Name _____ Section _____

Turn in the Results and Discussion Question sections.

Results

Table 3.2: *Randomized sequence of measurements*

Variable	Random Number	Randomized Sequence	Random Number Sorted
One			
One			
One			
One			
One			
One			
One			
One			
One			
One			
Thirds			
Thirds			
Thirds			
Thirds			
Thirds			
Thirds			
Thirds			
Thirds			
Thirds			
Thirds			

Table 3.3: *Measured weights for* ***One*** *and* ***Thirds***

Observation	Variable	Weight (g)
1		
2		
3		
4		
5		
6		
7		
8		
9		
10		
11		
12		
13		
14		
15		
16		
17		
18		
19		
20		

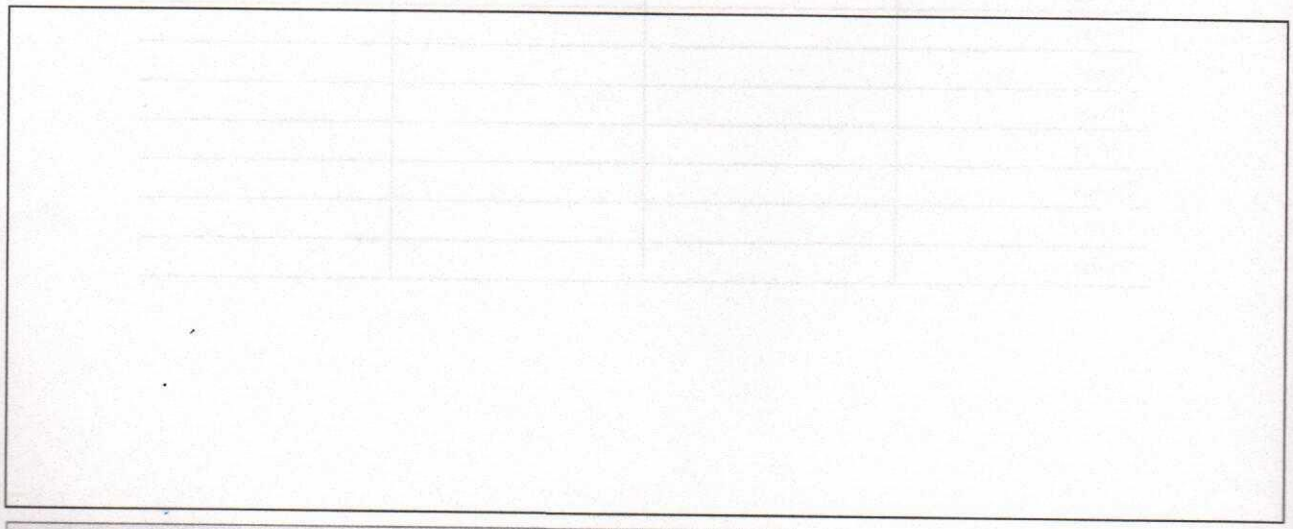

Figure 3-1: *Side-by-side boxplots of* ***One*** *and* ***Thirds***

Name _____ Section _____

Table 3.4: *Table to help calculate standard deviation for* ***One***		
x	$x - \bar{x}$	$(x - \bar{x})^2$
$\Sigma x =$	$\Sigma (x - \bar{x}) =$	$\Sigma (x - \bar{x})^2 =$

$$s = \sqrt{\frac{\Sigma(x - \bar{x})^2}{n - 1}} =$$

Table 3.5: *Table to help calculate standard deviation for* ***Thirds***		
x	$(x - \bar{x})$	$(x - \bar{x})^2$
$\Sigma x =$	$\Sigma (x - \bar{x}) =$	$\Sigma (x - \bar{x})^2 =$

$$s = \sqrt{\frac{\Sigma(x - \bar{x})^2}{n - 1}} =$$

Table 3.6: *Descriptive Statistics*			
Variable	Mean	Median	Standard Deviation
One			
Thirds			

Discussion Questions

1. Based on the side-by-side boxplots for **One** and **Thirds**, which measurement technique tended to result in higher weights overall? Explain your answer by comparing the two boxplots.

2. Based on the side-by-side boxplots for **One** and **Thirds**, which measurement technique resulted in more spread or variability in the weights overall? Explain your answer by comparing the two boxplots.

3. Based on the summary statistics in Table 3.6, which measurement technique tended to result in higher weights overall? Which summary statistic did you look at to make your decision?

4. Based on the summary statistics for in Table 3.6, which measurement technique showed more variability or spread in measured weights? Which summary statistic did you look at to make your decision?

5. Based on the results of this experiment, if you had a recipe that required precise measurements and wanted consistent results would you chose to use the 1 one cup measuring cup or three 1/3 measuring cups? Pretend your answer will be published in *Food Network Magazine*.

6. In this experiment, the order of measurements was randomized. Describe one way in which the experiment may have been affected if all of the one cup measurements were taken first followed by the all of the three-1/3-cup measurements.

Name _____ Section _____

7. A biologist wants to compare the lengths of minnows in two areas of a lake. He goes to the first site and measures a sample of ten minnows in the morning using a tape measure. Later that day, he goes to the second site and measures a second sample of ten minnows. This time, he uses a ruler because the tape measure is misplaced. For these samples, he finds that the mean length at the first site is longer than at the second site. What two factors might have contributed to a greater mean length for the first site other than true differences in length?

8. **Reality Check.** Do you think that it is a good practice for manufacturers of over the counter children's liquid medication to provide a dosing cup in the package? Explain.

REFERENCES

Wu Chang, M. (2010, February 19). Dosing cups for children's liquid medications: Overdoses are common. *Journal Watch Dermatology.* Retrieved from http://dermatology.jwatch.org/cgi/content/full/2010/219/2?eaf