

Show all work for each answer. If you used your calculator, write in what your typed.

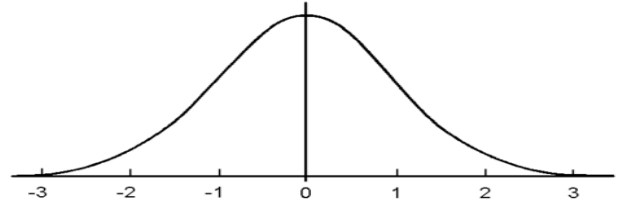
T1-R

Statistics

Test 1 Review

1. The weights of Roma tomatoes are normally distributed with a mean of 74 grams with a standard deviation of 3.3 grams.

- a. Label the bell curve with the appropriate weights at each standard deviation value.
- b. What are the lower and upper boundaries within 3 standard deviations (99.7%)?



- c. What percent of tomatoes weigh...
- i. More than 80 g?
 - ii. Less than 75 g?
 - iii. Between 68 and 78 g?
- d. What are the weights of...
- i. The lightest 15%?
 - ii. The heaviest 30%?
 - iii. The central 25%?

2. A college professor gives test grades as z-scores. Ben got a z-score of 2.20. Jerry got a z-score of 0. Explain what each of their scores mean about the performance of these students. (i.e. Think: what information does this scoring methodology give the students? How did they do, relative to the rest of the class?)
3. A 37-gram mouse and a 1260-lb moose are arguing about their body weights. Each one thinks they are heavier, relative to their respective groups. The mouse's colony has a mean weight of 30 grams and a standard deviation of 3.4 grams. The moose's herd has a mean weight of 910 pounds and a standard deviation of 185 pounds. Who is right? Support your answer with calculations and what they mean.

4. The average monthly temperatures for Milwaukee is shown below.

Milwaukee: 23 30 54 69 63 74 76 80 72 50 40 28

Find the five number summary.

Range: _____

IQR: _____

Outliers (prove it with calculations): _____

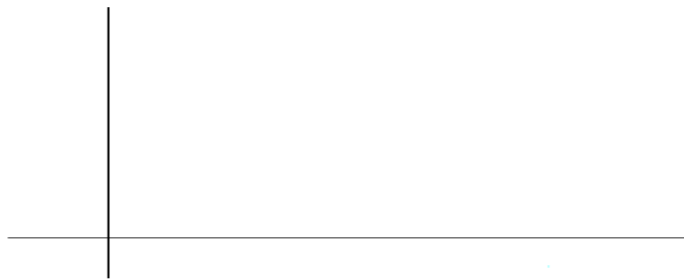
5. A new lunch place is opening in town, and they want RHS students to be a main lunchtime demographic. The manager wants to find out how much the average student-generated lunch bill is in various restaurants around town. A random sample of 36 local lunch orders was collected.

2	3	4	4	5	6	7	7	7
8	9	9	10	11	12	12	13	14
14	15	16	17	18	19	21	22	23
23	25	26	27	28	29	30	49	63

a. Represent your data in the following ways (by hand):

i. Stem-and-leaf plot:

ii. Histogram:



b. Are there any outliers? Should that data be kept in or not? What might explain them?

c. A few months later, the luncheonette is in business. They introduce a “Student Lunch Combo Special” at a discounted price, which they advertise on Instagram. The manager wanted to know the effectiveness of that ad, so after every lunch order was placed, they noted whether or not the Combo was ordered, and customer was asked, “Did you see the ad for the Combo on Instagram?”

i. Is this a good way to gauge whether or not the ad is effective? Explain why or why not.

Data from the “lunch combo survey” is recorded in the **Frequency table**.

ii. Fill in and label the marginal distributions

	Bought Combo	Did Not Buy Combo
Saw the ad	32	33
Did not see the ad	17	18

iii. Make a Relative Frequency Table

	Combo	No Combo	
Ad			
No Ad			

iv. Conditional Relative Frequency Tables:

	Combo	No Combo	
Ad			
No Ad			

	Combo	No Combo	
Ad			
No Ad			

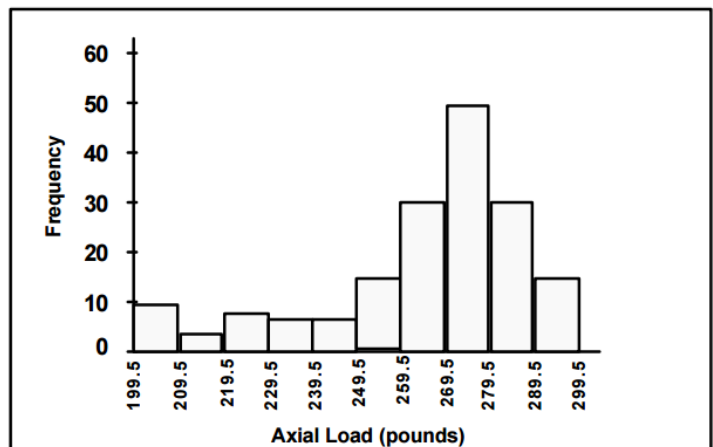
i. What do you think? Is the ad effective? Explain why or why not and support with calculations.

6. Use the distribution below to answer the following questions:



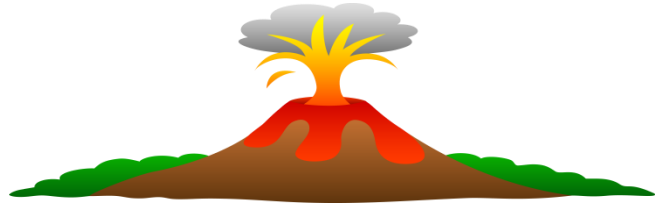
- Is the data normal, uniform, skewed left or right?
- Which is greater? The mean or the median?

7. What is the mean for the histogram?



8. Several years ago, a volcano erupted. Lava is still oozing down its mountainside. The following ordered pairs gives one scientists' prediction of height of the lava, in y -feet, x -years from this year:

(2, 253), (3, 241), (5, 215), (6, 205), (9, 168)



- a. What is the LSR model?
- b. What is the correlation coefficient?
- c. What is the average rate of change for the lava? Describe in words.
- d. What is the altitude of the lava this year?
- e. Predict the height of the lava in 2030.
- f. In what year will the lava finally hit the ocean?
- g. What is the residual for $x = 6$? What does that mean, in real life?
- h. The volcano from which the lava erupted is 1,000 feet high. In what year did the volcano erupt?
9. Use the information to create the LSR line:

$$\bar{x} = 121.67, \quad \bar{y} = 167.5, \quad s_x = 107.165, \quad s_y = 165.39, \quad r = .967$$