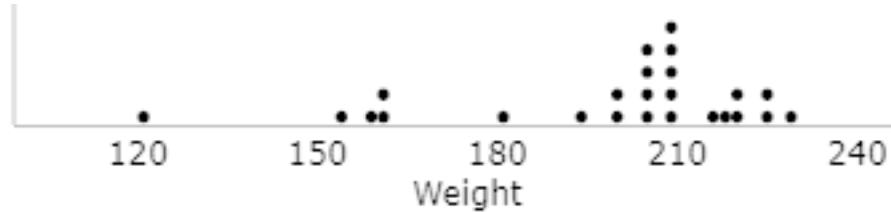


Rowers' Weights



a) Based on this dotplot, estimate the values of the mean and median of the rowers' weights.
 Mean (estimate): _____ Median (estimate): _____

b) Go to the Applets:DotPlot found on the class GoogleDoc. Click the "Clear" button. Then open the spreadsheet found under Data:Rower in the GoogleDoc. Then copy the data (with the labels), and paste it into the Applet, and click "Use Data." Now click "Mean:Actual" and "Median:Actual." Record the mean and median in the first column of the following table. Why does it make sense that the mean and median differ in this direction? [Hint: Think about more than the shape of the distribution.]

Explanation:

	Whole Team	Without Coxswain	With Maximum Weight at 329	With Maximum Weight at 2229
Mean				
Median				

c) Predict what will happen to the mean if you remove the coxswain (McElhenney, the outlier whose job is to call out rowing instructions and steer) from this analysis. Also predict what will happen to the median. Explain.

- d) Remove the coxswain McElhenney (delete it from the pasted data in the Applet, and click “Use Data”) and recalculate the mean and median. Record the values in the second column of the table. Did these values change as you predicted?
- e) Now consider what would happen if you instead increased the weight of the heaviest rower. How would this change the mean (if at all)? How would it affect the median? Explain.
- f) Put McElhenney back and increase Newlin’s weight from 229 to 329. Recalculate the mean and median, and record them in the third column of the previous table. Did they change (or not) as you predicted?
- g) Suppose the typist’s finger slipped when recording Newlin’s weight and entered 2229. Predict how this error will affect the mean and median.
- h) Increase Newlin’s weight to 2229 and recalculate the mean and median. Record them in the last column of the table.

A measure whose value is relatively unaffected by the presence of outliers in a distribution is said to be **resistant**.

- i) Based on these calculations, is the mean and/or the median resistant? Explain why this conclusion makes sense; base your argument on how each measure is calculated.
- j) In principle, is there any limit to how much the mean can increase or decrease simply by changing *one* of the values in the distribution?