

Where Would You Like to Work?

Here are the weekly payrolls for two fast-food restaurants, Mooseburgers and McTofu:

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

1. Find the Five-Number Summaries.

2. Create parallel boxplots. Label your graphs clearly.

3. Compare the distributions. What does the data tell you?

4. Which restaurant pays the higher average salary?

5. Why is the mean salary misleading?

6. At which restaurant would you rather work? Provide sound statistical justification for your decision.

Standard Deviation by Hand

A science class of thirty students has been divided into groups of five each. After completing their recent unit, they take an individual 20-point quiz. By group, here are their quiz scores:

	Group					
	1	2	3	4	5	6
Quiz Scores (out of 20)	10	8	0	0	0	4
	10	10	10	8	2	6
	10	10	10	10	10	8
	10	10	10	12	18	14
	10	12	20	20	20	18

To compute the standard deviation (by hand) of Group 2...

- find the mean of the data
- find the difference between the mean and the individual data values for each

$$\text{Mean} = 10$$

- square and sum these differences

$$(2)^2 + 0^2 + 0^2 + 0^2 + (-2)^2 = 4 + 4 = 8$$

- divide this sum by one fewer than the size of the data set

$$\frac{8}{5-1} = \frac{8}{4} = 2$$

- take the square root of this value

$$\sqrt{2} = 1.41 = \text{Standard deviation of data}$$

1. Calculate the range, mean and standard deviation for all of the remaining groups.

2. Using these calculations, completely analyze the spread of the scores of the class by groups.

Chap 4 Review Questions

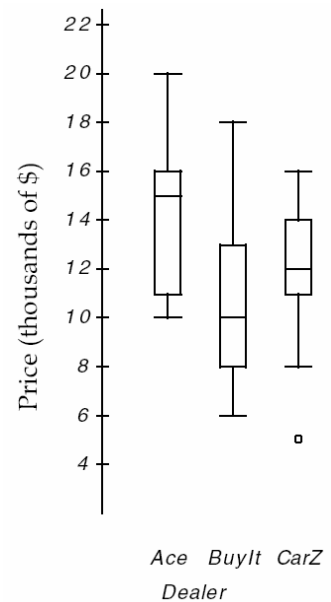
The Five-Number Summary for the weights (in pounds) of fish caught in a bass tournament is:

Min	Q1	Median	Q3	Max
2.3	2.8	3.0	3.3	4.5

1. Would you expect the mean weight of all fish caught to be higher or lower than the median? Explain.
2. You caught three bass weighing 2.3 pounds, 3.9 pounds, and 4.2 pounds. Were any of your fish outliers? Explain.

These boxplots show prices of used cars (in thousands of dollars) advertised for sale at three different car dealers:

3. Which dealer offers the cheapest car, and at what price?
4. Which dealer has the lowest median price, and how much is it?
5. Which dealer has the smallest price range, and what is it?
6. Which dealer's prices have the smallest IQR, and what is it?



7. Which dealer's prices have the largest standard deviation? How do you know?
8. Which dealer generally sells cars cheapest? Explain.

On Monday, a class of students took a big test and the highest score was a 92. The next day a student who had been absent made-up the test, scoring a 100. Indicate whether adding that student's score to the rest of the data made each of these summary statistics increase, decrease, or stay about the same.

9. mean

10. median

11. range

12. IQR

13. standard deviation

An automobile brake and muffler shop reported the repair bill for their customers yesterday...

88	283	312	290	172	154	400	381	346	181
203	118	143	252	227	56	192	292	213	422

14. Sketch a histogram for these data.

15. Below the histogram, sketch a horizontal boxplot.

16. Find the mean and standard deviation of the repair costs.

17. Is it appropriate to use the mean and standard deviation to summarize these data? Explain.

18. Describe the distribution of repair costs.