

40. a) The distribution is skewed to the right, therefore the median and spread would be the best statistics for measuring center and spread.
- b) The distribution is symmetric with no outliers, therefore the mean and standard deviation would be the best statistics for measuring center and spread.
- c) The mean and standard deviation would be the best statistics for measuring center and spread because the distribution of scores is roughly symmetric with no outliers.

42. Answers can vary.

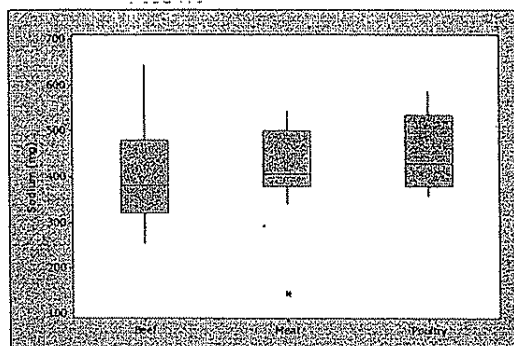
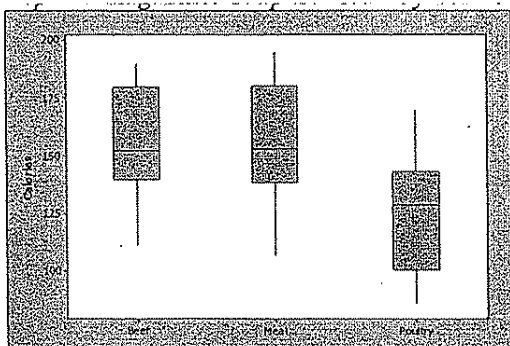
Answers HW p. 97, 100

46. A 5% raise across-the-board will increase both IQR and s by a factor of 1.05.

$$x_{\text{new}} = 1.05x$$

48. Individuals are hotdogs. Variable of interest is calories and sodium intake, both quantitative. Researchers are investigating nutritional quality of major brands of hotdogs. The data were collected in 1996 by researchers in a lab for *Consumer Reports*.

Graphs below:



Numerical summaries: Descriptive statistics for each variable of interest are shown below.

Descriptive Statistics: Beef-cal, Meat-cal, Poultry-Cal

Variable	N	Mean	StDev	Minimum	Q1	Median	Q3	Maximum
Beef-cal	20	156.85	22.64	111.00	139.50	152.50	179.75	190.00
Meat-cal	17	158.71	25.24	107.00	138.50	153.00	180.50	195.00
Poultry-Cal	17	122.47	25.48	86.00	100.50	129.00	143.50	170.00

Descriptive Statistics: Beef-sod, Meat-sod, Poultry-Sod

Variable	N	Mean	StDev	Minimum	Q1	Median	Q3	Maximum
Beef-sod	20	401.2	102.4	253.0	319.8	380.5	478.5	645.0
Meat-sod	17	418.5	93.9	144.0	379.0	405.0	501.0	545.0
Poultry-Sod	17	459.0	84.7	357.0	379.0	430.0	535.0	588.0

50. a) To convert power to watts, let $x_{new} = 746x$, where measurement is in horsepower. Mean, median, IQR, and s will all be multiplied by 746.

b) To convert temperature to degrees Celsius, let $x_{new} = (5/9)(x - 32)$, where x = measurement in degrees F.

The new mean and median will be found by multiplying the old by $5/9$ and subtracting $160/9$. The IQR and s will be multiplied by $5/9$.

c) The curved grades will be $x_{new} = x + 10$, where x = old test score. The mean and median will increase by 10 points. The IQR and s will remain the same.

54. The means and s are basically the same. Data A is skewed left and data B is skewed right.

58. a) Mean --- although right skewed, the city government wants to know about the total tax base.

b) Median --- the sociologist is interested in "typical" family, and wants to lessen the impact of extremes.