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

1. Types of data.

   (a) Discrete
   (b) Discrete
   (c) Continuous
   (d) Continuous

2. Standardized score.

   (a) The distribution of the data is negatively skewed (mean < median).
   (b) $z = \dfrac{x - \bar{x}}{s} = \dfrac{60 - 64.8}{12.3} = -0.390$

3. Variability of data.

   (a) $\bar{x}_{\text{new}} = 74.8$ (10 points higher)
   (b) $s_{\text{new}} = 12.3$ (no change in variability)

4. Numerical summary of data.

   Note : $\sum x = 742$; $\sum x^2 = 123070$; $n = 6$

   (a) $m = \dfrac{70 + 144}{2} = 107.000$
   (b) $\bar{x} = \dfrac{\sum x}{n} = \dfrac{742}{6} = 123.667$
   (c) $s^2 = \dfrac{\sum x^2 - (\sum x)^2/n}{n-1} = \dfrac{123070 - (742)^2/6}{6-1} = 6261.867$

5. Experimental design.

   Both the participants and those who record observations are unaware of what treatments are given to which groups.

6. Graphical summary of data.

   (a) Frequency-distribution table

Class interval	Frequency	Relative freq.	Cumulative rel. freq.
12 to <13	1	.100	.100
11 to <12	1	.100	.200
10 to <11	3	.300	.500
9 to <10	3	.300	.800
8 to <9	0	.000	.800
7 to <8	1	.100	.900
6 to <7	1	.100	1.000
Total	10	1.000	—

   (b) Stem-and-leaf display

Stem	Leaf
6	5
7	5
8	
9	055
10	005
11	5
12	0