Math 220 : Elementary Statistics — Kane Nashimoto
Exam 1 Solutions
Fall 2006

1. Standardized score.

   (a) The distribution of the data is positively skewed (mean > median).

   (b) $z = \dfrac{x - \bar{x}}{s} = \dfrac{20 - 28}{9} = -0.889$

2. Experimental design.

   (a) The population of all Americans.

   (b) The population of the people in Missouri.

3. Types of data.

   (a) Continuous numerical

   (b) Discrete numerical

   (c) Insufficient information to determine.

   (d) Categorical

4. Bias in scientific studies.

   An example of a study in which responses are not obtained from all participants.

5. Numerical summary of data.

   Note : $\sum x = 349$; $\sum x^2 = 24795$; $n = 5$

   (a) $\bar{x} = \dfrac{\sum x}{n} = \dfrac{349}{5} = 69.800$

   $s = +\sqrt{\dfrac{\sum x^2 - (\sum x)^2/n}{n-1}} = +\sqrt{\dfrac{24795 - (349)^2/5}{5-1}} = 10.426$

   (b) $\bar{x}_{\text{new}} = 74.800$ (5 points higher)

   $s_{\text{new}} = 10.426$ (no change in variability)

6. Graphical summary of data.

   (a) i. minimum = 3.1

   ii. median = 4.0 (18th ordered datum)

   iii. maximum = 4.9

   (b) Repeat each stem digit multiple times (e. g., twice, five times).