Quiz 1 for Statistics 301
Elementary Statistical Methods - Spring 2001
Material Covered: Chapter 3 of Workbook and text
Friday, 26th January

This is a 15 minute quiz, worth 5% and marked out of 5 points. The total possible points awarded for each question is given in square brackets at the beginning of each question. Anything that can fit on one side of an $8\frac{1}{2}$ by 11 inch piece of paper may be used as a reference during this quiz. A calculator and appropriate statistical tables may also be used. No other aids are permitted.

Name (please print): ———————————— . **ID Number:** ——————— .

last   first

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1. [2 points] Circle true or false.

(a) True / False The value of the median will always be one of the data points in the data set.

(b) True / False In a sample of size n, the median of the sample is $\frac{n+1}{2}$.

(c) True / False The standard deviation is always less than the variance.

(d) True / False The terms *median, fiftieth percentile* and *second quartile* are represent the same value.

2. Consider the following questions on Chebyshev's Theorem.

(a) [1 point] At least what percent of a set of data will lie within 2.25 standard deviations from the mean?
(circle closest one) **60.5% / 75.9% / 80.2% / 85.6% / 92.4%**.

(b) [1 point] A sample has a mean of 100 and a standard deviation of 15. At least $\frac{8}{9}$ of all data will lie between what two values?
(circle closest one) **100 ± 15 / 100 ± 1.5(15) / 100 ± 2(15) /**
100 ± 2.5(15) / 100 ± 3(15).

(c) [1 point] A sample of size 50 has a mean of 60 and a standard deviation of 10. At least what percent of the data is between 10 and 110?
(circle closest one) **89.55% / 91.90% / 93.75% / 96.00% / 98.75%**.

(1) **False**, **False** (this is the location, not the median itself)
      False (eg. $s = 0.9$ and $s^2 = 0.81$) **True**

(2a) **80.2%**
      $1 - \frac{1}{k^2} = 1 - \frac{1}{2.25^2}$

(2b) $\mathbf{100 \pm 3(15)}$
      since $1 - \frac{1}{k^2} = 1 - \frac{1}{3^2} = \frac{8}{9}$, interval is given by one 3 SDs from mean

(2c) **96.00%**
      since 10 is 5 SDs below mean 60, $1 - \frac{1}{k^2} = 1 - \frac{1}{5^2} = 0.96$