

Unit 2 Study Guide

Name: **SOLUTIONS**

2.1a The table below gives the weight in ounces of the popular women's tennis shoes.

Weight (ounces)	Number of shoes
$(9.0+10.0)/2 = 9.5$	2
$10.0-11.0 (10+11)/2$	18
$11.0-12.0 (11+12)/2$	5
$12.0-13.0 (12+13)/2$	2
$13.0-14.0 (13+14)/2$	3

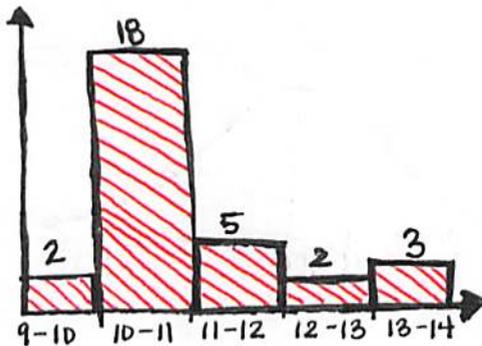
a. What is the range of the data?

$14 - 9 = 5$

b. What are the class marks?

9.5, 10.5, 11.5, 12.5, 13.5

c. Draw a histogram of the data.



2.1b the scores that students earned on a test are listed below: 42, 53, 67, 66, 92, 88, 71, 75, 83, 52, 90, 76, 78, 89, 98, 69, 70, 81

Create a Stem and Leaf Plot of the data:

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4 | 2
5 | 23
6 | 679
7 | 01568
8 | 31389
9 | 028
    
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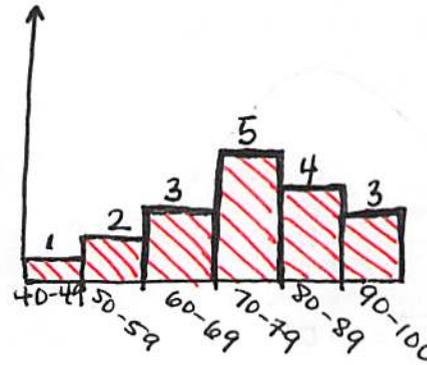
What would be an appropriate class interval for this data?

40-49, 50-59, ... 90-100

What type of graph should we use to display this data?

Histogram

Create a frequency table using your interval from part (a) and then graph the data on the graph from part (b).



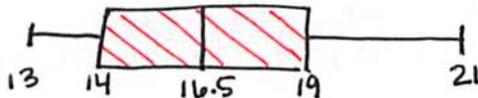
Value	freq.
40-49	1
50-59	2
60-69	3
70-79	5
80-89	4
90-100	3

2.2a Consider the following data:

#	13	14	16	17	19	21
Frequency	2	2	5	7	3	6

- a. Mean: 16.7
- b. Median: 16.5
- c. Mode: 17
- d. Range: 8
- e. Std Dev: 2.73
- f. 1st and 3rd quartile: 14, 19
- g. Interquartile range: 5

h. Box and whisker plot:



i. Best measure of central tendency? Why?

mean: because there are no outliers.

2.2b The number of calories in one serving of twenty different cereals are listed below:

110, 110, 330, 200, 88, 110, 88, 110, 165, 390, 150, 440, 536, 200, 110, 165, 88, 147, 110, 165

a. Draw a stem and leaf plot of the data in this format:

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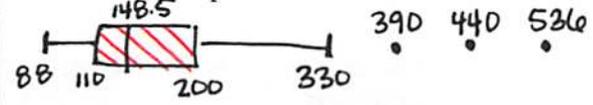
10/0 = 100
      8 888
      11 000000
      15 0
      16 555
      20 00
      14 7
      33 0
    
```

Should be here...

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      39 0
      44 0
      53 6
    
```

- b. Find the 1st and 3rd quartiles: 110, 200
- c. Find the interquartile range of the data. 90
- d. Draw a Box-plot of the data.



e. Best measure of central tendency? Why?
Median because there are outliers.

Unit 2 Study Guide

Name: _____

2.3a The following survey question is an example of what kind of measurement bias? Explain your answer.

Do you consider yourself racist? YES or NO

Social Desirability because people are expected to say no.

2.3b The following survey question is an example of what kind of sampling bias? Explain your answer.

You ask your peers at POB, "Should the drinking age be lowered to 18?" YES or NO

Under-coverage because you are not asking adults.

2.3c Create two survey questions, and the answer choices, about the same topic. One must be biased, one must be unbiased.

Biased: _____

How do you know it is biased? _____

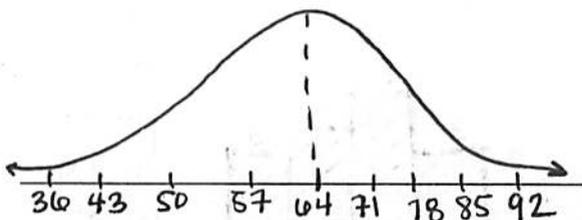
Unbiased: _____

How do you know it is unbiased? _____

Answers will vary

2.4a The mean of normally distributed set of data is 64 and the standard deviation is 7.

a. Draw the normal curve of this data.

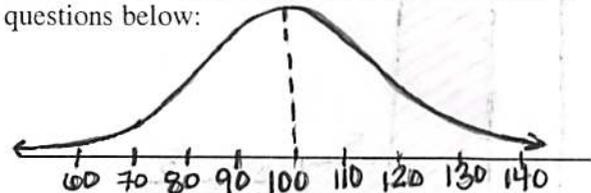


b. What percentage of the data falls in the interval 57-71? $68\% = 1\sigma$

c. What percentage of the data falls in the interval 43-85? $3\sigma = 99.7\%$

d. In a sample of 500 values how many fall in the interval 50-78? $2\sigma = 95.5\% \cdot 500 = 477.5$

2.4b Use the normal curve provided to answer the questions below:



a. What is the mean of the data? $\bar{x} = 100$

b. What is the standard deviation of the data? $\sigma = 10$

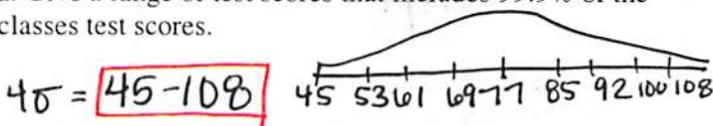
c. What percentage of the data falls in the interval from 77-115? $\text{normalcdf}(77, 115, 100, 10) = 92.2\%$

d. Find the interval about the mean that includes 50% of the data.

Lower $\text{invnorm}(.5 - .25, 100, 10) = 93.3$
 Upper $\text{invnorm}(.5 + .25, 100, 10) = 106.7$

2.5a A teacher determined that the classes' scores on their test were normally distributed. The mean of the test scores was a 77 with a standard deviation of 8 points.

a. Give a range of test scores that includes 99.9% of the classes test scores.



$4\sigma = 45 - 108$

b. Ms. Army earned an 84 on the test. What percentage of the class earned a higher score than her?

$\text{normalcdf}(84, 1099, 77, 8) = 19.1\%$

2.5a A college professor plans to grade a test on a curve. The mean score on the test was 65 and the standard deviation was 7. The professor wants 15% A's, 20% B's, 30% C's, 20% D's, and 15% F's. Assume the grades are normally distributed.

a. What is the lowest score for an A? $\text{invnorm}(1 - .15, 65, 7) = 72.3$

b. Find the lowest passing score. $\text{invnorm}(1 - .85, 65, 7) = 15 + 20 + 30 + 20 = 85\%$

c. What is the interval for the B's? $57.7 - 72.3$

Lower $\text{invnorm}(1 - .35, 65, 7) = 67.7$
 Upper = Lower A = 72.3

