Math 220 : Elementary Statistics — Kane Nashimoto
Exam 1 Solutions
Spring 2007

1. Standardized score.

   Adam: $z = \dfrac{x - \bar{x}}{s} = \dfrac{3500 - 3200}{500} = +0.600$

   Bob: $z = \dfrac{x - \bar{x}}{s} = \dfrac{12000 - 10000}{2200} = +0.909$

   $\Rightarrow$ Bob got the better deal.

2. Variability of data.

   (a) V has the larger variance.

   (b) $c = 4$ (adding 1 to each value in U does not change the variability).

3. Bias in scientific studies.

   An example of a study in which participants' responses are influenced by the how they are obtained.

4. Types of data.

   (a) Discrete

   (b) Continuous

   (c) Discrete

   (d) Continuous

5. Observational study.

   No, correlation does not imply causation. In this case, students with good reading comprehension may have read more books.

6. Numerical summary of data.

   Note : $\sum x = 85$; $\sum x^2 = 1251$; $n = 6$

   (a) i. $m = \dfrac{15 + 16}{2} = 15.500$

   ii. $\bar{x} = \dfrac{\sum x}{n} = \dfrac{85}{6} = 14.167$

   iii. $s = +\sqrt{\dfrac{\sum x^2 - (\sum x)^2/n}{n - 1}} = +\sqrt{\dfrac{1251 - (85)^2/6}{6 - 1}} = 3.061$

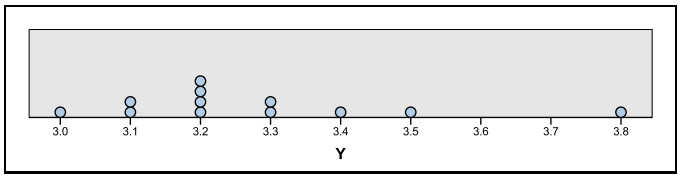
   (b) The distribution of the data is negatively skewed (mean < median).

7. Graphical summary of data.

   (a) Stem-and-leaf display.

Stem	Leaf
3	011
3	222233
3	45
3	
3	8

   (b) Dot plot.



   (c) The distribution of the data is positively skewed.