SOC510 Homework#1: Solution

I. Solve for the following

(a) $\sum_{i=1}^{5} X_i = 6 + 4 + 6 + 0 + 6 = 22$

(b) $\sum_{i=1}^{3} Y_i = 9 + 5 + 3 = 17$

(c) $\sum_{i=3}^{5} X = 3 + 7 + 8 = 12$

(d) $\sum Y = 9 + 5 + 3 + 7 + 8 = 32$

(e) $\sum_{i=1}^{5}(X + Y) = \sum X + \sum Y = 22 + 32 = 54$

(f) $\sum_{i=1}^{5} X_i Y_i = X_1Y_1 + X_2Y_2 + X_3Y_3 + X_4Y_4 + X_5Y_5 = 54 + 20 + 18 + 0 + 48 = 140$

(g) $\sum_{i=1}^{5} X_i^2 = X_1^2 + X_2^2 + X_3^2 + X_4^2 + X_5^2 = 36 + 16 + 36 + 0 + 36 = 124$

(h) $\left(\sum_{i=1}^{5} X_i\right)^2 = 22^2 = 484$

(i) $\sum X = 22$

(j) $\sum Y^2 = 81 + 25 + 9 + 49 + 64 = 228$

II. Solve for the following (where $c = 3$)

(a) $\sum_{i=1}^{5} cX_i = c\sum X = 3(22) = 66$

(b) $\sum cXY = c\sum XY = 3(140) = 420$

(c) $\sum c(X + Y) = c\sum(X + Y) = 3(54) = 162$

(d) $\sum_{i=1}^{5} c = 5(3) = 15$

(e) $\sum_{i=1}^{3}(X + c) = \sum_{i=1}^{3} X + \sum_{i=1}^{3} c = 16 + 9 = 25$

III. Simplify the following (where k is a constant and c is a constant)

$$\frac{\sum_{i=1}^{N} c(kW_i + W_i)}{\sum_{i=1}^{N} W_i} = \frac{c(k+1)\sum_{i=1}^{N} W_i}{\sum_{i=1}^{N} W_i} = c(k+1)$$

IV. Solve for the following questions from the textbook

1.24. (a) categorical (= qualitative); (b) categorical; (c) quantitative; (d) categorical; (e) quantita-

tive
1.27. (b) In order to make a pie chart, we would need to know the total number of deaths in this age group.
1.30. skewed to right. the medium is 2 servings of fruit.
1.33. (a) skewed to right; (b) variable 2; (c) variable 1; (d) variable 3
1.34.