

Lesson Summary

To find the IQR, you order the data, find the median of the data, and then find the median of the bottom half of the data (the lower quartile) and the median of the top half of the data (the upper quartile). The IQR is the difference between the upper quartile and the lower quartile, which is the length of the interval that includes the middle half of the data. The median and the two quartiles divide the data into four sections, with about $\frac{1}{4}$ of the data in each section. Two of the sections are between the quartiles, so the interval between the quartiles would contain about 50% of the data.

Problem Set

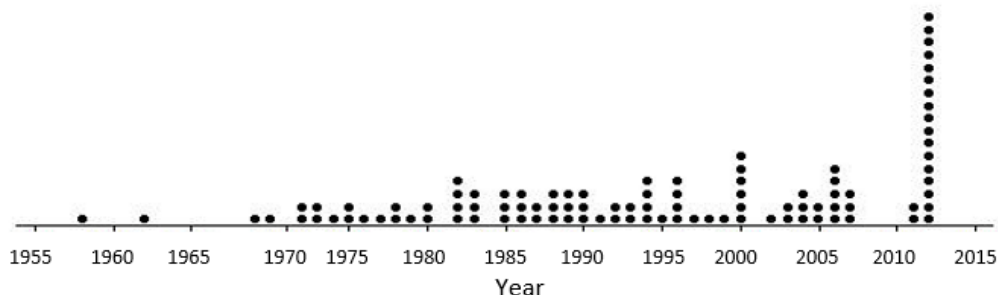
1. The average monthly high temperatures (in degrees Fahrenheit) for St. Louis and San Francisco are given in the table below.

	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
St. Louis	40	45	55	67	77	85	89	88	81	69	56	43
San Francisco	57	60	62	63	64	67	67	68	70	69	63	57

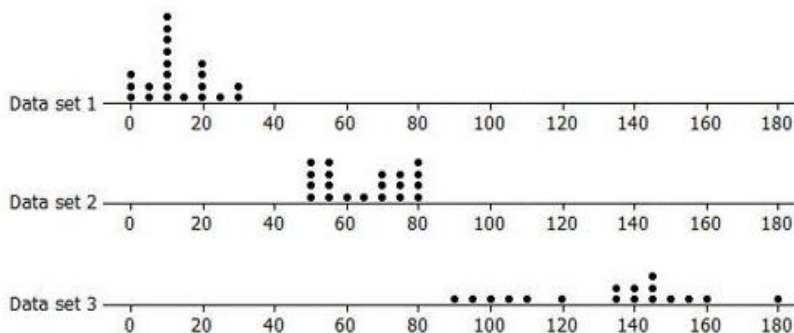
Data Source: <http://www.weather.com>

- How do you think the data might have been collected?
- Do you think it would be possible for $\frac{1}{4}$ of the temperatures in the month of July for St. Louis to be 95°F or above? Why or why not?
- Make a prediction about how the values of the IQR for the temperatures for each city compare. Explain your thinking.
- Find the IQR for the average monthly high temperature for each city. How do the results compare to what you predicted?

2. The plot below shows the years in which each of 100 pennies were made.



- What does the stack of 17 dots at 2012 representing 17 pennies tell you about the age of these pennies in 2014?
 - Here is some information about the sample of 100 pennies. The mean year they were made is 1994; the first year any of the pennies were made was 1958; the newest pennies were made in 2012; Q1 is 1984, the median is 1994, and Q3 is 2006; the MAD is 11.5 years. Use the information to indicate the years in which the middle half of the pennies was made.
3. In each of parts (a)–(c), create a data set with at least 6 values such that it has the following properties:
- A small IQR and a big range (maximum – minimum)
 - An IQR equal to the range
 - The lower quartile is the same as the median.
4. Rank the following three data sets by the value of the IQR.



5. Here are the number of fries in each of the bags from Restaurant A:

80, 72, 77, 80, 90, 85, 93, 79, 84, 73, 87, 67, 80, 86, 92, 88, 86, 88, 66, 77

- Suppose one bag of fries had been overlooked and that bag had only 50 fries. If that value is added to the data set, would the IQR change? Explain your reasoning.
- Will adding another data value always change the IQR? Give an example to support your answer.