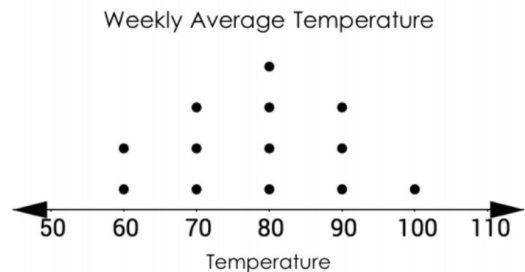
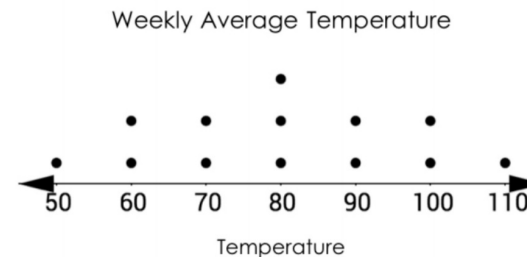


A meteorologist recorded the average weekly temperatures over a 13-week period and displayed the data below.



A meteorologist in a different state also recorded the average weekly temperatures over a 13-week period and displayed the data below.



Measures of spread tell us how much a data sample is spread out or scattered.

What are the differences between the spreads of the two data sets?

Second set is more spread out.

There are two primary ways to measure the spread of data.

- **Interquartile Range (IQR)** = represents the middle 50% of the data and is typically used to describe the spread of skewed data.

Consider the following data set.

5, 5, 6, 7, 8, 8, 8, 9, 10, 12, 12

What are the first and third quartiles of the data?

1st: 6 3rd: 10

Calculate the interquartile range (IQR) of the data.

$$10 - 6 = 4$$

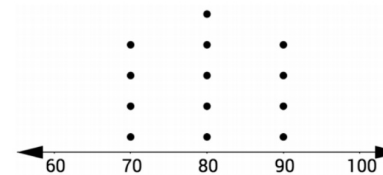
Why do you think IQR is used to measure spread in skewed data?

The IQR is unaffected with skewed data.

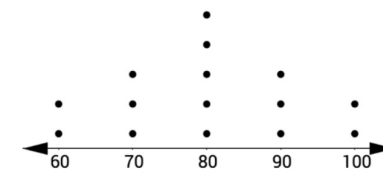
- **Standard deviation** is the typical distance of the data values from the mean. The larger the standard deviation, the farther the individual values are from the mean. It is typically used for normal distribution.

Consider the dot plots below.

A.



B.



Which has a larger standard deviation? Explain your answer.

B. More spread out.

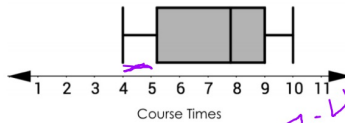
The Bozeman Bucks and Tate Aggies cross-country teams ran an obstacle course. The times for each team are summarized below.

Bozeman Bucks' Obstacle Course Times

4:25	4:43	4:49	5:02	5:12
5:21	5:31	5:32	5:37	5:52
5:54	6:08	6:20	6:26	6:33
6:48	6:53	7:16	7:23	8:05

1:19

Tate Aggies' Obstacle Course Times



Which statements are true about the data for the Bozeman Bucks and the Tate Aggies? Select all that apply.

- The median time of the Bozeman Bucks is less than the median time of the Tate Aggies.
- The fastest 25% of athletes on both teams complete the obstacle course in about the same amount of time.
- The interquartile range of the Bozeman Bucks is less than the interquartile range of the Tate Aggies.
- Approximately 50% of Tate Aggies have times between 5 and 6 minutes.
- The data for the Bozeman Bucks is skewed to the left.

The data from a survey of the ages of people in a CrossFit class were skewed to the right.

Part A: The appropriate measure of center to describe the data distribution is the

- mean.
- median.

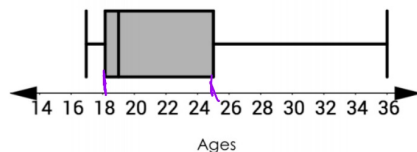
The interquartile range standard deviation is the appropriate

measure to describe the spread.

Part B: The box plot below represents the data. Calculate the appropriate measure of spread.

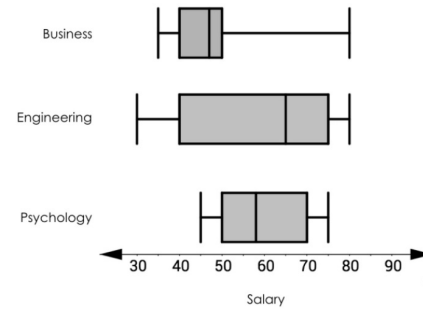
Age Distribution in a CrossFit Class

$25 - 18 = 7$



The following box plots represent the starting salaries (in thousands of dollars) of 12 recent business graduates, 12 recent engineering graduates, and 12 recent psychology graduates.

Salaries of Recent Graduates



median: Engineering
IQR: Engineering

a. Describe the shape of each major's data distribution.

Business: Skewed right
Engineering: Skewed left
Psychology: Normal

b. Which major has the largest median salary? The largest IQR?