No Sweat Statistics

MWA
Training tools for quality excellence
1-877-284-9941

Pre-Test Introduction

The purpose of the PRE-TEST is to help determine your understanding of statistical concepts and the applications of the concepts to Statistical Process Control.

Ultimately, the PRE-TEST will help uncover your areas of weakness in this subject so that appropriate training can be prescribed. Do not take an undue amount of time trying to "figure out" the correct answer. Typically, you will either know the correct answer, or you won't. If you do not know the correct answer, your natural instinct will be to "guess." In the long run, this will not help you. Simply pass over the question and go on to the next.

Finally, this test is not intended to either qualify or disqualify you for a particular job. It simply provides a benchmark from which training can be prescribed.

If you will be grading your own test, your instructor will provide you with the answer sheet when you're finished.

Instructions

Place an "X" next to the answer that <u>best</u> completes the statement or answers the question.

1. When "identical" parts are being manufactured, they vary from one another. If the variation is normally distributed it:

   _____ a. is natural and is to be expected

   _____ b. indicates the parts do not meet quality standards

   _____ c. indicates an unstable process is developing

2. Probability tells us:

   _____ a. how often something actually occurs

   _____ b. how often something is expected to occur

   _____ c. the number of random samples it takes for an event to occur

3. Unnatural variation is normally the result of:

   _____ a. expected variation in the process

   _____ b. assignable causes

   _____ c. product design choices

4. A histogram is a graph of:

_____ a. the past history of the process

_____ b. machine capability

_____ c. how often events or measurements occur

5. The normal distribution curve:

_____ a. is a picture of how products are distributed from a stable set of conditions.

_____ b. provides accurate information about specification limits

_____ c. allows us to identify causes of variation

6.
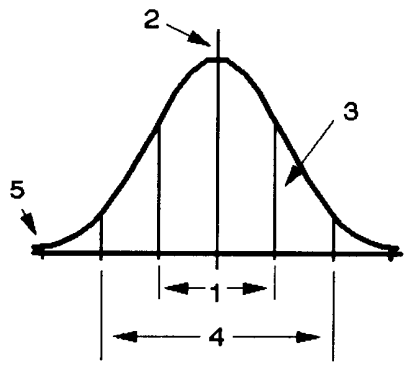
Write the correct number from the diagram above in the space below that describes what is being shown on the normal distribution curve.

_____ a. mean

_____ b. +1 standard deviation

_____ c. -3 standard deviations

_____ d. represents 68.26% of the total values

_____ e. represents 95.5% of the total values

7.   The mean is:

_____ a. the number of times an event occurs

_____ b. shown on an "A" chart

_____ c. the average

8.   The mean of a sample taken from the population:

_____ a. is written as $\overline{X}$

_____ b. is the result of measuring all the individuals

_____ c. determines process capability

9.   Range is:

_____ a. the number of times an event occurs

_____ b. the difference between the highest and lowest values

_____ c. shown on an $\overline{X}$ chart

10.   The variability of a group is described by:

_____ a. standard deviation

_____ b. population totals

_____ c. the value between the first and last piece produced

11.   A "quality" product is one that:

_____ a. is within the specification limits

_____ b. meets the needs and expectations of the customer

_____ c. uses geometric dimensioning and tolerancing

12.   Statistical Process Control:

_____ a. tracks the variability of products or services

_____ b. will solve the majority of quality-related problems

_____ c. is most useful during 100% inspection

13. The normal distribution of averages is:

_____ a. larger than the distribution of individuals

_____ b. narrower than the distribution of individuals

_____ c. the same as the distribution of individuals

14. A product's key quality characteristics are monitored:

_____ a. during final inspection

_____ b. within ± .001

_____ c. using a control chart

15. Control limits on an $\overline{X}$ chart are:

_____ a. the statistical words for blueprint tolerances

_____ b. based upon the distribution of sample averages

_____ c. used to determine process capability

16. Process capability studies:

_____ a. give information about how a process is behaving

_____ b. are most effective in determining whether or not SPC works

_____ c. Require that a single machine be capable of producing at least 2 different parts

17. Values plotted as points on an $\overline{X}$ chart are:

_____ a. individual values

_____ b. specification limits

_____ c. sample values

18. The pattern of points on an $\overline{X}$ chart should show a normal distribution that:

_____ a. closely parallels individual measurements

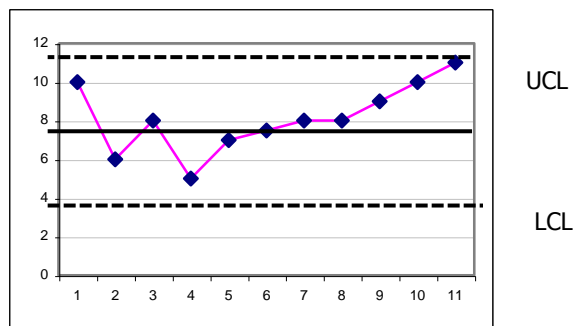_____ b. shows percent defective

_____ c. is within ± 3 sigma

19.
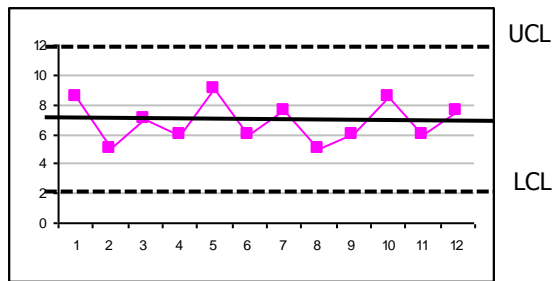
The abovecontrol chart shows a pattern that is:

_____ a. in control

_____ b. out of control

_____ c. producing scrap

20.

The above control chart shows a pattern that is:

_____ a. in control

_____ b. out of control

_____ c. producing scrap

SCORE: