

## Math 10 MPS - Homework 1 answers

1&2 Identify the following data by type (categorical, discrete, continuous) and level (nominal, ordinal, interval, ratio)

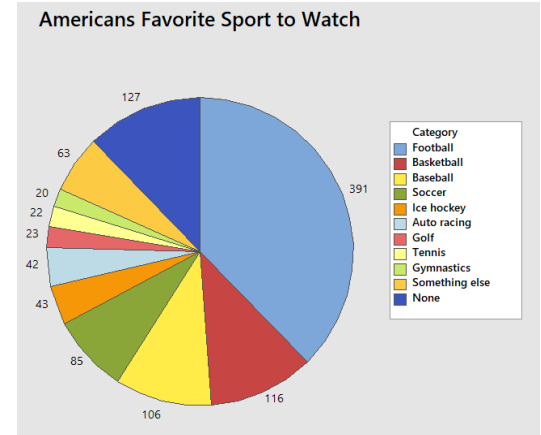
- Number of tickets sold at a rock concert **discrete, ratio**
- Make of automobile. **categorical, nominal**
- Age of a fossil. **continuous, ratio**
- Temperature of a nuclear power plant core reactor. **continuous, interval**
- Number of students who transfer to private colleges. **discrete, ratio**
- Cost per unit at a state University. **continuous, ratio**
- Letter grade on an English essay. **categorical, ordinal**

3. 1038 Americans were asked, "What is your favorite sport to watch?" The results were summarized into a pie graph.

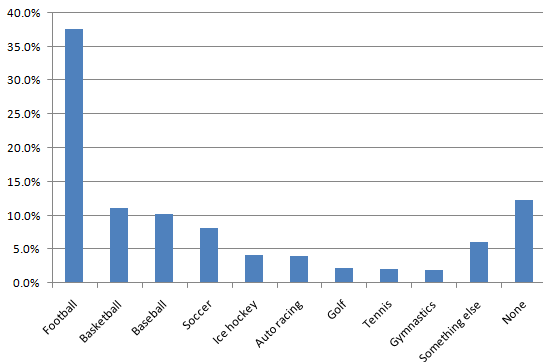
- Interpret the pie graph.  
**Many answers possible. #1 was football.**

- Do you think a different graph would have a clearer way to show this data? Explain.

**Bar Graph would be easier to read.**



- Using the same data create a bar graph. Instead of labeling each bar with counts, use percentages.



- Compare the bar graph to the pie graph. In your opinion, which of these two graphs better explains the data?  
**Many answers possible, I prefer bar graph.**

4. The two frequency histograms represent the ages of 78 Male US Senators and 22 Female US Senators. Ages were evaluated on October 20, 2017.

a. Estimate the center of each graph. Does there seem to be a difference in average age due to gender in the US Senate?  
**Men about 65, women about 60. Women seem younger.**

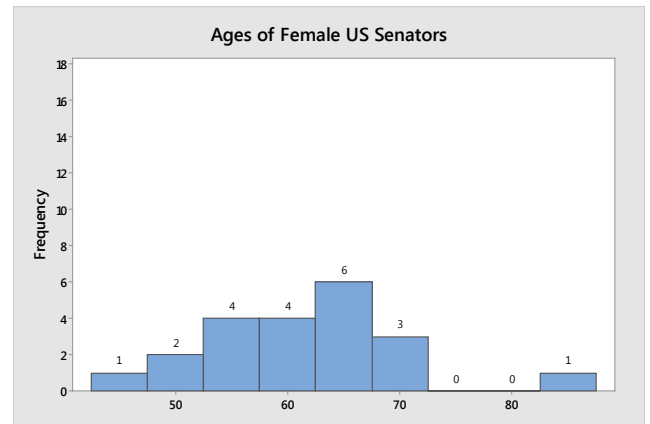
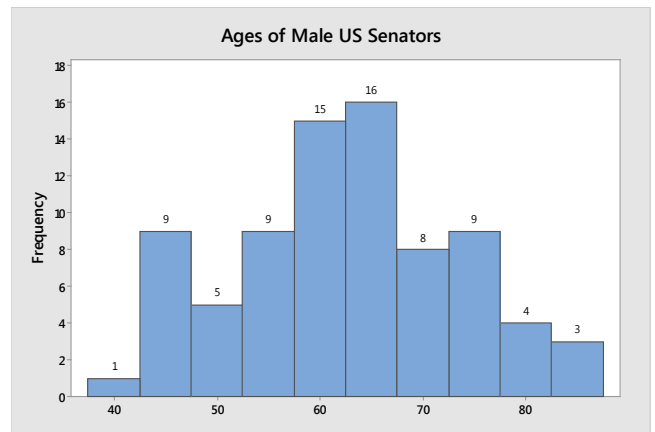
b. Estimate the range of each graph. there seem to be a difference in age spread due to gender in US Senate  
**Range is about 50 years for each gender, however, only one women is very old.**

c. Is there a difference in shape between the two graphs?

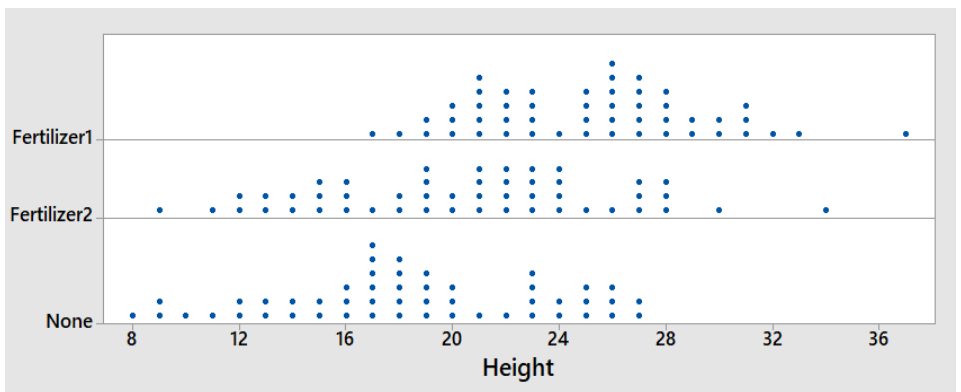
**Both seem symmetric**

d. Senator Diane Feinstein of California, who is 84 years old, represents an outlier among the females. Would your answers to parts a, b or c change if Senator Feinstein were removed from the data? Explain.

**Range would decrease for women to about 35. Shape would be skewed negative for women.**



5. An experiment was conducted on string bean plants. The plants were broken into three groups. The first group was given Fertilizer 1, the second group was given Fertilizer 2, and the third group was given no fertilizer. After 2 months, the heights in inches were measured with results shown in the dot plot. From the dot plots, describe the center, spread, shape and unusual features of each group, and then make an overall statement about the fertilizers.



	Fertilizer 1	Fertilizer 2	None
Center	26 inches	23 inches	18 inches
Spread (Range)	20 inches	26 inches	19 inches
Shape	Symmetric/skewed positive	symmetric	Skewed negative

**Tallest plants with fertilizer 1, most spread with fertilizer 2.**