

# Displaying and Comparing Quantitative Data

- Topic: Data Distributions
- Objective: Students will be able to compare data displayed in a variety of displays including box and whisker plots, dot plots, and histograms.
- Standards: AP Stats: UNC-1 (EU), UNC-1.N (LO), UNC-1.N.1 (EK), UNC-1.O (LO), UNC-1.O.1 (EK) CCSS Math: 7.SP.B.3, 7.SP.B.4

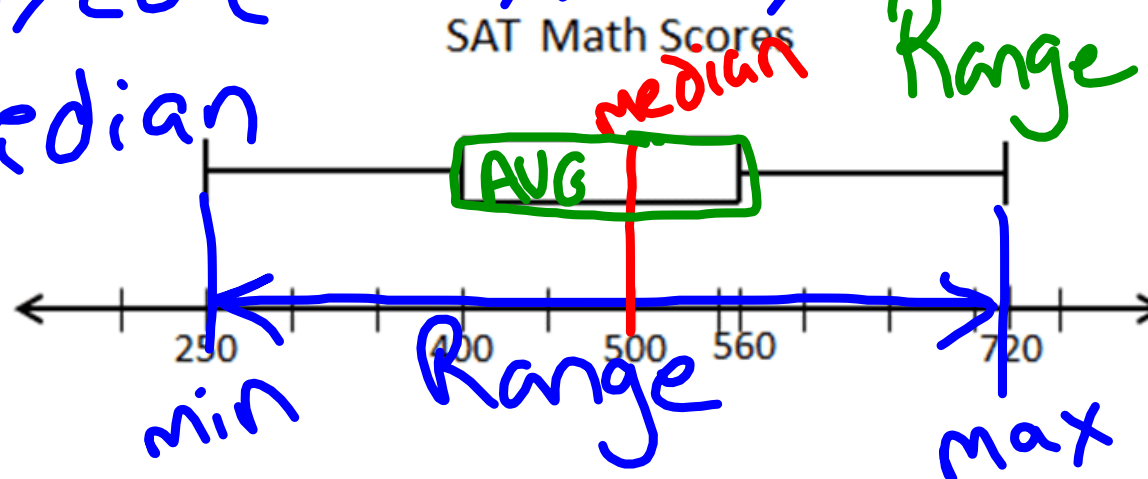
# Displaying and Comparing Quantitative Data

- Box and Whisker Plots

- ① Range of numbers
- ② Hi/Low (max/min)
- ③ Median

max: 720  
min: 250

Range: 470

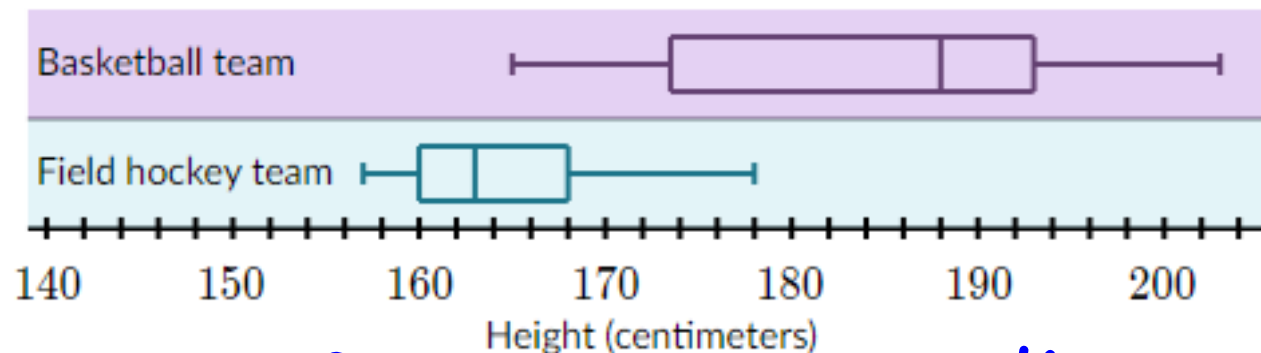


- ④ Avg (sum of)

Not: how many?  
exact mean

# Displaying and Comparing Quantitative Data

- Comparing Box and Whisker Plots
- Example: The box plots below show the heights (in centimeters) of the players on the University of Maryland women's basketball and field hockey teams.

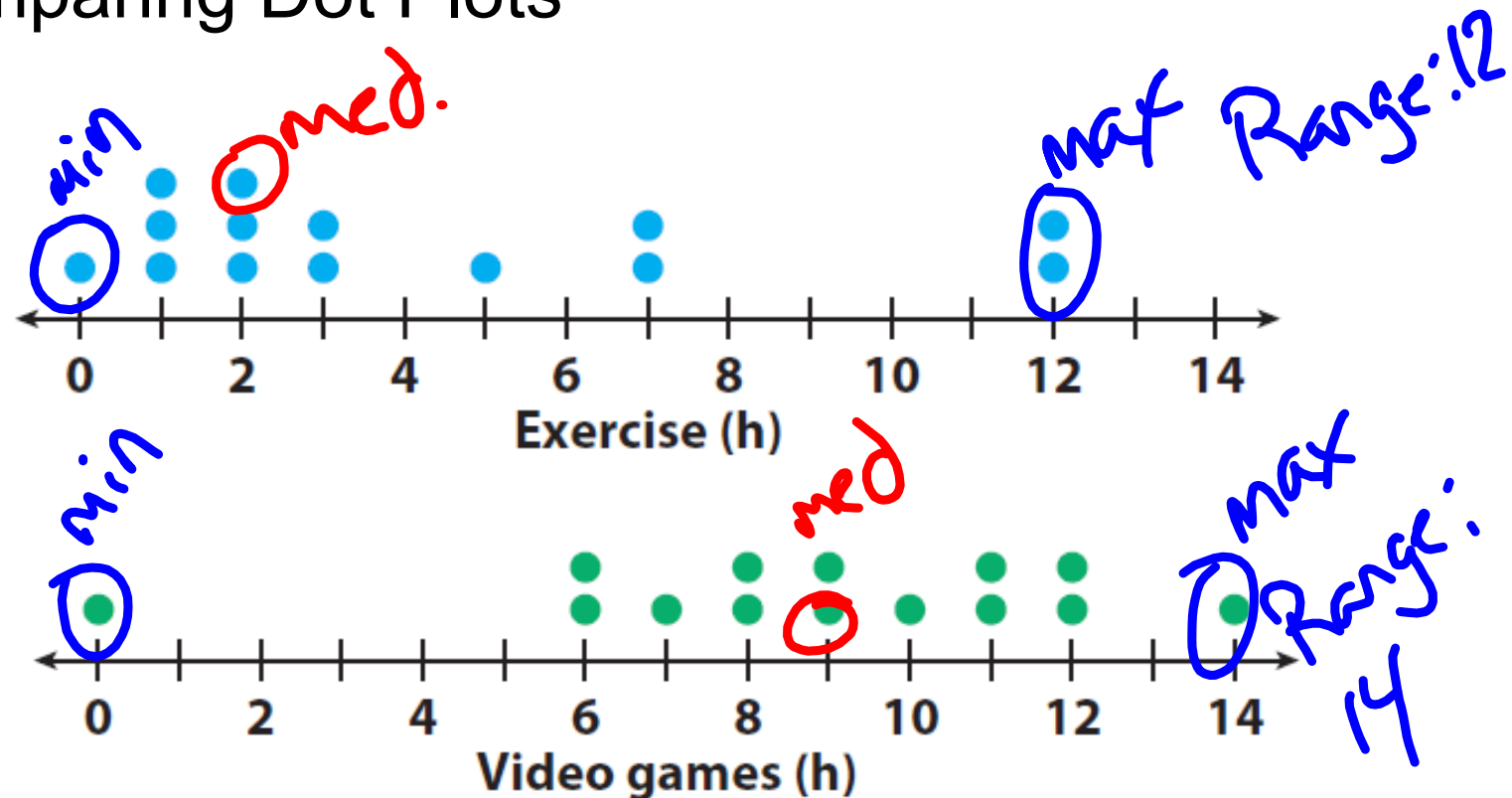


① On avg. BK team is taller

② Heights of ~~BK~~ vary noticeably more.

# Displaying and Comparing Quantitative Data

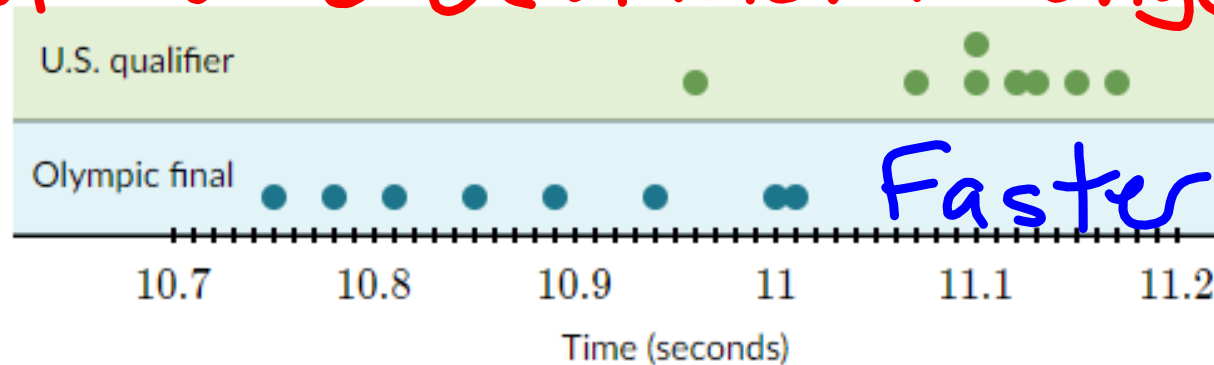
- Comparing Dot Plots



# Displaying and Comparing Quantitative Data

- Comparing Dot Plots
- Example: Before sending track and field athletes to the Olympics, the U.S. holds a qualifying meet. The lower dot plot shows the times (in seconds) of the 8 sprinters who competed in the final of the women's 100-meter dash at the 2012 Olympic games. The upper dot plot shows the times (in seconds) of the top 8 sprinters at the U.S. qualifying meet for that event.

generally  
Standard deviation: range/spread



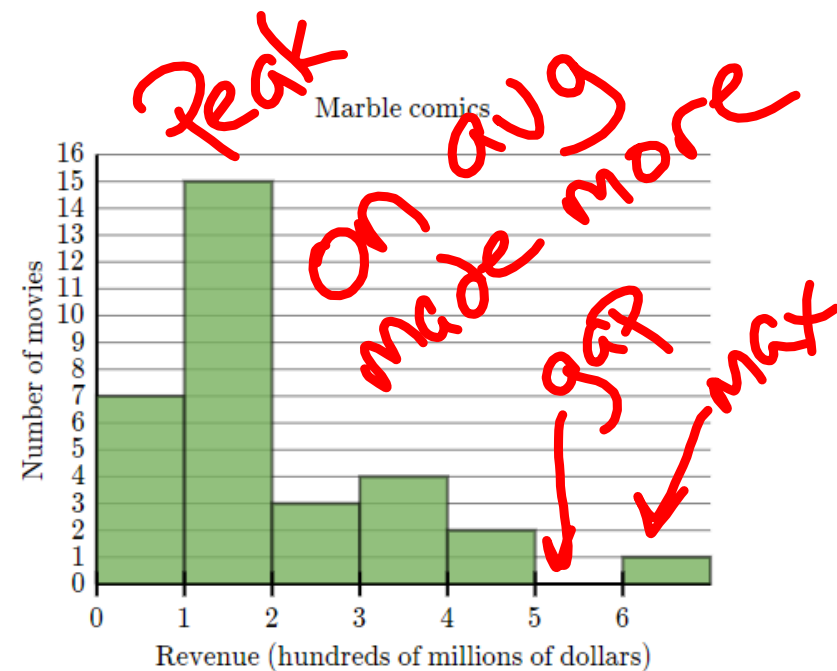
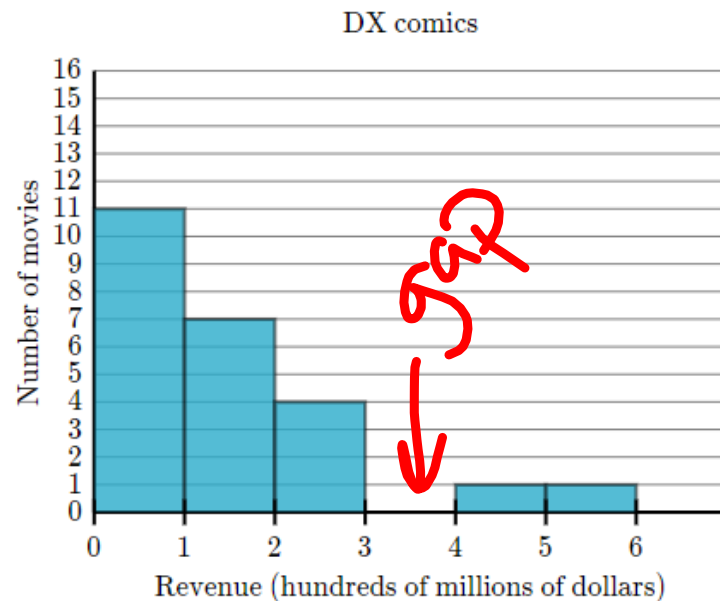
Faster

very noticeably more

bigger S.D.

# Displaying and Comparing Quantitative Data

- Comparing Histograms
- Example: People seem to like movies about comic book heroes. The histograms below show the gross revenue (in hundreds of millions of dollars) of movies based on heroes from the two most popular comic book companies.



# Displaying and Comparing Quantitative Data

- Things to watch out for:

1. The word **ALL**
2. The word **ALWAYS**
3. The word **NEVER**

} usually not the answer!

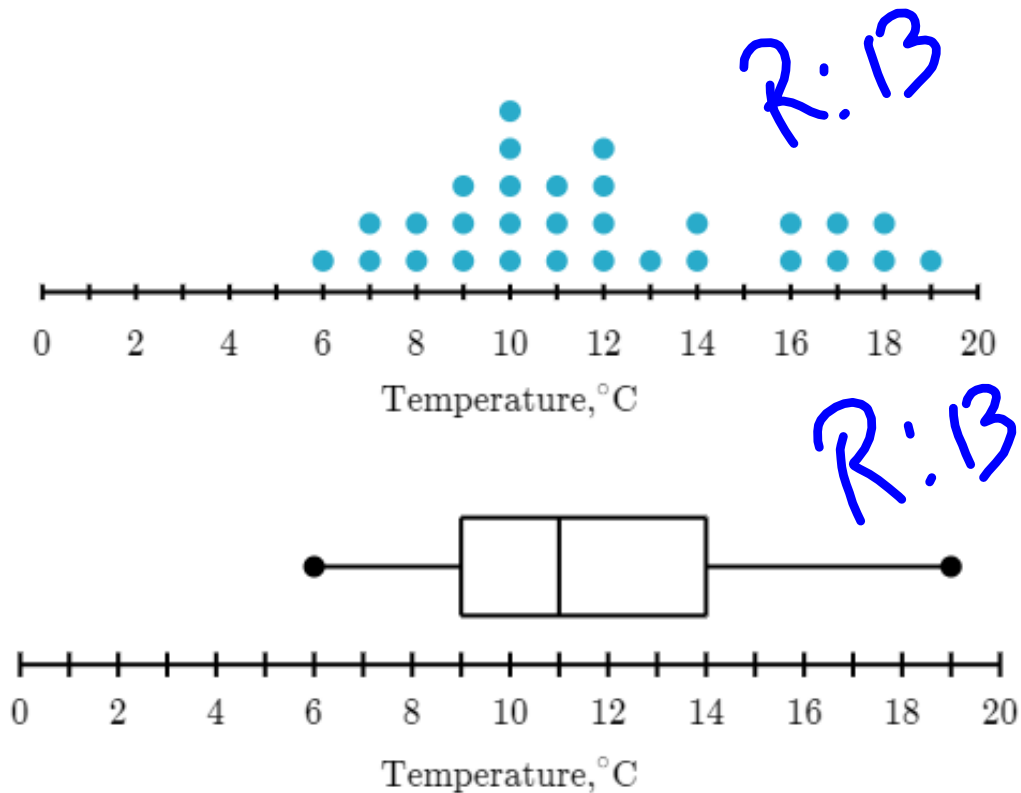
- Vocabulary:

1. **Mean:** Average, Arithmetic Mean
2. **Median:** Middle
3. **Mode:** Most often
4. **Normal Distribution:**
5. **Standard Deviation:**

1, 4, 4, 7, 9

# Displaying and Comparing Quantitative Data

- Comparing Data Displays:
  - > Dot Plots compared to Box-and-whisker

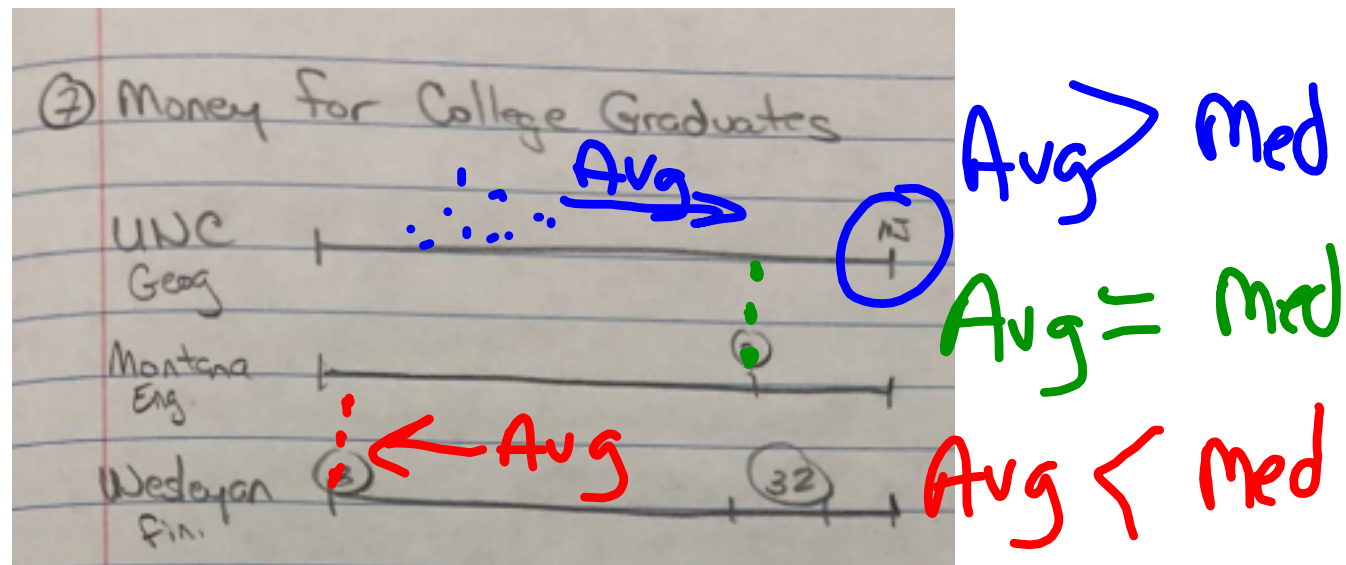




# Displaying and Comparing Quantitative Data

## • Comparing Data Distributions Example:

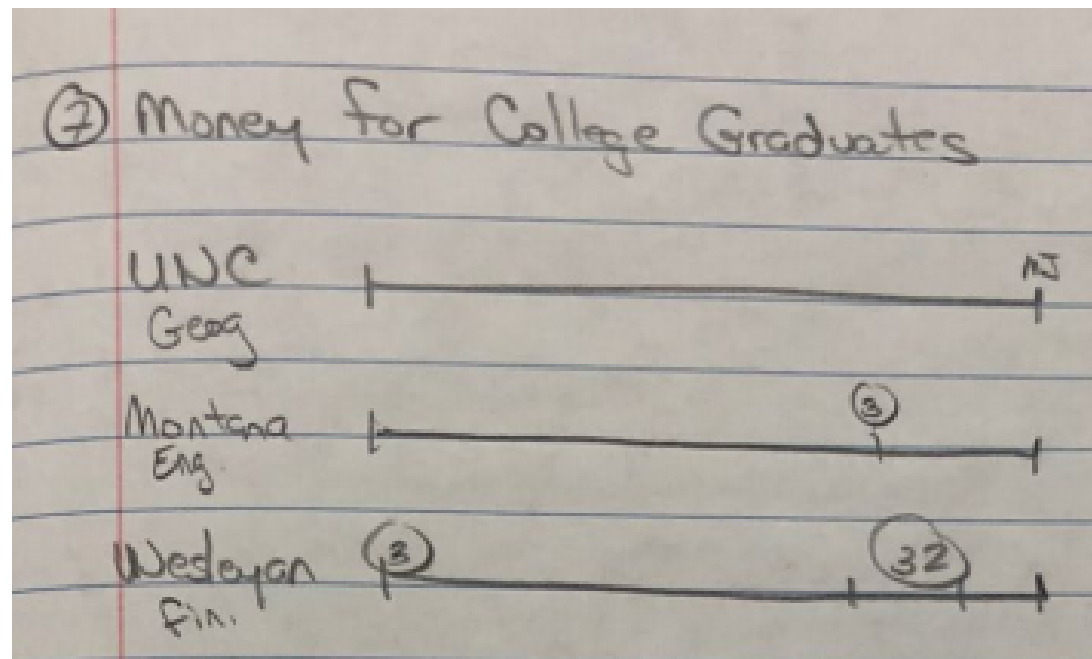
- For his senior project, Richard is researching how much money a college graduate can expect to earn based on his or her major. He finds the following interesting facts:
- Basketball superstar Michael Jordan was a geology major at the University of North Carolina.
- There were only 3 civil engineering majors from the University of Montana. They all took the exact same job at the same company, earning the same salary.
- Of the 35 finance majors from Wesleyan University, 32 got high-paying consulting jobs, and the other 3 were unemployed.



# Displaying and Comparing Quantitative Data

## • Comparing Data Distributions Example:

1. For geology majors from UNC, the median income will likely be \_\_\_\_\_ the mean.
2. For civil engineering majors from Montana, the median income will be \_\_\_\_\_ the mean.
3. For finance majors from Wesleyan, the median income will be \_\_\_\_\_ the mean.



# Displaying and Comparing Quantitative Data

## • Comparing Center and Spread Example:

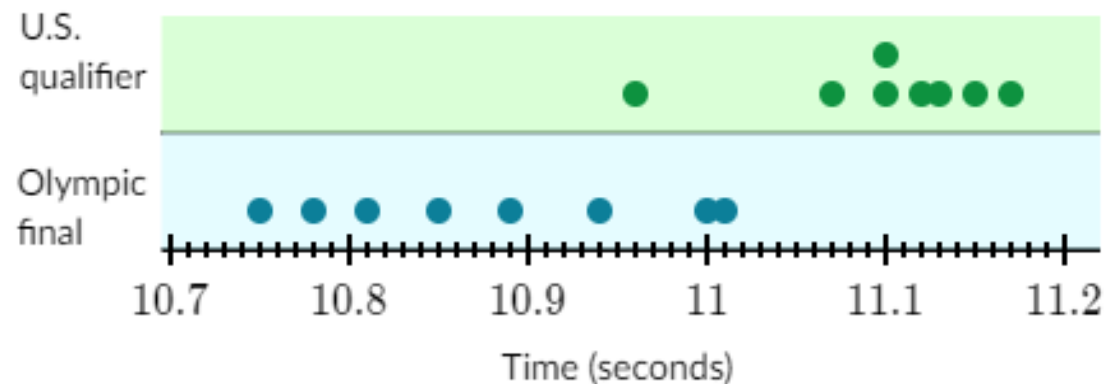
Semifinal round				Final round			
				52	2	3	522, 523
527	7	52	8				528
533, 533, 530	0	53	1	2	3		531, 532, 533
537, 535, 535, 535	5	53	5	8			535, 538

Key : |53|8 = 53.8 seconds

- The center of the semifinal round distribution is 10 the center of the final round distribution.
- The variability in the semifinal round distribution is 16 the variability in the final round distribution.

# Displaying and Comparing Quantitative Data

- Comparing Center and Spread Example:



- The center of the Olympic final distribution is \_\_\_\_\_ the center of the US qualifier distribution.
- The variability in the Olympic final distribution is \_\_\_\_\_ the variability in the US qualifier distribution.

## Displaying and Comparing Quantitative Data

You should be working on the following skills:

1. Shape of distributions
2. Clusters, gaps, peaks, and outliers
3. Comparing distributions
4. Comparing data displays
5. Comparing data distributions
6. Comparing center and spread

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Spirit Week is This Week, extra credit for  
anyone who participates!