Data Collection

Wrist Circumference

Class Data:

Find the five number summary and the IQR for wrist circumference. Identify any outliers.

On Desmos – place the data in a new table [the examples below will assume the data is in x_1]

Quartile 1 - On an empty line, type quantile(x_1 , .25)

Quartile 3 - On an empty line, type quantile(x_1 , .75)

Spread

A measure of center (mean, median) alone can sometimes be misleading. We need to know how spread out the data is, or the variability of the observations. For that reason, when we describe a distribution, we must also address its spread.

Q_1 is the first quartile. It is the median of the bottom half of the observations.
25% of observations are less than this number and 75% are above this number.

Q_2 is the median.
50% of observations are less than this number and 50% are above this number.

Q_3 is the third quartile. It is the median of the top half of the observations.
75% of observations are less than this number and 25% are above this number.

IQR The Interquartile Range (IQR) is the range of the middle 50% of the data: $Q_3 - Q_1$

Finding the quartiles and IQR by hand:

1. Find the median. This splits the data into a lower half and an upper half. The median is the second Quartile.
2. Perform the steps for finding a median on the lower half of the data. This is the First Quartile.
3. Perform the steps for finding a median on the upper half of the data. This is the Third Quartile.
4. To find the IQR, subtract $Q_3 - Q_1$

Five Number summary describes: Min Q1 Median Q3 Max

Outliers

Outliers are observations that are so far above or below the majority of the data that they do not fit. Here is the process to find the cutoff values.

1. find the IQR
2. multiple the IQR by 1.5
3. Subtract the new number from Q_1 Any data value below this is considered an outlier (too low)
4. Add the value from step 2 to Q_3 Any data value above this is considered an outlier (too high)

Cutoff Value Formulas: $Q_1 - 1.5(IQR)$ $Q_3 + 1.5(IQR)$

HW 6 - IXL KK3 plus the Supplemental Problems below:

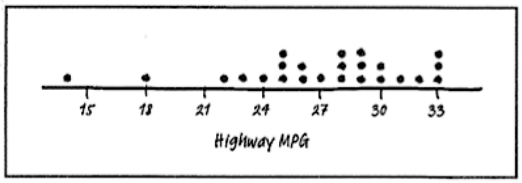
Q1

The table below displays the EPA estimates of highway gas mileage in miles per gallon (mpg) for a sample of 24 model year 2009 midsize cars.

Model	Mpg	Model	Mpg	Model	Mpg
Acura RL	22	Dodge Avenger	30	Mercury Milan	29
Audi A6 Quattro	23	Hyundai Elantra	33	Mitsubishi Galant	27
Bentley Arnage	14	Jaguar XF	25	Nissan Maxima	26
BMW 528I	28	Kia Optima	32	Rolls Royce Phantom	18
Buick Lacrosse	28	Lexus GS 350	26	Saturn Aura	33
Cadillac CTS	25	Lincoln MKZ	28	Toyota Camry	31
Chevrolet Malibu	33	Mazda 6	29	Volkswagen Passat	29
Chrysler Sebring	30	Mercedes-Benz E350	24	Volvo S80	25

Source: 2009 Fuel Economy Guide, from the U.S. Environmental Protection Agency's Web site at www.fueleconomy.gov.

Here is a dotplot of the data:



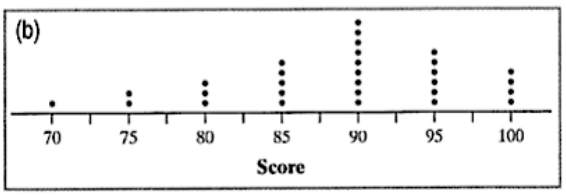
Find the following statistics for the mpg:

Five number summary:

Range:

Interquartile range:

Q2: the dot plot at the right shows the percents for the students in Mr. Jay's class on the last quiz. Find the following:



Five number summary:

Range:

Interquartile range:

Mean:

Q3: the stem and leaf plot at the right shows the number of shoes for female students. Find the following:

1	33359
2	233466
3	0148
4	9
5	0017

Key: 4|9 represents a female student who reported having 49 pairs of shoes.

Five number summary:

Range:

Interquartile range:

Mean:

Q4: The double sided stem and leaf plot at the right shows the number of shoes for male and female students.

Females		Males
	0	4
	0	555677778
333	1	0000124
95	1	
4332	2	2
66	2	
410	3	
8	3	58
	4	
9	4	
100	5	
7	5	

Key: 2|2 represents a male student with 22 pairs of shoes.

FIGURE 1.15 Back-to-back stemplot comparing numbers of pairs of shoes for male and female students at a school.

Find the following for the females:

Five number summary:

Range:

Interquartile range:

Mean:

Find the following for the males:

Five number summary:

Range:

Interquartile range:

Mean:

Who has more shoes? Back it up…

Which group is has lower variability? Back it up…

Q5

79. **Quiz grades** Joey's first 14 quiz grades in a marking period were

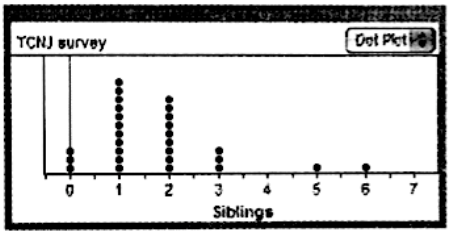
86	84	91	75	78	80	74
87	76	96	82	90	98	93

Use the data in the list to describe the median and mean for the data set.

Q6

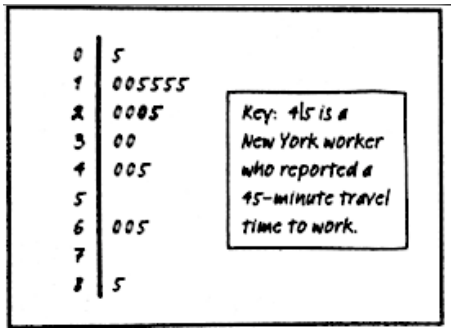
CHECK YOUR UNDERSTANDING

The Fathom dotplot displays data on the number of siblings reported by each student in a statistics class.



1. Describe the shape of the distribution.
2. Describe the center of the distribution.
3. Describe the spread of the distribution.
4. Identify any potential outliers.

Q7



Describe the distribution of the boxplot above.