Lesson 11-5

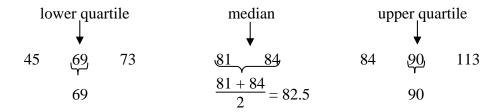
Example 1 Find Measures of Variation FOOD Find the measures of variation for the data in the table.

The range is 113 - 45 or 68 Calories.

Median, Upper Quartile, and Lower Quartile

Arrange the numbers in order from least to greatest.

Calories in a 1-cup Serving of Fruit		
Fruit	Calories	
Apples	73	
Blueberries	81	
Cherries	84	
Grapefruit	69	
Grapes	113	
Mandarin Oranges	84	
Plums	90	
Strawberries	45	



The median is 82.5, the lower quartile is 69, and the upper quartile is 90.

Interquartile Range = upper quartile – lower quartile = 90 - 69 or 21

Example 2 Find Outliers CAR SALES Find any outliers for the data in the table.

upper quartile →

median →

 $\text{lower quartile} \rightarrow$

Annual Car Sales		
Country	Cars Sold (in thousands)	
Belgium	515	
Austria	310	
Greece	290	
Sweden	290	
Portugal	258	
Ireland	237	
Luxembourg	42	

Find the interquartile range.

310 - 237 or 73

Multiply the interquartile range by 1.5.

 $73 \times 1.5 = 109.5$

Find the limits for the outliers.

Subtract 109.5 from the lower quartile.

237 - 109.5 = 127.5

Add 109.5 to the upper quartile.

310 + 109.5 = 419.5

The limits for the outliers are 127.5 and 419.5. The two outliers are 515 and 42.

Example 3 Use Measures of Variation to Describe Data

VOLUNTEER Use the measures of variation to describe the data in the table at the right.

Find the measures of variation.

The range is 26 - 7, or 19.

The median is 18.

The upper quartile is 21.

The lower quartile is 13.5.

The interquartile range is 21 - 13.5, or 7.5.

Volunteer Hours	
Student	Hours
Geraldo	26
Michael	22
Anne	20
Betty	18
Ralph	15
Erin	12
Amanda	7

The spread of the data is 19 hours. The middle number is 18 hours. One-fourth of the students volunteered 13.5 or fewer hours, and one-fourth of the students volunteered 21 or more hours. The number of hours volunteered by half of the students was in the interval 13.5–21.