

Statistical Tables are Allowed

Attempt All Questions:

- 1: Answer "true" if the statement is true, otherwise, try to correct the statement:
- a- The thickness of the sheet metal that a company uses in its manufacturing process is an illustration of continuous data.
  - b- The mean of a sample always divides the data into two equal halves- half larger and half smaller in value than itself.
  - c- The mean, the common average, is the most commonly used and understood measure of dispersion.
  - d- A measure of central tendency is a quantitative value that describes how widely the data are dispersed about a central value.
  - e- For any distribution, the sum of the deviations from the mean is equals zero.
  - f- The standard deviation for the set of values 2, 2, 2,... and 2 is 2.
- 2: The life, in years, of a certain type of electrical switch has an exponential distribution with an average life  $\beta = 2$ . If 100 of these switches are installed in different systems, what is the probability that at most 30 fail during the first year?
- 3: A circuit fuse is designed to burn out as the average electric current reaches 20 amperes with standard deviation  $\sigma = 1.5$  amperes. From a lot of 10,000 fuses, 36 are selected at random and tested for their breaking point. What do you conclude about the amperage specification of the lot if the sample reveals a mean of 20.9 amperes and a standard deviation of 1.5 amperes? Use a level of significance of 0.01. Construct the OC curve for your test.
- 4: The following data were collected to determine the relationship between pressure and the corresponding scale reading for the purpose of calibration.

<u>Pressure, <math>x_i</math> (ib/sq.in.)</u>	<u>Scale reading, <math>y_i</math></u>
1.5	4.8
1.8	5.7
2.4	7.0
3.0	8.3
3.5	10.5
3.9	12.4
4.4	13.1
4.8	13.6
5.0	15.3

- (a) Find the equation of the regression line.  
(b) What is the expected value of scale reading when the value of pressure is equal to 5.5 ib/sq.in.

Good Luck;  
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