Math 153 - Quiz 4

Name key

September 21, 2017

Score _____

Show all work to receive full credit. Supply explanations when necessary. YOU MUST WORK INDIVIDUALLY.

Forty-five full-time PSC students were selected at random and asked how many hours per week they normally spend studying outside of class. The results are shown below.

0	0	0	1	1.5	2	2	2	2
2	2	2.5	3	3	3.5	3.5	4	4
4.5	5	5	6	6	6	6	7	7
7	8	8	8	8	9	9	10	10
10	10	12	14	14	15	20	20	25

1. (2 points) Use your calculator to compute the mean and standard deviation.

$\overline{X} \approx 6.83$

$S \approx 5.58$

2. (1 point) Compute the z-score corresponding to 8.5 hours.

$$Z = \frac{8.5 - 6.83}{5.58} \approx 0.30$$

3. (1 point) Compute the raw score whose z-score is 3.25.

$$X \approx 6.83 + 3.25(5.58)$$

$$\approx 24.97$$

4. (2 points) What is the value at the 60th percentile?

$$\frac{L}{45} = 0.60 \Rightarrow L = 27$$

$$\frac{27^{TH} + 28^{TH}}{2} = \frac{7+7}{2} = 7$$

5. (3 points) Compute the 5-number summary and the cutoff values for outliers.

LOWER HALF HAS 22 ELEMENTS

$\Rightarrow Q_1 = \frac{11^{TH} + 12^{TH}}{2} = \frac{2+2.5}{2} = \underline{2.25}$

MEDIAN = 23RD ELEMENT = $\underline{6}$

UPPER HALF HAS 22 ELEMENTS

$\Rightarrow Q_3 = \frac{34^{TH} + 35^{TH}}{2} = \frac{9+10}{2} = \underline{9.5}$

MIN VALUE = $\underline{0}$

MAX VALUE = $\underline{25}$

$IQR = 9.5 - 2.25 = 7.25$

CUTOFFS...

$Q_1 - 1.5(IQR) = 2.25 - 1.5(7.25) = -8.625$

$Q_3 + 1.5(IQR) = 9.5 + 1.5(7.25) = 20.375$

6. (1 point) Sketch the modified boxplot.