EXERCISES 4.1 - 4.16

4.1 ● The Insurance Institute for Highway Safety (www.iihs.org, June 11, 2009) published data on repair costs for cars involved in different types of accidents. In one study, seven different 2009 models of mini- and micro-cars were driven at 6 mph straight into a fixed barrier. The following table gives the cost of repairing damage to the bumper for each of the seven models.

Model	Repair Cost
Smart Fortwo	$1,480
Chevrolet Aveo	$1,071
Mini Cooper	$2,291
Toyota Yaris	$1,688
Honda Fit	$1,124
Hyundai Accent	$3,476
Kia Rio	$3,701

Compute the values of the mean and median. Why are these values so different? Which of the two—mean or median—appears to be better as a description of a typical value for this data set?

4.2 ● The article "Caffeinated Energy Drinks—A Growing Problem" (*Drug and Alcohol Dependence* [2009]: 1–10) gave the following data on caffeine concentration (mg/ounce) for eight top-selling energy drinks:

Energy Drink	Caffeine Concentration (mg/oz)
Red Bull	9.6
Monster	10.0
Rockstar	10.0
Full Throttle	9.0
No Fear	10.9
Amp	8.9
SoBe Adrenaline Rush	9.5
Tab Energy	9.1

a. What is the value of the mean caffeine concentration for this set of top-selling energy drinks?
b. Coca-Cola has 2.9 mg/ounce of caffeine and Pepsi Cola has 3.2 mg/ounce of caffeine. Write a sentence explaining how the caffeine concentration of top-selling energy drinks compares to that of these colas.

4.3 ● Consumer Reports Health (www.consumerreports.org/health) reported the accompanying caffeine concentration (mg/cup) for 12 brands of coffee:

Coffee Brand	Caffeine Concentration (mg/cup)
Eight O'Clock	140
Caribou	195
Kickapoo	155
Starbucks	115
Bucks Country Coffee Co.	195
Archer Farms	180
Gloria Jean's Coffees	110
Chock Full o'Nuts	110
Peet's Coffee	130
Maxwell House	55
Folgers	60
Millstone	60

Use at least one measure of center to compare caffeine concentration for coffee with that of the energy drinks of the previous exercise. (Note: 1 cup = 8 ounces)

4.4 ● Consumer Reports Health (www.consumerreports.org/health) reported the sodium content (mg) per 2 tablespoon serving for each of 11 different peanut butters:

120 50 140 120 150 150 150 65
170 250 110

a. Display these data using a dotplot. Comment on any unusual features of the plot.
b. Compute the mean and median sodium content for the peanut butters in this sample.
c. The values of the mean and the median for this data set are similar. What aspect of the distribution of sodium content—as pictured in the dotplot from Part (a)—provides an explanation for why the values of the mean and median are similar?

4.5 In August 2009, Harris Interactive released the results of the "Great Schools" survey. In this survey, 1086 parents of children attending a public or private school were asked approximately how much time they spent volunteering at school per month over the last school year. For this sample, the mean number of hours per month was 5.6 hours and the median number of hours was 1.0. What does the large difference between the mean and median tell you about this data set?