Charles Hwang – CJC 206

1. 1 3 4 6 7

a) $\frac{\Sigma x}{n} = \frac{7 + 6 + 3 + 1 + 4}{5} = \frac{21}{5} = \boxed{4.2}$

b) $\frac{n + 1}{2} = \frac{5 + 1}{2} = \boxed{3^{rd} \text{ position}}$

c) $\boxed{4}$

d) —

e) Data from a sample of five cases — use "n - 1" in denominator

$$\sigma^2 = \frac{\Sigma(x_i - \bar{x})^2}{n - 1} = \frac{(7 - 4.2)^2 + (6 - 4.2)^2 + (3 - 4.2)^2 + (1 - 4.2)^2 + (4 - 4.2)^2}{5 - 1} = \frac{22.8}{4} = \boxed{5.7}$$

f) $\sigma = \sqrt{\sigma^2} = \sqrt{4.56} \approx \boxed{2.14}$

2. 12 12 13 15 16 18 20 21

a) $\frac{\Sigma x}{n} = \frac{20 + 21 + 18 + 16 + 12 + 15 + 12 + 13}{8} = \frac{127}{8} = 15.875 \approx \boxed{15.88}$

b) $\frac{n + 1}{2} = \frac{8 + 1}{2} = \boxed{4.5^{th} \text{ position}}$

c) $\frac{15 + 16}{2} = \frac{31}{2} = \boxed{15.5}$

d) $\boxed{12}$

e) —

f) Data from a sample of eight cases — use "n - 1" in denominator

$$\sigma^2 = \frac{(20-15.88)^2+(21-15.88)^2+(18-15.88)^2+(16-15.88)^2+(12-15.88)^2+(15-15.88)^2+(12-15.88)^2+(13-15.88)^2}{8 - 1} =$$

$$\frac{16.97 + 26.21 + 4.49 + 0.01 + 15.05 + 0.77 + 15.05 + 8.29}{7} = \frac{86.84}{7} = 12.40571429 \approx \boxed{12.41}$$

g) $\sigma = \sqrt{\sigma^2} = \sqrt{12.41} = 3.52217465293 \approx \boxed{3.52}$

3.	1	1	2	3	4	4	5	6	9

a) $\frac{\Sigma x}{n} = \frac{6+1+4+3+4+1+2+9+5}{9} = \frac{35}{9} = 3.88888889 \approx \boxed{3.89}$

b) $\frac{n+1}{2} = \frac{9+1}{2} = \boxed{5^{th} \text{ position}}$

c) 4

d) 1 and 4

e) —

f) Data from a sample of nine cases — use "n - 1" in denominator

$$\sigma^2 = \frac{(6-3.89)^2+(1-3.89)^2+(4-3.89)^2+(3-3.89)^2+(4-3.89)^2+(1-3.89)^2+(2-3.89)^2+(9-3.89)^2+(5-3.89)^2}{9-1} =$$

$$\frac{4.45+8.35+0.01+0.79+0.01+8.35+3.57+26.11+1.23}{8} = \frac{52.87}{8} = 6.60875 \approx \boxed{6.61}$$

g) $\sigma = \sqrt{\sigma^2} = \sqrt{6.61} = 2.57074891812 \approx \boxed{2.57}$

Charles Hwang

CJC 206: Criminal Justice Statistics
Homework 04 problems

Homework 04: Measures of central tendency and dispersion
SHOW YOUR WORK FOR FULL CREDIT!!!

Textbook problems (application questions, not general thought questions)

Question number	Page in book	Points	Notes
1	52	1 point	**Don't do part d. (mean deviation)**
2	52-53	1 point	**Don't do part e. (mean deviation)**
3	53	2 points	**Don't do part e. (mean deviation)**

4. Use the dataset in the excel file on Sakai (Resources – Week 4 – Homework 04 dataset) to answer the following questions:

(a) Provide the five-number summary for women's study times (2 points)

Minimum	60
Q1	120
Median	175
Q3	180
Maximum	360

(b) Provide the five-number summary for men's study times (2 points)

Minimum	0
Q1	60
Median	120
Q3	150
Maximum	300

(c) Describe the distribution of women's study times. Is it skewed? Why or why not? (1 point) (Hint: remember to pay attention to the mean and the median).

The distribution of women's study times is somewhat skewed to the left. This is because the mean (165.17) is somewhat less than the median (175).

(d) Describe the distribution of the men's study times. Is it skewed? Why or why not? (1 point) (Hint: remember to pay attention to the mean and the median).

The distribution of men's study times is slightly skewed to the left. This is because the mean (117.17) is slightly less than the median (120).