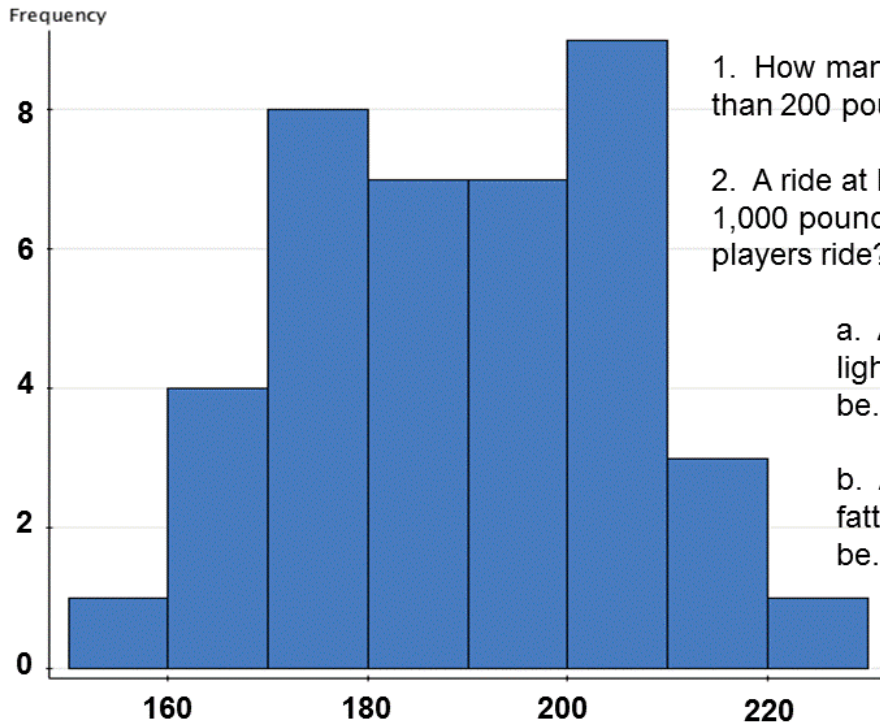


Histogram for Weight of 1970s Los Angeles Angels Baseball Team



1. How many players weigh more than 200 pounds?

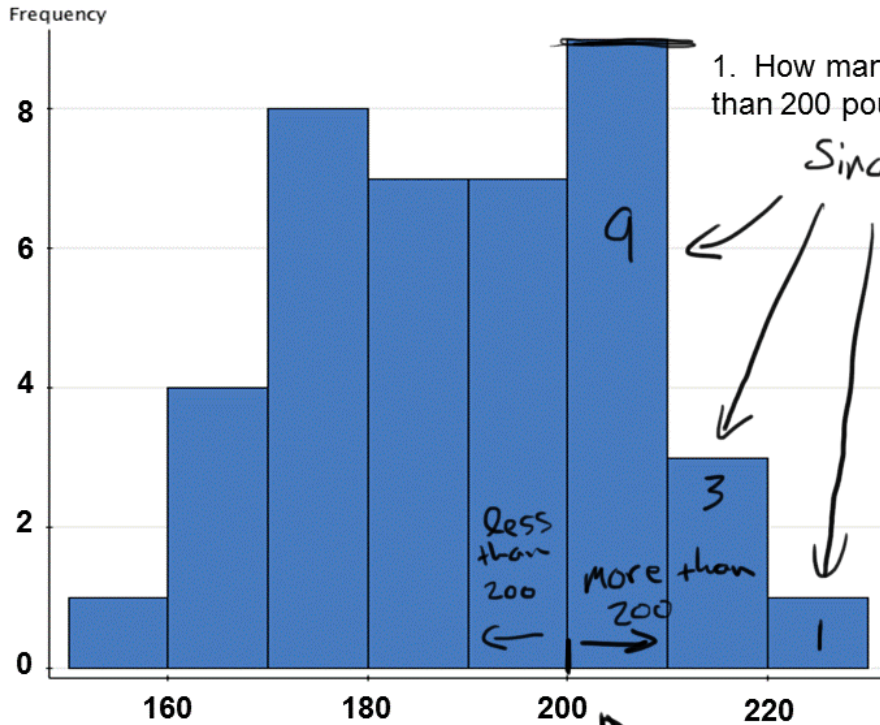
2. A ride at Disney can only support 1,000 pounds. Can the biggest 4 players ride?

a. Assume they are the lightest they are allowed to be.

b. Assume they are the fattest they are allowed to be.

Warm UP (5 min)

Histogram for Weight of 1970s Los Angeles Angels Baseball Team



1. How many players weigh more than 200 pounds?

Since these are all larger than 200

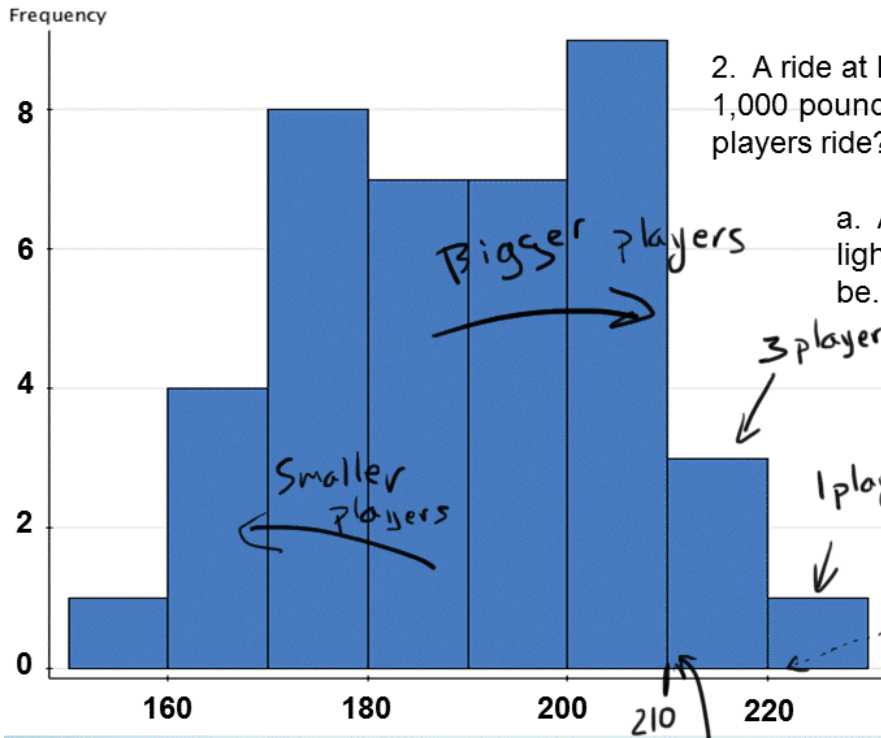
We have to count up the people in those columns.

$$9 + 3 + 1 = 13$$

Warm UP (5 min)

The pounds are on the bottom.

Histogram for Weight of 1970s Los Angeles Angels Baseball Team



2. A ride at Disney can only support 1,000 pounds. Can the biggest 4 players ride?

a. Assume they are the lightest they are allowed to be.

3 players

3+1=4 biggest players

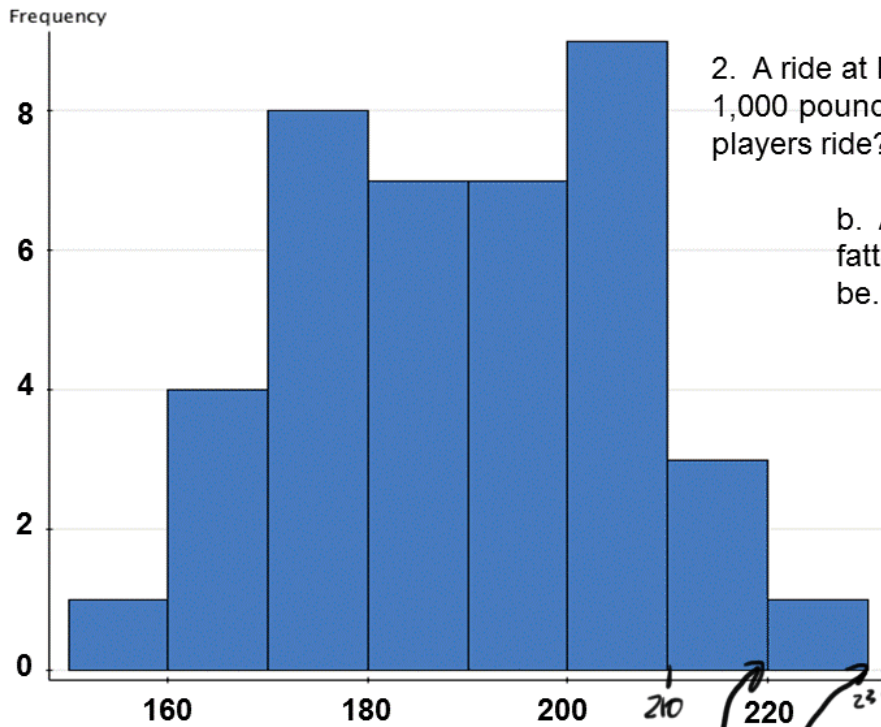
1 player

$$\begin{array}{r} 210 \\ 210 \\ 210 \\ 220 \\ \hline 850 \end{array}$$

If the players are on a diet they could all be 210

Warm UP (5 min)

Histogram for Weight of 1970s Los Angeles Angels Baseball Team



2. A ride at Disney can only support 1,000 pounds. Can the biggest 4 players ride?

b. Assume they are the fattest they are allowed to be.

$$\begin{array}{r} 220 \\ 220 \\ 220 \\ + 230 \\ \hline 890 \end{array}$$

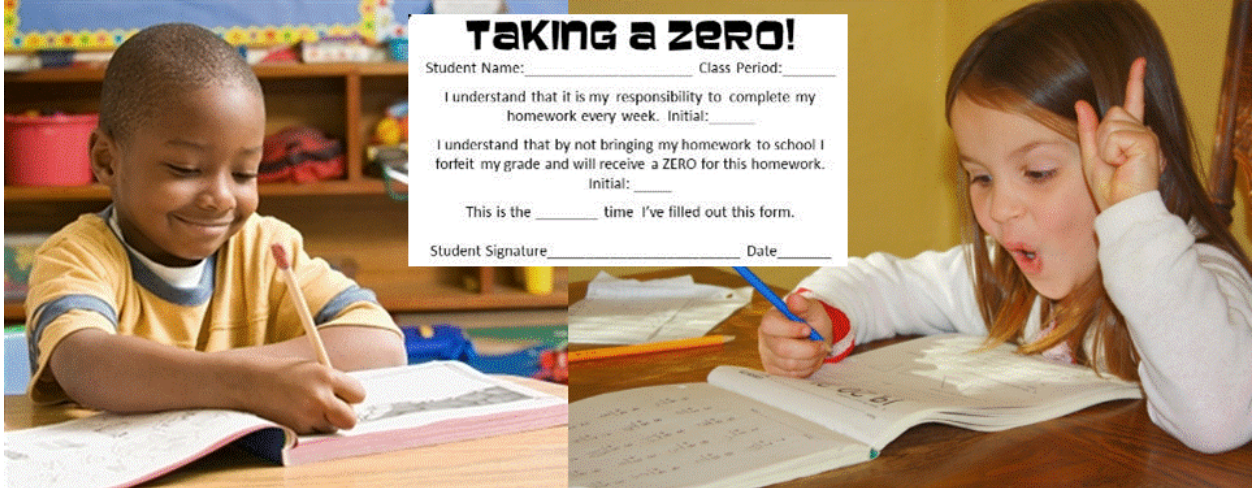
If they are the fattest they will be 220 and 230

Warm UP (5 min)

Home Work

Due: u2d2 hw (Measures of Center)

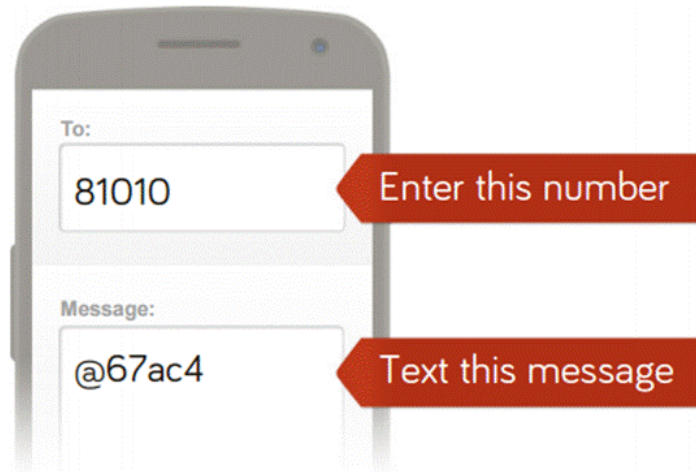
Assigned: u2d3 Rockets Team hw



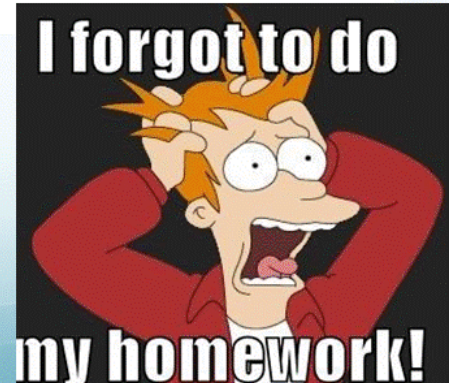
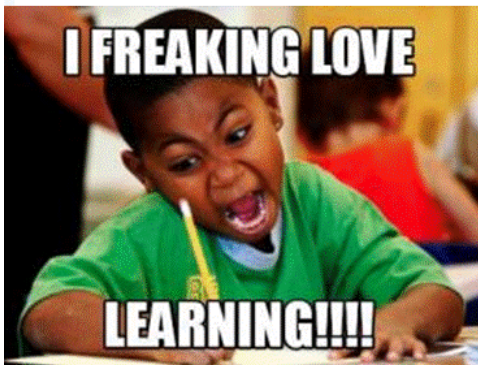
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Trouble using 81010? Try texting **@67ac4** to **(786) 837-6620** instead.



*Standard text message rates apply.



Unit 2: Data

Day 3/7: Box Plots

u2d~~1~~³ NOTES

The INDEX starts your notes for every Unit!

Index: 

UNIT 2

u2d1	Dot Plots and Histograms.....	Page 1
u2d2	Measures of Center	Page ___
u2d3	Box Plots.....	Page ___
u2d4	I don't know yet.....	Page ___
u2d5	Two-ways Frequency Tables	Page ___
u2d6	Two-ways Frequency Tables Review.....	Page ___
u1d7	TEST.....	Page ___

Box Plot

- The **median** splits the data set in half.

(3, 4, 4, 5, 8, 8, 9, 10, 11)

lower half

Upper Half

middle number = median

Another name is Q_2 = Quartile Two

- From here we can then find the **upper and lower quartiles** as well as the upper and lower extremes.

Box Plot

- The median splits the data set in half.

[3, 4, 4, 5,] 8, [8, 9, 10, 11]

Q_1 is the middle of the lower half.

Q_2 is the middle of the upper half.

- From here we can then find Q_1 and Q_2

Lower Quartile

Upper Quartile

Box Plot

- The **lower quartile** is the **median** of the bottom half of the data (to the left of the median).

the Rule is that when two #'s are in the middle we add them divide by 2.

$\frac{4+4}{2} = \frac{8}{2} = 4$

lower Quartile

(3, 4, 4, 5)

Q1

the middle of the lower half

[3, 4, 4, 5], 8, [8, 9, 10, 11]

Box Plot

- The **upper quartile** is the **median** of the top half of the data (to the right of the median).

Upper Quartile

Upper half

$\frac{9+10}{2} = \frac{19}{2} = 9.5$

(8, 9, 9.5, 10, 11)

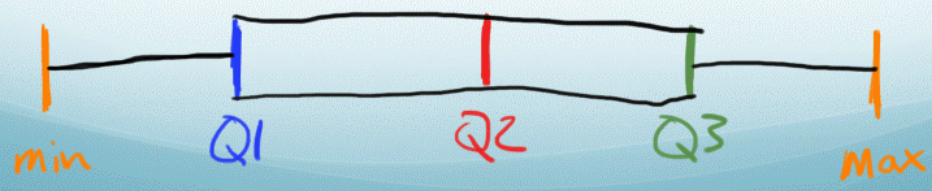
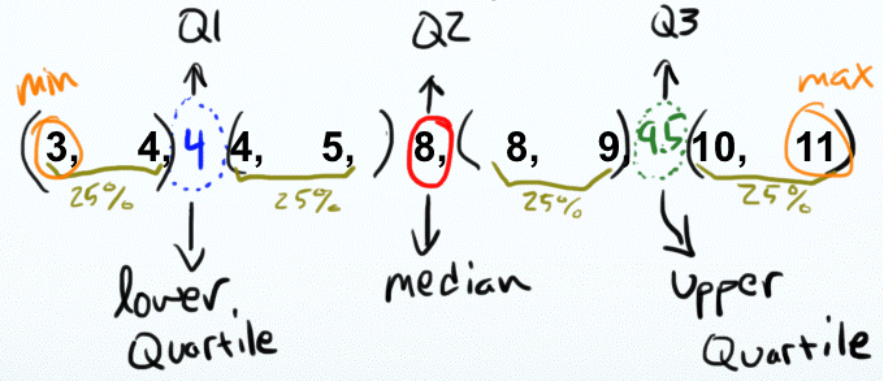
Q3

the middle of the upper half

[3, 4, 4, 5], 8, [8, 9, 10, 11]

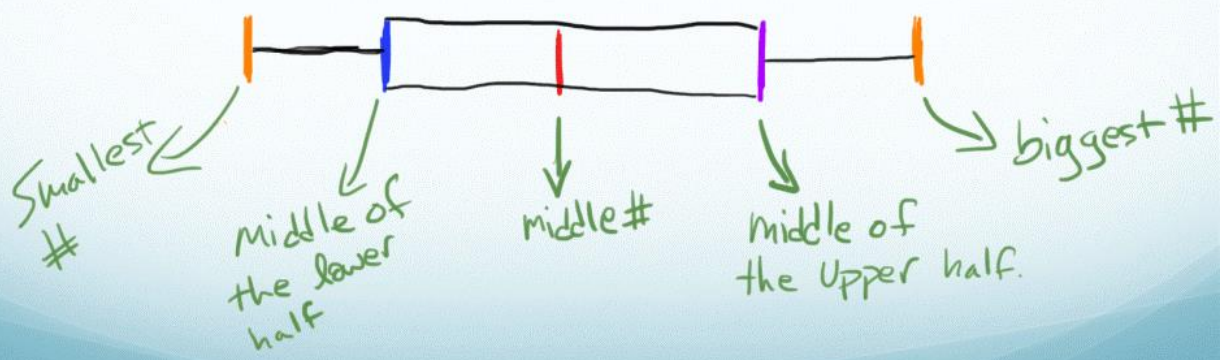
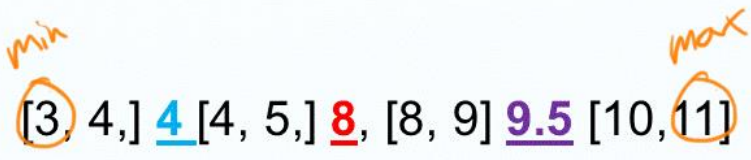
Box Plot

- Now rewrite our data with all quartiles marked off:



Box Plot

- Now rewrite our data with all quartiles marked off:



Box Plot

- The **lower extreme** or **minimum value** is the lowest number in the data set.

[3, 4,] 4 [4, 5,] 8, [8, 9] 9.5 [10,11]

- The lower extreme for this data set = 3

Box Plot

- The **upper extreme** or **maximum value** is the highest number in the data set.

[3, 4,] 4 [4, 5,] 8, [8, 9] 9.5 [10,11]

The upper extreme for this data set = 11

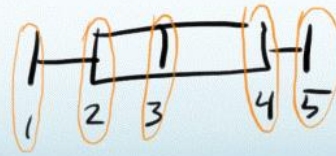
Box Plot

[3, 4,] 4 [4, 5,] 8, [8, 9] 9.5 [10, 11]

Five Number Summary

- Median = **8**
- Lower Quartile = **4**
- Upper Quartile = **9.5**
- Lower Extreme = **3**
- Upper Extreme = **11**

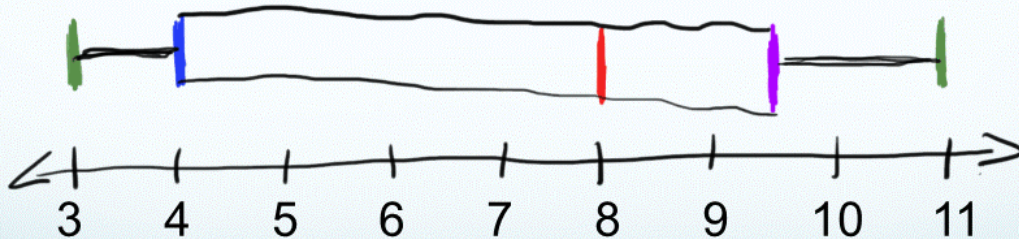
Each one of these #s is a line in the box plot



Box Plot

[3, 4,] 4 [4, 5,] 8, [8, 9] 9.5 [10, 11]

See how the box is all stretched and weird? This shows us the way the data is spread out.



Box plots **HAVE** to be lined up with a number line. — The first step of drawing a box plot is always to draw a number line.

Number of Smiles

Boys

8, 21, 7, 1, 2, 4, 4, 20, 19, 12, 9, 7, 20,

Data for WKSHT

Number of Smiles

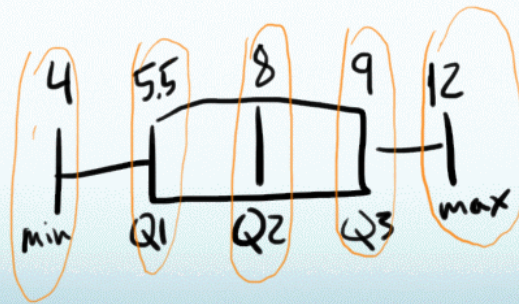
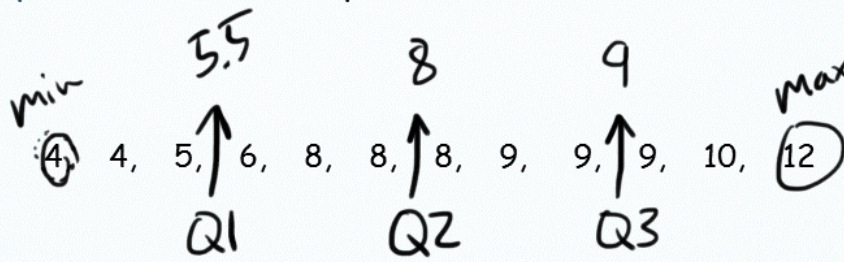
Girls

10, 11, 11, 8, 2, 12, 14, 15, 8, 15, 3, 0, 19,

Data for the WKSHT

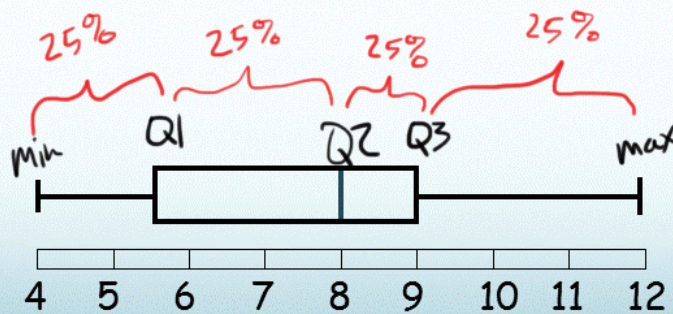
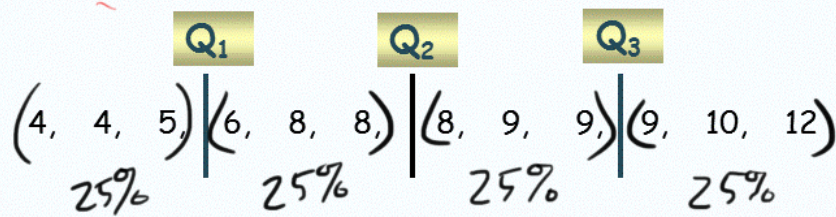
Drawing a Box Plot.

Example 1: Draw a Box plot for the data below



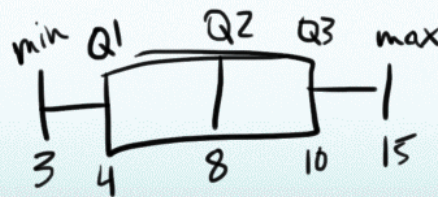
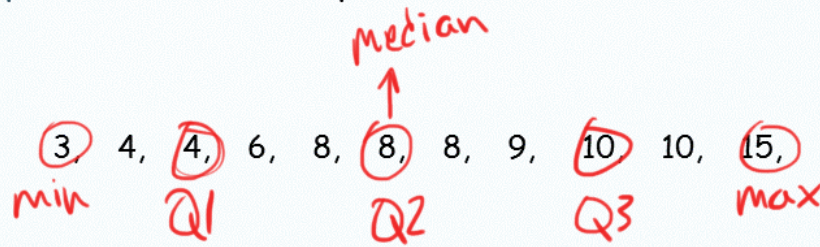
Drawing a Box Plot.

Example 1: Draw a Box plot for the data below



Drawing a Box Plot.

Example 2: Draw a Box plot for the data below

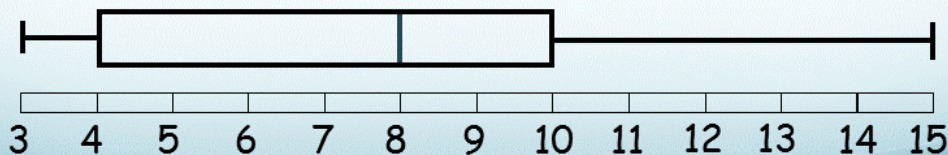


Drawing a Box Plot.

Example 2: Draw a Box plot for the data below

3, 4, 4, 6, 8, 8, 8, 9, 10, 10, 15,

See how when we put the Box Plot on a number line it gets all stretched out.
That stretch shows how the actual numbers are stretched out!



Drawing a Box Plot.

Example 3 : Stuart recorded the heights in cm of boys in his class as shown below. Draw a box plot for this data.

(137) 148, 155, (158), 165, 166, 166, (171), 171, 173, 175, (180), 184, 186, (186)
min Q1 Q2 Q3 Max

btw I am 188 cm tall

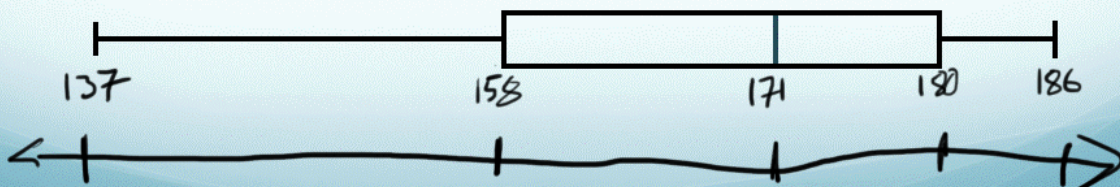
Do it on your own!!!

Drawing a Box Plot.

Example 3 : Stuart recorded the heights in cm of boys in his class as shown below. Draw a box plot for this data.

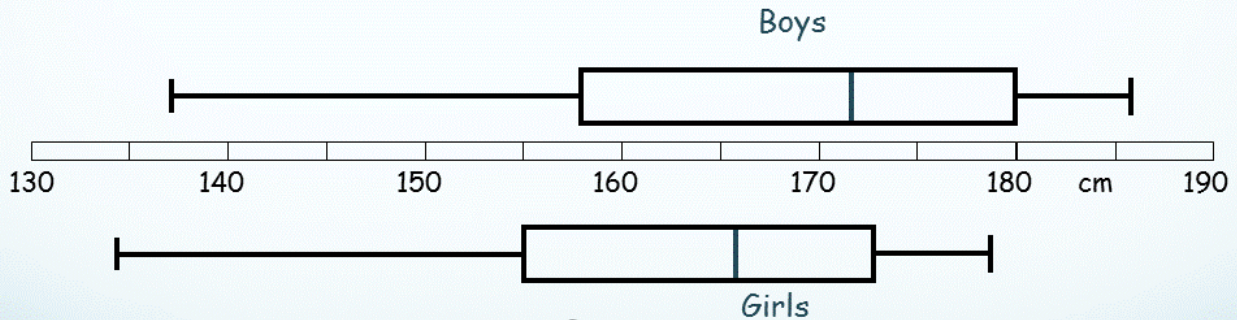
137, 148, 155, 158, 165, 166, 166, 171, 171, 173, 175, 180, 184, 186, 186

Do it on your own!!!



Drawing a Box Plot.

Question: Gemma recorded the heights in cm of girls in the same class and constructed a box plot from the data. The box plots for both boys and girls are shown below. Use the box plots to choose some **correct** statements comparing heights of boys and girls in the class. Justify your answers.



1. The girls are taller on average. *false*

2. The boys are taller on average. *true*

3. The girls show less variability in height. *false*

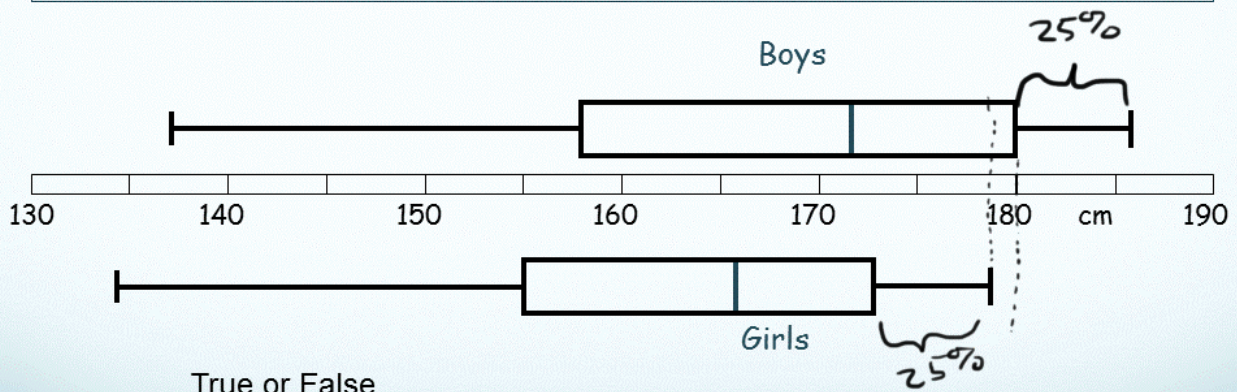
5. The smallest person is a girl. *true*

4. The boys show less variability in height. *True*

6. The tallest person is a boy. *True*

Drawing a Box Plot.

Question: Gemma recorded the heights in cm of girls in the same class and constructed a box plot from the data. The box plots for both boys and girls are shown below. Use the box plots to choose some **correct** statements comparing heights of boys and girls in the class. Justify your answers.

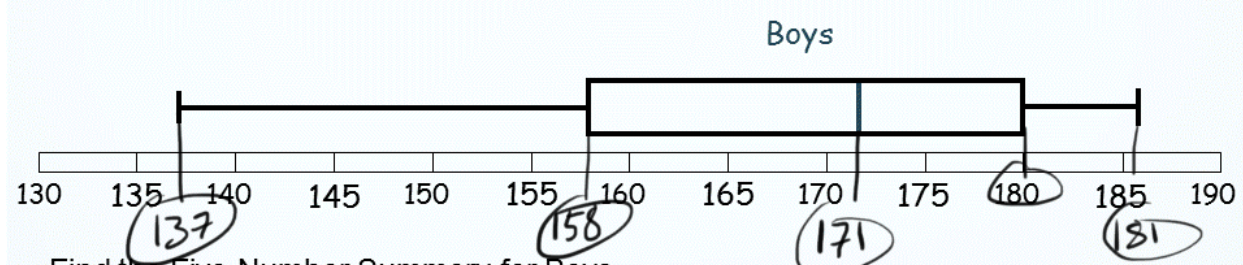


True or False

Top 25% of boys are ALL taller than the top 25% of girls. *True*

The top 25% of girls are ALL taller than the lower 75% of boys. *false*

Box Plot



Find the Five Number Summary for Boys

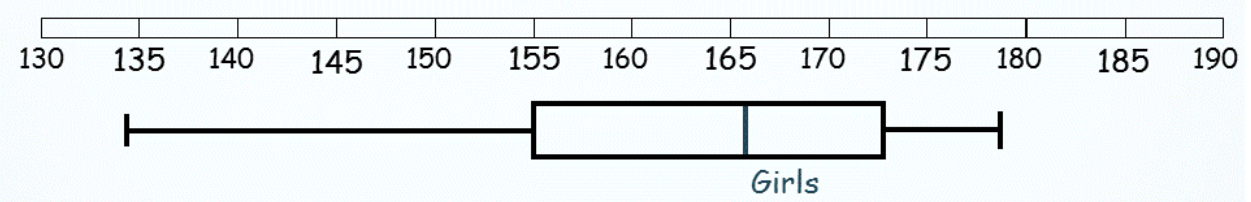
- Median = 171
- Lower Quartile = 158
- Upper Quartile = 180
- Lower Extreme = 137
- Upper Extreme = 181

Range???

Mode???

Mean???

Box Plot



Find the Five Number Summary for Girls

- Mean = 166
- ~~Q1~~ Q1 = 155
- ~~Q3~~ Q3 = 174
- ~~min~~ min = 135
- ~~max~~ max = 179

Do it on your own!!!

• **And find Range**

Box Plot

I can easily find:

- Median =
- Lower Quartile =
- Upper Quartile =
- Lower Extreme =
- Upper Extreme =
- Range =

I cannot find:

- Mean = ????
 - Mode = ????
- (I can guess very accurately for special sets of data)



I can easily find:

- Median = *Easy*
- Mode = *Super Easy*
- Range = *max - min*
- Lower Extreme = *min*
- Upper Extreme = *max*

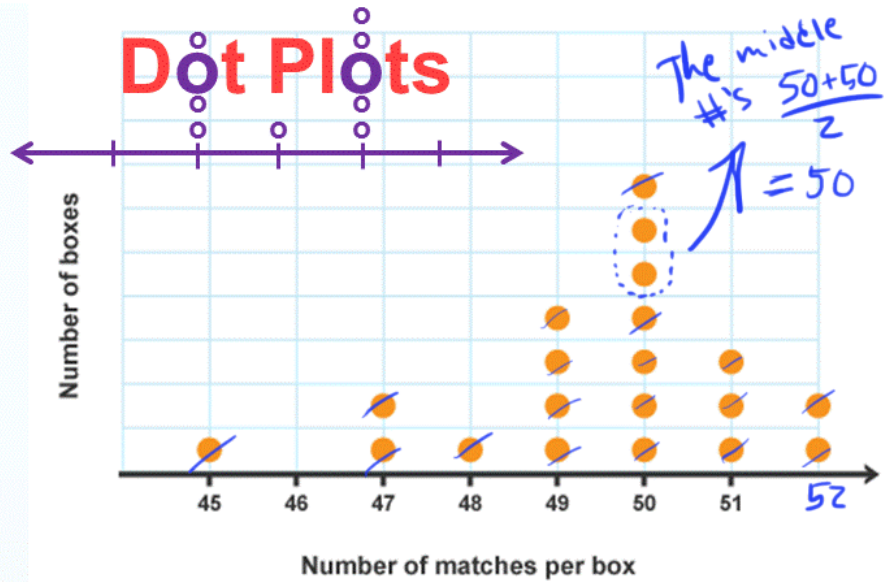
Takes work: *add all #'s*

- Mean = *# of #'s*
- Lower Quartile = *middle of lower half*
- Upper Quartile = *middle of upper half*

I cannot find:

- ????
- = You can find Everything with work.*

Dot Plots



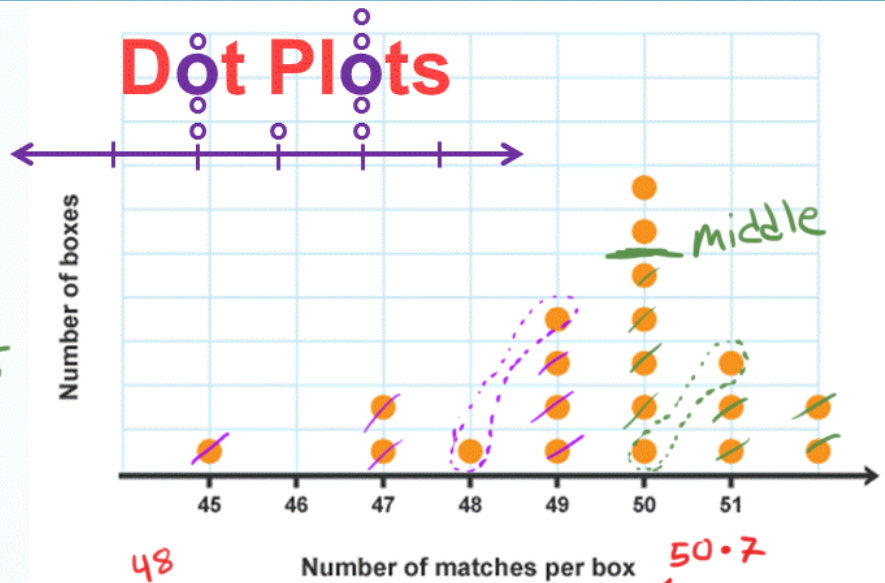
I can easily find:

- Median = 50
- Mode = 50
- Range = 7 = 52 - 45
- Lower Extreme = 45
- Upper Extreme = 52

Total Added
= 990

$$\frac{990}{20} = 49.5$$

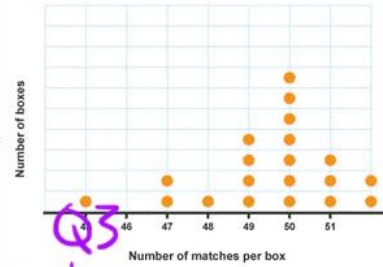
Dot Plots



Takes work:

- Mean = 49.5
- Lower Quartile = 48.5
- Upper Quartile = 50.5

Dot Plots



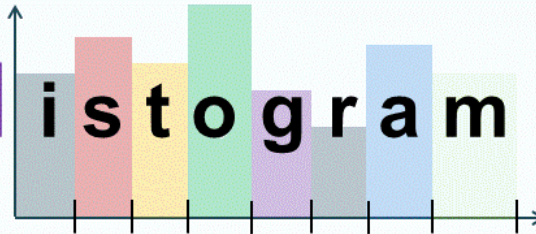
45, 47, 47, 48, 49, 49, 49, 49, 50, 50, 50, 50, 50, 50, 50, 50, 51, 51, 51, 52, 52

$Q1 \downarrow 48.5$
 $50 \downarrow \text{Median } Q2$
 $Q3 \downarrow 50.5$

Takes work:

- Mean =
- Lower Quartile = 48.5
- Upper Quartile = 50.5

Histogram



I can easily find:

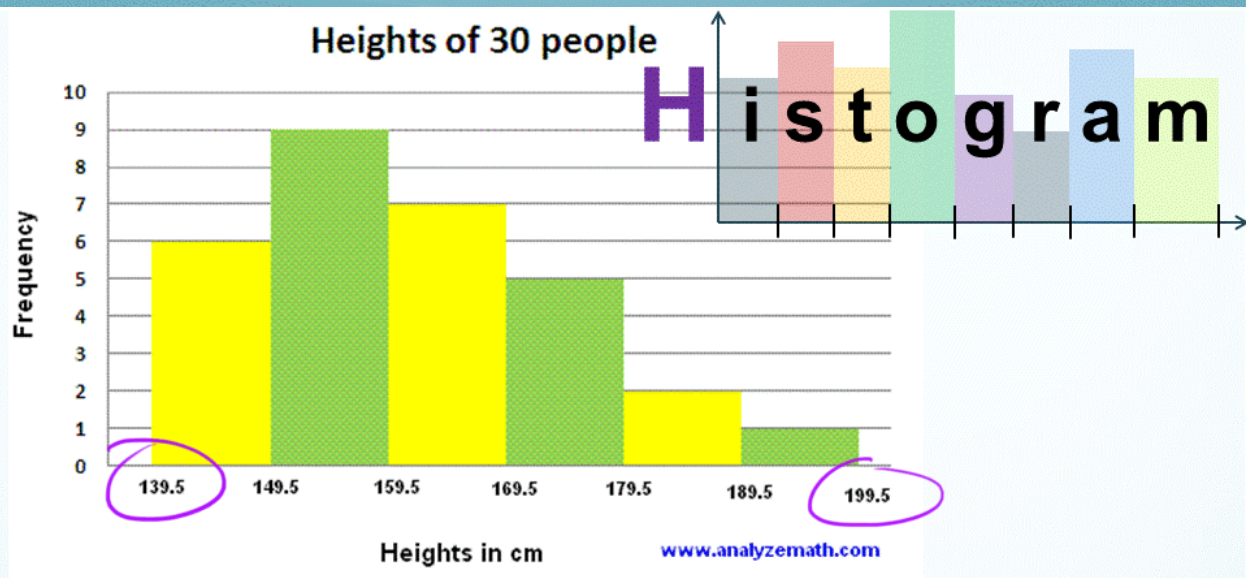
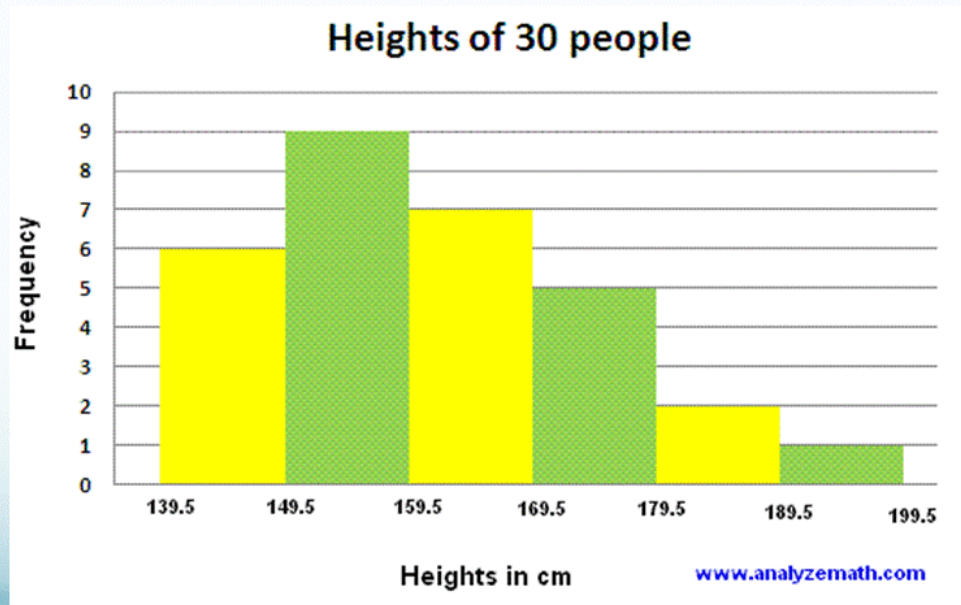
- *Range =
- *Lower Extreme =
- *Upper Extreme =

Takes work:

I cannot find:

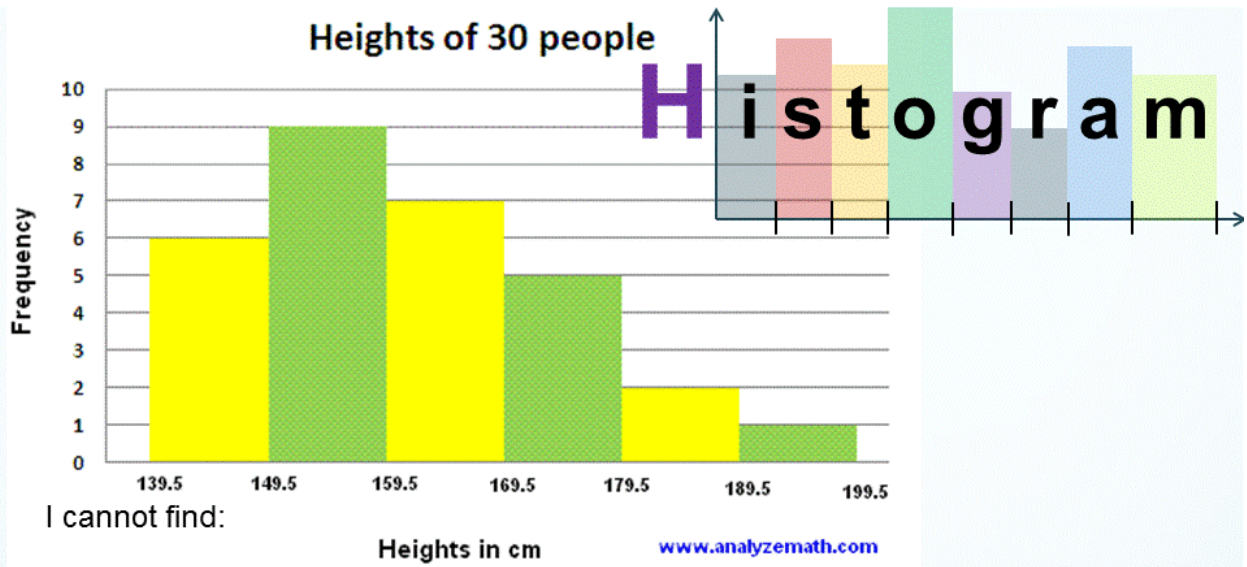
- Mean
- Median
- Mode
- Lower Quartile
- Upper Quartile

Histogram



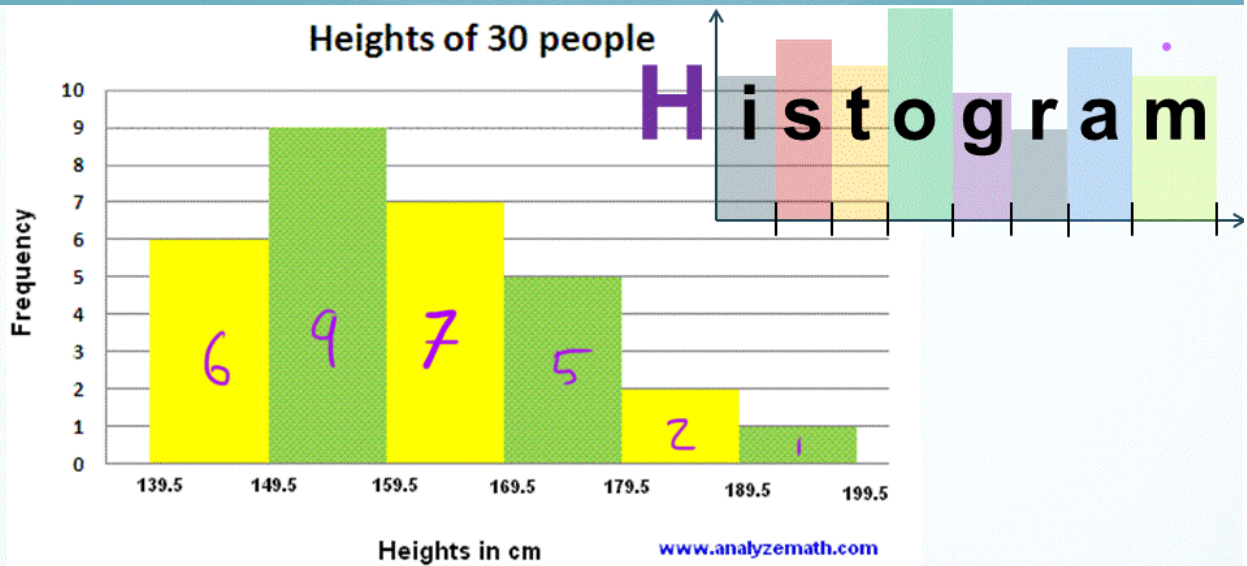
I can easily find:

- *Range = $\text{Max} - \text{min} = 199.5 - 139.5 = 60$
- *Lower Extreme = $\text{min} = 139.5$
- *Upper Extreme = $\text{max} = 199.5$



- Mean
- Median
- Mode
- Lower Quartile
- Upper Quartile

} No Real way to find these



a) How many people have heights between 159.5 and 169.5 cm?

7

b) How many people have heights less than 159.5 cm?

$6 + 9 = 15$

c) How many people have heights more than 169.5 cm?

$5 + 2 + 1 = 8$

d) What percentage of people have heights between 149.5 and 179.5 cm?

$9 + 7 + 5 = 21$