

All questions are one point unless otherwise noted (15 p. on Sakai – 10 p. on hard copy only)

Homework 2 - Chapter 4

Name _____

The table shows the payrolls for two fantasy restaurants, Myburgers and SuperTofu. **(5 points)**

Find the 5-number summaries.

| Statistic | Myburgers | SuperTofu |
|-----------|-----------|-----------|
| Min | | |
| Q1 | | |
| Median | | |
| Q3 | | |
| Max | | |

| Myburgers | SuperTofu |
|-----------|-----------|
| Al | \$123 |
| Boris | \$136 |
| Connie | \$144 |
| Dwight | \$150 |
| Ernie | \$110 |
| Francois | \$131 |
| Gloria | \$140 |
| Horace | \$160 |
| Isaac | \$120 |
| Juan | \$130 |
| Ken | \$110 |
| Latisha | \$115 |
| Maria | \$130 |
| Nate | \$100 |
| Otto | \$120 |
| Pablo | \$146 |
| Quentin | \$117 |
| Rosa | \$129 |
| Sally | \$360 |
| Ted | \$132 |
| Uta | \$107 |

Show your work.

Create parallel boxplots. Label your graph clearly

(3 points)

1. How is the distribution of salaries at Myburgers ?
 - A) symmetric and unimodal B) bimodal C) multimodal

 2. How is the distribution of salaries at SuperTofu?
 - A) symmetric and unimodal B) bimodal C) multimodal

 3. Are the distributions similar or different?
 - A) Different, as they are located at very different levels of the salary axes
 - B) Similar, as the IRQ is the same for both and the outlier is far away
 - C) Different, as one has one outlier and the other one does not
 - D) Similar, as the IRQs are about only \$10 apart and there is only one outlier

 4. Which restaurant pays the higher average salary?
- Show your calculations:
-
- A) Myburgers
 - B) SuperTofu
-
5. Why is the mean salary misleading?
 - A) Because the mean is not reported on the boxplot
 - B) Because the outlier pulls the mean
 - C) Because it is impossible to calculate the mean if there is an outlier
 - D) Because the mean is always misleading with salaries

 6. At which restaurant would you rather work?
 - A) Myburgers
 - B) SuperTofu

7. The midterm scores of the Rutgers Social Psychology class could be summarized by the following (with the midterm granting 50 potential total points):

| Min | Q1 | Median | Q3 | Max |
|------|----|--------|------|------|
| 16.5 | 32 | 39 | 43.5 | 48.5 |

Are the midterm scores:

- A) symmetrical
- B) skewed to the right
- C) skewed to the left
- D) bimodal

8. Would you expect the mean midterm score of all students who took the midterm to be:

- A) higher than the median
- B) lower than the median
- C) equal to the median
- D) Midway between Q1 and Q3

9. The values of the boxplot “fences” are:

Show your calculations:

- A) Lower fence: 16.5 Upper fence: 48.75
- B) Lower fence: 8.25 Upper fence: 24.37
- C) Lower fence: 14.75 Upper fence: 60.75
- D) Lower fence: 11.5 Upper fence: 35

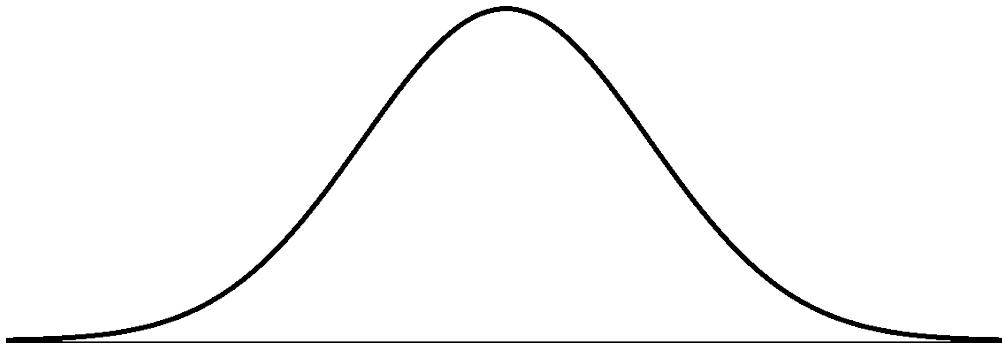
10. Based on the five-number summary, and on the value of the fences are any of the midterm scores outliers?

- A) Yes
- B) No

Homework 2 – Chapter 5

The manager of New Brunswick's Post Office is passionate about Statistics and thinks that a Normal model can help him projecting how many letters will be mailed during a given day. He thinks that a mean of 20,000 letters is reasonable, and so is a standard deviation of 250 letters.

Below, draw and clearly label this model. On the graph, make a mark for the value of the mean and for the values of 1,2,3 standard deviation above and below the mean respectively (**one point**)



If we take someone's temperature through the ear, it will be usually a bit higher than his or her temperature taken through the mouth. We will then consider that a Normal model with a mean of 98.7° F and a s of 0.7° F is fine for body temperatures taken through the ear.

Show your work.

11. A temperature of 97° F may be dangerously low. According to the model, what percent of people have such a potentially dangerous condition?

- A) 0.75%
- B) 75%
- C) 0.075%
- D) 0.0075%

12. Find the interquartile range (hint: first find the z-scores associated with Q1 and Q3, then solve the "z-scores equations" for y).

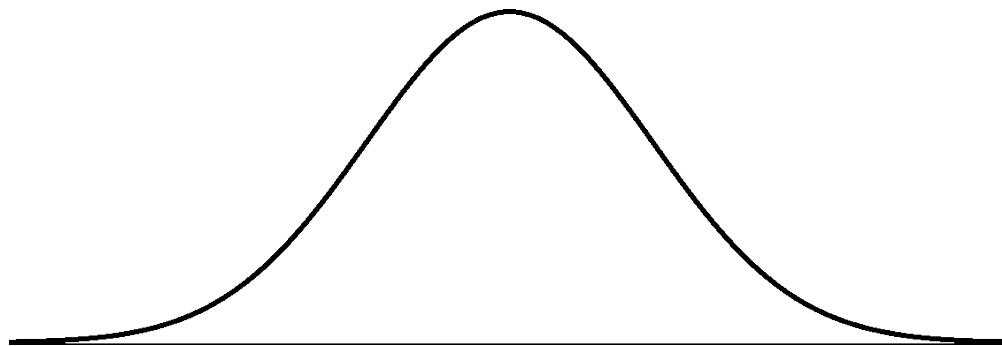
- A) 2.3° F
- B) 0.6° F
- C) 1° F
- D) 3.4° F

13. A new thermometer reports that it is more accurate than the one currently on sale. If the average ear temperature reading remains

the same and the company reports an IQR of 0.5° F, find the standard deviation for this new ear thermometer. (hint: write the formula of the new IQR as a function of s and then solve for s)

- A) 0.52° F $^{\circ}$
- B) 0.25° F $^{\circ}$
- C) 0.30° F $^{\circ}$
- D) 0.37° F $^{\circ}$

At a local animal hospital, the costs incurred for pet care follow a Normal model with a mean of \$80 and a s of \$20. **Draw the model below (one point):**



14. Mike brings in his dog and his final bill amounts to \$125. Is this unusual?

- A) Yes B) No

Explain

15. What is the IQR for the cost of veterinary care at this animal hospital? *Show your work.*

- A) \$45.10
- B) \$32.40
- C) \$37.00
- D) \$26.80