Some of these will be adopted for use as part of the strategic business plan. The organization's performance will be affected by the implementation of these goals.

## Quality Terms and Definitions

The following terms and definitions are pertinent to understanding and communicating quality. They are paraphrased from the *Quality Dictionary* by Tracy Omdahl (2010)<sup>18</sup>, ISO 8402 (1994)<sup>13</sup> and *Glossary and Tables for Statistical Quality Control* by ASQ (1993)<sup>1</sup>.

<b>Attribute</b>	A characteristic or property that is appraised in terms of whether it does or does not exist, with respect to a given requirement.
<b>Audit Standard</b>	An authentic description of essential characteristics of audits which reflects current thought and practice.
<b>Auditing Organization</b>	A unit or function that carries out audits through its employees. This organization may be a department of the auditee, client, or an independent third-party.
<b>Batch</b>	A definite quantity of product or material produced under conditions that are considered uniform.
<b>Capability</b>	The ability to perform designated activities and to achieve results which fulfill specified requirements.
<b>Certification</b>	The authoritative act of documenting compliance with agreed requirements.
<b>Characteristic</b>	A property that helps to differentiate between items of a given sample or population. The difference may be either quantitative (by variables) or qualitative (by attributes).
<b>Compliance</b>	A judgment that a product or service meets the requirements of a specific standard.
<b>Contract</b>	An accepted order. The agreed requirements between a supplier and customer transmitted by any means.
<b>Corrective Action</b>	An action taken to eliminate the causes of an existing nonconformity, defect or other undesirable situation, to prevent recurrence.



## Quality Terms and Definitions (Continued)

<b>Defect</b>	The nonfulfillment of intended usage requirements. The departure or absence of one or more quality characteristics from intended usage requirements.
<b>Dependability</b>	The collective term used to describe the availability of performance and its influencing factors: reliability performance, maintainability performance and maintenance support performance.
<b>Design Review</b>	A formal, documented, comprehensive and systematic examination of a design to evaluate the design requirements and the capability of the design to meet the requirement for quality and to identify problems and propose solutions.
<b>Deviation</b>	Written authorization, granted prior to the manufacture of an item, to depart from a particular performance or design requirement of a contract or specification, for a specific number of units or period of time.
<b>Discrepancy</b>	A failure to meet the specified requirement, supported by evidence. (Other words used interchangeably: non-conformance, deficiency, finding.)
<b>Documentation</b>	The use of documentary evidence; the documents used.
<b>Inspection</b>	The process of measuring, examining, testing, gaging or otherwise comparing a unit with requirements.
<b>100% Inspection</b>	Inspection in which specified characteristics of each unit of product are examined or tested to determine conformance with requirements.
<b>Inspection Level</b>	A feature of a sampling scheme relating the size of the sample to that of the lot. Selection of an inspection level may be based on simplicity, unit inspection cost, inspection destructiveness or lot consistency.
<b>Inspection Record</b>	Recorded data concerning inspection results.
<b>Instructions</b>	Detailed, written, or spoken directions given in regard to what is to be done.

## Quality Terms and Definitions (Continued)

<b>ISO</b>	<b>The International Organization for Standardization.</b>
<b>Item</b>	<b>An object, tangible or intangible, that can be individually described and considered. Same as unit or individual.</b>
<b>Lot</b>	<b>A definite quantity of a product or material accumulated under conditions that are considered uniform for sampling purposes.</b>
<b>Management Review</b>	<b>A formal quality evaluation, by top management, of the status and adequacy of the quality system in relation to quality policy and objectives.</b>
<b>Measuring and Test Equipment</b>	<b>All devices used to measure, gage, test, inspect, diagnose, or otherwise examine materials, supplies, and equipment to determine compliance with technical requirements.</b>
<b>Nonconforming Unit</b>	<b>A unit of product or service containing at least one nonconformity.</b>
<b>Nonconformity</b>	<b>A departure of a quality characteristic from its intended level or state that occurs with a severity sufficient to cause an associated product or service not to meet a specification requirement.</b>
<b>Objective Evidence</b>	<b>Information which can be verified, based on facts and obtained through observation, measurement, or test.</b>
<b>Organization</b>	<b>A company, corporation, firm, enterprise or institution, or part thereof (whether incorporated or not, public or private) that has its own function(s) and administration.</b>
<b>Precision</b>	<b>The closeness of agreement between randomly selected individual measurements or test results.</b>
<b>Preventive Action</b>	<b>An action taken to eliminate the causes of a potential nonconformity, defect or other undesirable situation, to prevent occurrence.</b>