

## Exercise Set A



**MM1D3a** Compare summary statistics (mean, median, quartiles, and interquartile range) from one sample data distribution to another sample data distribution in describing center and variability of the data distributions.

**MM1D3b** Compare the averages of the summary statistics from a large number of samples to the corresponding population parameters.

**In Exercises 1–4, find the mean, median, range, lower quartile, upper quartile, and interquartile range of the data set.**

- 5, 9, 3, 6, 12, 10, 8, 7, 12
- 54, 32, 87, 49, 67, 45, 71, 58, 64, 76
- 5.9, 7.1, 2.4, 1.9, 5.5, 4.3, 6.7, 3.8
- 110, 65, 141, 126, 99, 81, 156, 184, 73

- 5. Error Analysis** Describe and correct the error in finding the quartiles of the given data set.  
23, 16, 12, 20, 19, 24, 15

Median = 20  
Lower Quartile = 16  
Upper Quartile = 24



**In Exercises 6 and 7, compare the two samples using mean, median, range, and interquartile range.**

- Sample A: 41, 37, 58, 62, 46, 33, 74, 51, 69, 81  
Sample B: 56, 68, 39, 47, 75, 68, 64, 52, 42, 59
- Sample A: 182, 117, 149, 172, 161, 105, 179, 142, 187, 170, 155, 129  
Sample B: 114, 167, 159, 192, 100, 125, 174, 103, 181, 203, 151, 134

**In Exercises 8 and 9, use the following information.**

**Final Exam Scores** Mrs. Hitchcock is analyzing final exam scores for the AP history course that she has taught for the last ten years. The table shows the summary statistics for the years 1999, 2001, 2003, 2005, 2006, and for all Mrs. Hitchcock’s AP history students over the ten years.

	Mean	Median	Range	Lower Quartile	Upper Quartile	Interquartile Range
<b>1999</b>	88	91	29	82	95.5	13.5
<b>2001</b>	85.2	88	31	78.5	92	13.5
<b>2003</b>	83.8	82	50	73	89	16
<b>2005</b>	87	88.5	35	82.5	91	8.5
<b>2006</b>	89	87.5	28	85	94.5	9.5
<b>All Students</b>	86.3	87.5	52	80	93	13

- Find the averages of the summary statistics from the five samples. Then compare each average statistic to the corresponding population measure.
- What happens to the averages in Exercise 8 if you exclude the data from 2003?

## Exercise Set B



**MM1D3a** Compare summary statistics (mean, median, quartiles, and interquartile range) from one sample data distribution to another sample data distribution in describing center and variability of the data distributions.

**MM1D3b** Compare the averages of the summary statistics from a large number of samples to the corresponding population parameters.

**In Exercises 1–4, find the mean, median, range, lower quartile, upper quartile, and interquartile range of the data set.**

- 11, 16, 18, 17, 20, 10, 14, 10, 17, 12
- 124, 179, 250, 196, 297, 221, 170, 276, 141
- 25, 37, 59, 50, 33, 64, 42, 46
- 5.8, 3.1, 4.7, 1.2, 2.4, 5.3, 4.2, 1.8, 3.9

**In Exercises 5 and 6, compare the two samples using the mean, median, range, and interquartile range.**

- Sample A: 10, 63, 52, 40, 8, 12, 73, 49, 26, 57, 32, 19  
Sample B: 56, 28, 21, 39, 69, 21, 11, 45, 56, 27, 35, 42
- Sample A: 3.0, 5.3, 2.1, 4.2, 8.9, 6.7, 4.9, 1.6, 2.5, 3.4  
Sample B: 7.8, 2.4, 6.2, 3.5, 1.2, 7.1, 5.3, 2.9, 4.1, 4.7

**In Exercises 7–9, use the following information.**

**Bowling Scores** The owner of a bowling alley keeps track of all league scores and has calculated statistics for the entire population. The table below shows the summary statistics for five different leagues, and all of the league bowlers.

	Mean	Median	Range	Lower Quartile	Upper Quartile	Interquartile Range
<b>Monday Men</b>	195	199.5	154	167	236	69
<b>Tuesday Mixed</b>	145	141	185	117.5	201.5	84
<b>Wed. Women</b>	162	158.5	154	138	197	59
<b>Thurs. Couples</b>	136	140.5	201	111	208	97
<b>Juniors</b>	119	121	178	94	168.5	74.5
<b>All League Bowlers</b>	157	172.5	258	128	210	82

- Find the averages of the statistics from the five samples.
- Compare each average statistic to the corresponding population value.
- Writing** Explain why the averages of statistics from samples are sometimes very close to the population values and sometimes very far from the population values. In your explanation, refer to the bowling leagues that were chosen as samples.