Example 1

…continued

Median:

To determine the median, order the data values from smallest to largest and identify the middle value.

9, 9, 9, 9, 11, 12, 13, 14, 14, 14, 15, 17

There are two middle values, so find the mean of the two values.

$$\text{median} = \frac{12 + 13}{2}$$
$$= 12.5$$

Mode:

The mode is 9 because it occurs more times than any other value.

Range:

$$\text{range} = 17 - 9$$
$$= 8$$

Practice Run

1. Determine the mean, median, mode and range for the following data.

114	164	185	101	220	103
152	171	144	161	133	99
155	132	152	129	108	135

2. Describe how the two sets of data are different.

Data Set 1		Data Set 2	
Mean	102	Mean	51
Median	108	Median	73
Mode	115	Mode	64
Range	29	Range	67

Compare your answers.

1. Determine the mean, median, mode and range for the following data.

114	164	185	101	220	103
152	171	144	161	133	99
155	132	152	129	108	135

Mean:

$$\text{mean} = \frac{114 + 164 + 185 + 101 + 220 + 103 + 152 + 171 + 144 + 161 + 133 + 99 + 155 + 132 + 152 + 129 + 108 + 135}{18}$$

$$= \frac{2558}{18}$$

$$= 142.1$$

Median:

99, 101, 103, 108, 114, 129, 132, 133, 135, 144, 152, 152, 155, 161, 164, 171, 185, 220

$$\text{median} = \frac{135 + 144}{2}$$

$$= 139.5$$

Mode:

152 occurs twice and more often than any other data value, so 152 is the mode.

Range:

$$\text{range} = 220 - 99$$

$$= 121$$

2.   Describe how the two sets of data are different.

Data Set 1		Data Set 2	
Mean	102	Mean	51
Median	108	Median	73
Mode	115	Mode	64
Range	29	Range	67

The centre of Data Set 1 appears to be greater than the centre of Data Set 2 because all three measures of central tendency are higher for Data Set 1. It also appears that the data in Data Set 2 is much more spread out because the range is much larger.

Training Camp

A.   Frequency Distributions

In 2012 there were 92 people whose net worth was 10 billion dollars or more. The following table lists their values in billions of dollars.

Net Worth of People Worth over 10 Billion in 2012 (in billions of dollars)												
15.9	44.0	25.3	11.9	15.3	13.0	12.0	10.0	12.1	12.4	12.0	18.3	25.0
12.5	23.1	24.0	11.2	12.5	12.4	10.0	16.0	15.9	13.2	10.3	25.0	14.2
11.5	18.0	13.4	18.0	41.0	14.0	17.4	25.4	18.7	11.0	12.4	13.8	10.7
10.6	18.7	23.7	10.2	10.0	10.4	11.2	14.0	11.3	12.2	18.1	13.5	15.9
61.0	20.0	10.0	11.9	10.9	15.7	13.8	26.0	17.8	16.5	37.5	18.0	14.4
14.5	12.5	22.3	17.6	69.0	11.0	10.0	18.4	36.0	23.3	20.7	24.9	14.2
12.0	13.0	17.5	13.8	10.8	17.5	17.8	22.0	13.8	19.0	25.5	30.0	16.0
10.2												

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Source: http://www.forbes.com/billionaires/list/

When looking at this table, you may have tried to find the largest value or the smallest value and you may have gotten a vague sense of the distribution of values, but probably not much more. Raw data like this can be fairly difficult to interpret and answering a question like "are more of the values near 10 billion or near 60 billion?" can be a challenge.