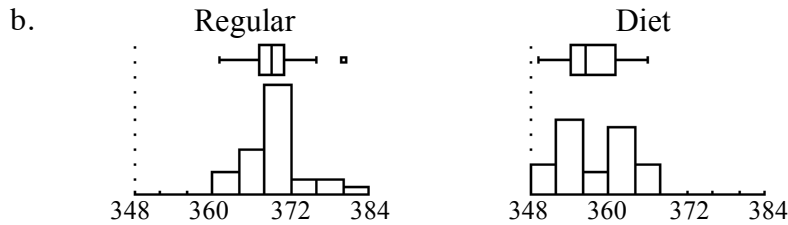# Lesson 1.2.4

1-54. a. Regular: (361, 367, 369, 371, 380 grams); Diet (349, 354, 356.5, 361, 366 grams)

b.

Regular   Diet

c. Regular: The mean is 369.4 grams, which falls at the middle of the distribution on the histogram. The shape is single-peaked and symmetric, so the mean should be a good measure of the center. Using the 1.5 IQR rule, there is one outlier at 380 grams. The histogram still appears mostly symmetric, so the standard deviation of 4.23 grams could be used to describe spread. Diet: The mean is 357.5 grams; this mean also falls at the center of the data on the histogram. The data is double-peaked but still fairly symmetric so the mean could be used to represent the center. There are no outliers so the standard deviation of 5.12 grams could be used to describe spread.

d. The regular cola cans are noticeably heavier (or had more mass) than the diet cans. The lightest regular can is at the third quartile of the diet sample and the median of the regular cans is heavier than the most massive diet can. The spread of each distribution is similar and they are both reasonably symmetric but the diet cans have a double peaked distribution.

e. Some answers include: Megan was weighing the can and the cola so the weight of the can is included in the data. Machines are out of adjustment or maybe not capable of filling the cans to the exact same amount each time. The regular cola weighs more than the diet because of all the sugar dissolved in it. Fluid ounces are actually a measure of volume not weight.

1-55. The team president is using the mean, and the fans are using the median. A few large "outliers," such as super star players, have very high salaries.

1-56. a. Team 2 works, on average, a little faster—the median number of widgets per team member is slightly higher. The distributions for both teams are similarly symmetric. However, the members of Team 1 are much more consistent than Team 2. The variability (IQR) of Team 1 is almost half that of Team 2, and Team 1's range is less too. Neither team had outliers.

b. Since both distributions are somewhat symmetric with no outliers, it is appropriate to compare standard deviations. Since Team 1 had both IQR and range smaller than Team 2, we would expect that Team 1 has a smaller standard deviation.

   Statistics