Algebra

Name: Key

14.1 Data Analysis Review Packet

Date: _____

Section 1: Histograms

1. What kind of data do we need to make a histogram?

   Univariate Data

2. What is the definition of the type of data you identified in number 1?

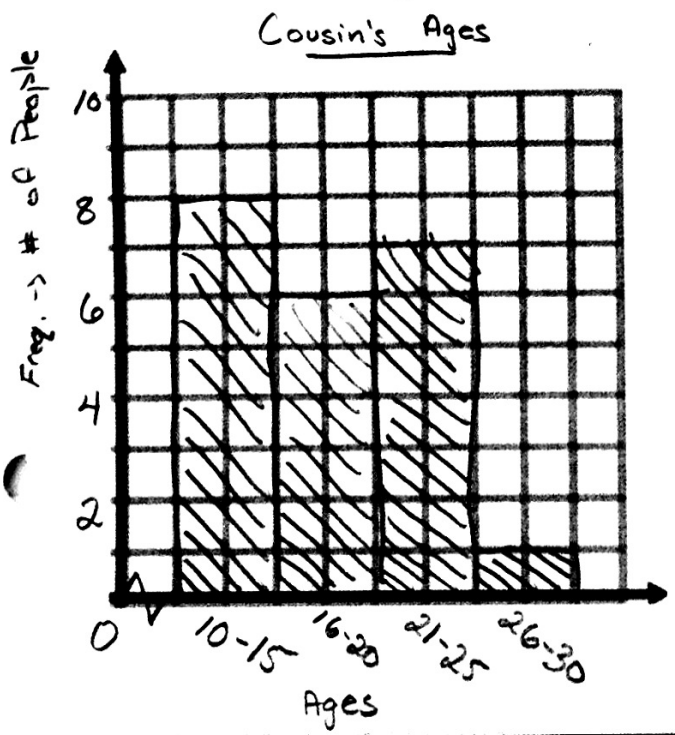
   One Variable Data.

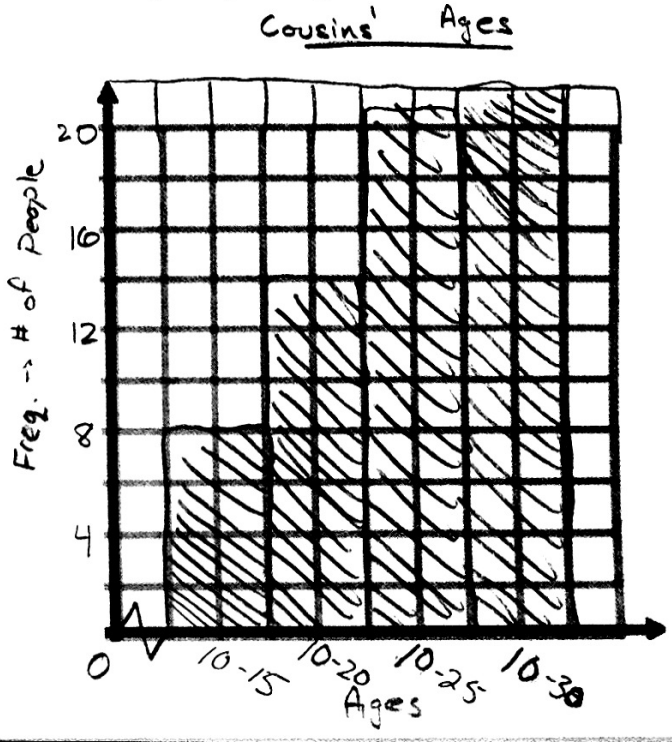
3. The following data set are the ages of all of Miss P's cousins. Make a table of the data including a tally column, a frequency column and a cumulative frequency column.

   27, 22, 10, 21, 25, 13, 13, 20, 23, 13, 16, 10, 23, 15, 17, 16, 23, 12, 12, 22, 18, 19

Ages	Tally	Frequency	Cumulative Freq.
10-15	||| |||	8	8
16-20	|||		6	14
21-25	||| |||	7	21
26-30		1	22

4. Make a histogram of the data above and a cumulative frequency histogram.

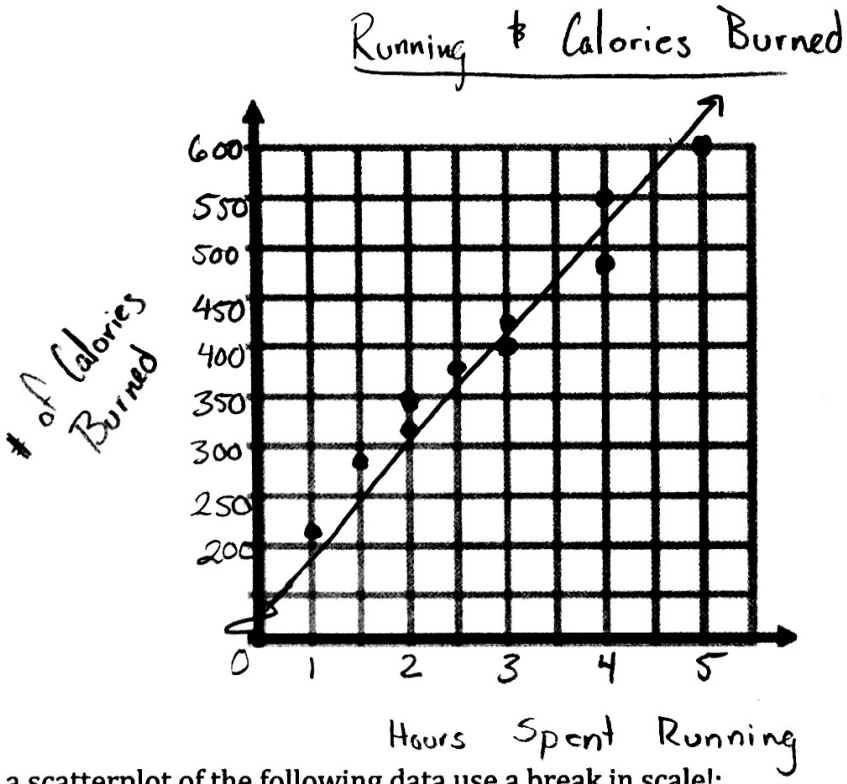




Section 2: Scatterplots

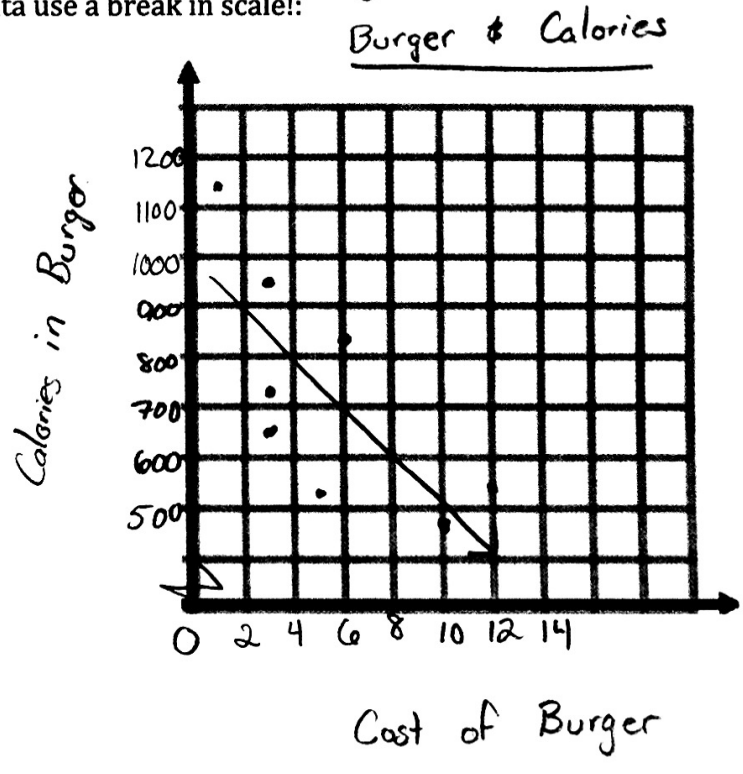
1. Make a scatterplot of the following data:

Hours Spent Running	3	2	1.5	4	1	2.5	3	2	4	5
Calories Burned	400	350	290	550	210	380	420	330	490	600



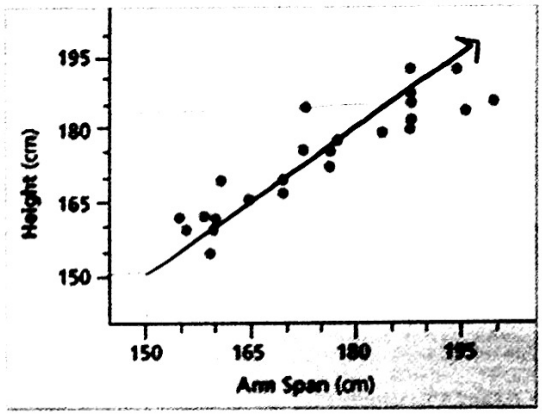
2. Make a scatterplot of the following data use a break in scale!:

Cost of Cheeseburger	Calories in burger
$3.00	720
$1.00	1120
$2.50	650
$5.00	525
$12.00	550
$6.00	835
$2.50	950
$10.00	490



Section 3: Best Fit Line and correlation.

1. Examine the scatterplot to the right. Draw in a line of best fit. What kind of correlation do you see?



Positive Correlation.

2. Write a sentence that describes the the situation in the scatterplot.

The longer a person's arm span is, the taller they most likely are.

3. If someone's arm span is 187.5 cm, approximately how tall are they?

About 185 cm.

4. If a person is 150 cm tall, approximately what is their arm span?

About 150 cm.

5. You are studying a data set on the amount of time students spent on their cell phones during class and test scores. The data set has strong negative correlation. What does that mean? What happens to a student's test score as the time they spend on their cell phone during class increases?

A strong negative correlation indicates as the independent variable increase, the dependent variable will decrease.

Therefore, as students spend more time on their cell phones during class, their test scores will decrease.

Section 4: Measures of Central Tendency

1. Define the following mathematical terms in non-mathematical words:
   a. Mean: Average
   b. Median: Middle #
   c. Mode: # that occurs the most often
   d. Range: Max # - Min #

2. Find the 4 MCTs of the following data set:

{22, 29, 22, 21, 33, 34, 35, 19, 19, 22, 28, 32, 28, 39, 32, 29, 17, 28, 29}

17, 19, 19, 21, 22, 22, 22, 28, 28, 28, 29, 29, 29, 32, 32, 33, 34, 35, 39

Mean = $\frac{512}{19}$ = 26.95

Mode = 22

Median = 28

Range = 22

3. Find the MCT for the following data set:

1.3, 0.6, 1.8, 2.2, 2.3, 0.9, 1.1, 1.0, 1.8, 2.0, 0.7

0.6, 0.7, 0.9, 1.0, 1.1, 1.3, 1.8, 1.8, 2.0, 2.2, 2.3

Mean = $\frac{15.7}{11}$ = 1.43

Mode = 1.8

Median = 1.3

Range = 1.7

Section 5: Shifts and Outliers

1. If the data set from number two in section 4 were to incur a shift of plus 5, how would the MCT be effected?

All +5 Except the range which stays the same.

2. A data set has mean = X and range = Y. If the data set incurs a shift of minus 10, what will the new mean and ranges be?

Mean = $x-10$

range = y

3. If we were to add the number 4 to the data set in number 2 in section 4, what would happen to the MCT ? Write a sentence for each MCT.

Mean = 30.95

Median = 32

Mode = 26

Range = 22

4. The following data set are the scores that Jessie earned on her English quizes. Find the MCT and identify any outliers in the data set. How did these outliers effect the MCT.

89, 94, 68, 92, 90, 88, 96, 83

Outlier = 68

Mean = 87.5

Median = 89.5

Mode = None

Range = 28

Outlier "pulled" the MCT down.

Section 6: 5 Number Summary

1. What are the 5 numbers in the 5 number summary. What do they mean?

Min Q_1 Median Q_3 Max

↑ Middle b/t Min & Median

↑ Middle b/t Median & Max.

3. Find the 5 number summary for the following data set:

9, 7, 2, 12, 8, 14, 11, 10, 5, 6, 14

Min	Q_1	Median	Q_3	Max
2	6	8.5	11	14

4. If a data set has a maximum value of 44, which of the following is a possible value for the third quartile?
   a. 44
   b. 45
   c. 54
   d. 24

5. If a data set has a first quartile value of 23 and a maximum of 28, what is a possible value for the thrid quartile of the data set?

Any # from 23 to 28.

6. Find the 5 number summary for the following data set:

~~100~~, 183, ~~117~~, ~~142~~, ~~134~~, ~~104~~, ~~174~~, ~~138~~, ~~122~~, ~~179~~

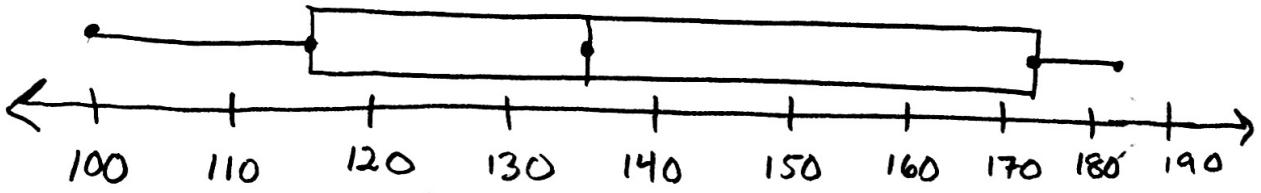
~~100~~, ~~104~~, 117, ~~122~~, ~~134~~ | ~~138~~, ~~142~~, 174, ~~179~~, ~~183~~

Min	Q_1	Median	Q_3	Max
100	117	136	174	183

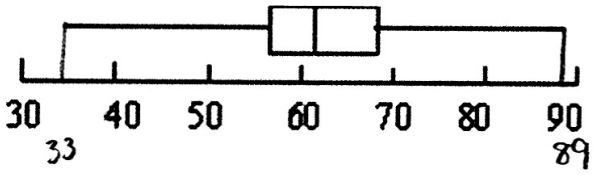
Section 7: Box and Whisker Plots

1. Construct a box and whisker plot for the following data set:
   100, 183, 117, 142, 134, 104, 174, 138, 122, 179

Box & Whisker Plot



2. Study the scatterplot below of the number of calories in 20 different health bars and answer the questions below.



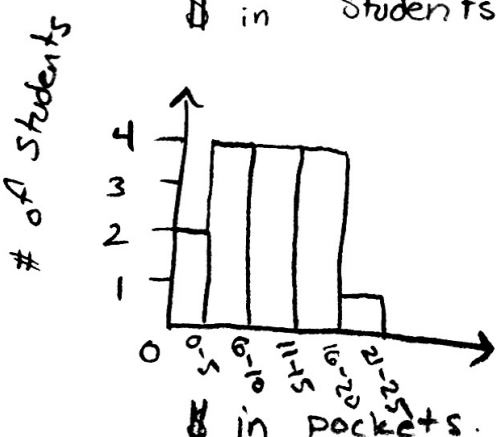
a. Approximately 50 % of the bars have less than 68 calories.
b. Approximately All the bars have more than 33 calories.
c. The max number of caloires in the bars is 89.
d. The range of the number of caloris for the data set is about 56.

3. The following data set is the number of dollars that 15 students had in their pockets. Make a histogram of the data.

7, 20, 25, 12, 0, 18, 14, 7, 9, 12, 17, 10, 4, 15, 20

0-5 || → 2
6-10 |||| → 4
11-15 |||| → 4
16-20 |||| → 4
20-25 | → 1

in Students' Pockets



Section 8: Univariate/Bivariate and Quanitative/Qualitative

Identify if the following data is univariate or bivariate and if it is Quantitative or Qualitiative.

1. Sally took a survey of all of the people in her english class. She asked them how much money they spent on lunch that day.

Univariate & Quantitative

2.

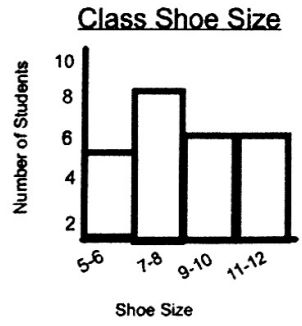
Fav. Color	Frequency
Red	21
Blue	28
Green	37
Purple	25
Pink	18

Univariate & Qualitative

3. Miss P did a survey about how far away students live from school and how long it takes them to get here in the morning.

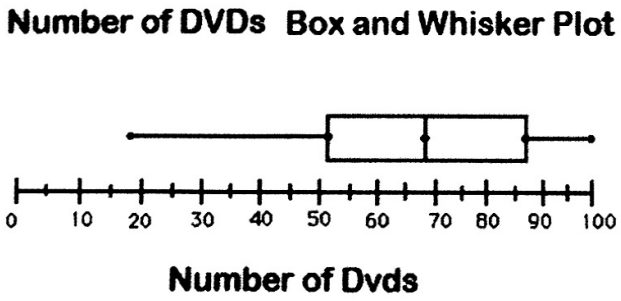
Bivariate & Quantitative.

4.



Univariate &
Quantitative

5.



Univariate &
Quantitative.

Setion 9: Percentiles

1. The following are the distances (in feet) that students could jump straight into the air.

~~5.5, 7.2, 5.0, 6.1, 3.6, 4.5, 6.3, 7.0, 6.8, 6.3, 5.1~~

11 total 3.6, 4.5, 5.0, 5.1, 5.5, 6.1, 6.3, 6.3, 6.8, 7.0, 7.2

a. If Mike jumped 6.8 feet, what percentile would he jump in?

$\frac{8}{11} = 0.73$ 73^{rd} percentile

b. If Jessica jumped in the 100th percentile, how high did she jump?

7.2 ft

c. If Steve jumped in the 36th percentile, how far did he jump?

5.1 ft

2. Last January, 8,331 teenagers took the New York State Integrated Algebra Regents Exam. The exam is out of 100 points. 2,719 teenagers, pased the exam with at least a 85. If you took the test and scored a 85, what percentile would you score in?

$$\begin{array}{r} 8,331 \\ -\ 2,719 \\ \hline 5,612 \end{array}$$ $\frac{5612}{8331} = 67\%$ 67^{th} percentile.

3. We measured how far 37 people can long jump. The maximum jump was 48 inches. If only 8 people jumped 20 inches or high, in what percentile would a jump of 20 inches fall?

$$\begin{array}{r} 37 \\ -\ 8 \\ \hline 29 \end{array}$$ $\frac{29}{37} = 78\%$ 78^{th} percentile.

Section 10: Bias

1. You are doing a survey about animal rights.

   Consider the following:

   a. Asking every other person who comes out of a library.
   b. Asking " Do you think animal rights are imporant?"
   c. Asking every other person who comes out a pets store.
   d. Asking " don't you think baby animals are the cutest?!"

   i. Which of the previous options is an example of a biased survey method?

   C

   ii. Which of the previous options is an example of a biased survey question?

   D

H

2. You are doing a survey about peer tutoring.
   a. Give an example of an unbiased survey method.

   b. Give an example of a biased survey method.

   c. Give an example of an unbiased survey question

   d. Give an example of a biased survey question