Measure of Center and Variability

Mr. Falci and Mr. Burke asked the students in their Algebra classes how many minutes a night they spent on math homework. The data is show in the frequency tables.

<div align="center">

Mr. Falci's Class

Minutes	Frequency
5	1
15	2
20	8
90	2

Mr. Burke's Class

Minutes	Frequency
5	3
15	6
20	4
25	2

</div>

List the data from the frequency table in order from *least to greatest* for **Mr. Falci's class.**

List the data from the frequency table in order from *least to greatest* for **Mr. Burke's class.**

<div align="center">

Mr. Falci's Class   Mr. Burke's Class

</div>

Mean - _____   Mean - _____

Median - _____   Median - _____

Mode - _____   Mode - _____
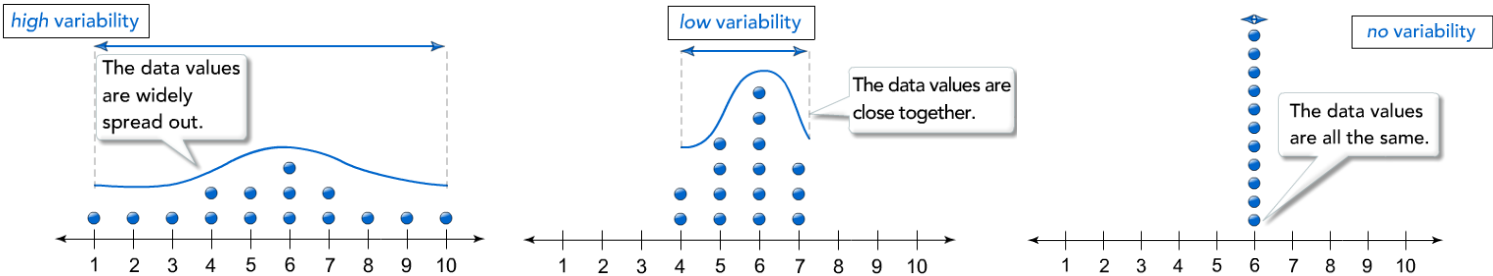

Range - _____   Range - _____

A data set's **Measure of Center** refers to a single value that best describes the data set. **Outliers** affect a data sets measure of center. If a data set <u>HAS OUTLIERS</u>, the <u>MEDIAN</u> is the best choice to represent the measure of center because it is NOT affected by outliers. If a data set <u>DOES NOT HAVE OUTLIERS</u>, the <u>MEAN or MEDIAN</u> will be relatively close so either is acceptable to represent the measure of center.

*Which measure of center best represents Mr. Falci's data _____

*Which measure of center best represents Mr. Burke's data _____
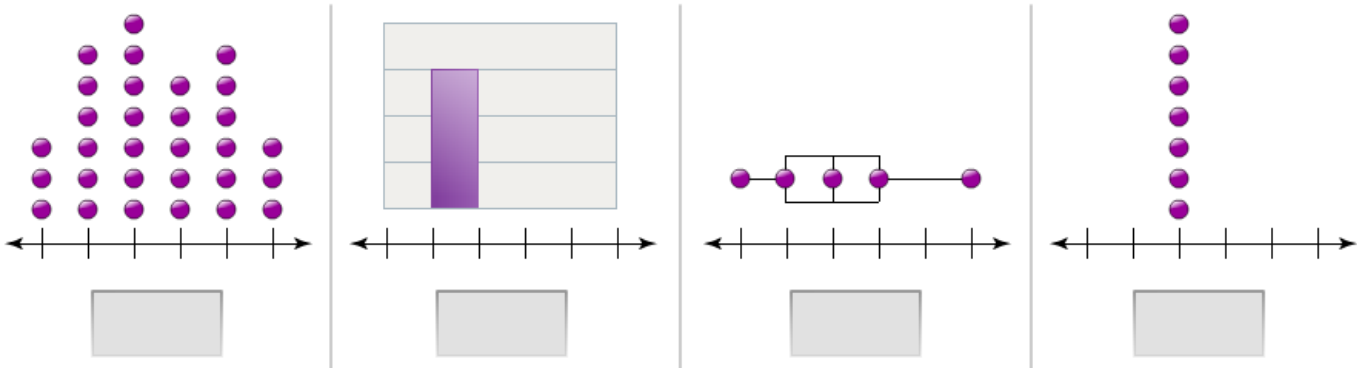
Which teacher's class do you say spends more time on their homework? Explain.

_____

_____

Variability describes how much the data values in a data set differ, or vary, from each other.

high variability

The data values are widely spread out.

low variability

The data values are close together.

no variability
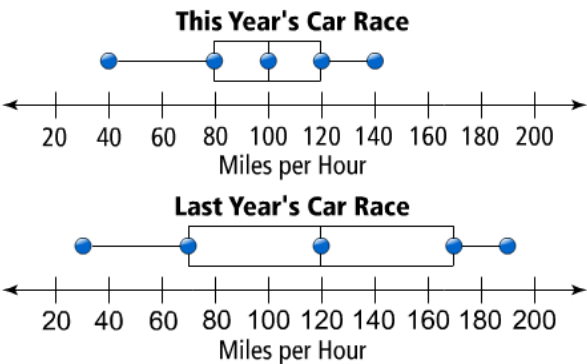
The data values are all the same.

Example
Label each data display to describe its level of variability.

High   **Low**   **None**

Got It?

Which race was more competitive, this year's or last year's?

This Year's Car Race

Miles per Hour

Last Year's Car Race

Miles per Hour

Got It?

A coffee shop wants to serve coffee at the same temperature every time for the best taste. On average, both shop workers hit the shop goal. However, the shop manager thinks one worker does a better job than the other.

Tell what temperature the shop wants the coffee to be. Then explain who the manager thinks did a better job.

Coffee Temperature by Cup (°F)

Worker A	155	160	150	145	170	175	165
Worker B	155	160	163	157	162	158	165

Measure of Center and Variability

Mr. Falci and Mr. Burke asked the students in their Algebra classes how many minutes a night they spent on math homework. The data is show in the frequency tables.

Mr. Falci's Class

Minutes	Frequency
5	1
15	2
20	8
90	2

Mr. Burke's Class

Minutes	Frequency
5	3
15	6
20	4
25	2

List the data from the frequency table in order from *least to greatest* for **Mr. Falci's class.**

5, 15, 15, 20, 20, 20, 20, 20, 20, 20, 20, 90, 90

List the data from the frequency table in order from *least to greatest* for **Mr. Burke's class.**

5, 5, 5, 15, 15, 15, 15, 15, 15, 20, 20, 20, 20, 25, 25

Mr. Falci's Class

Mean - $375 \div 13 = 28.8$

Median - 20

Mode - 20

Range - $90 - 5 = 85$

Mr. Burke's Class

Mean - $235 \div 15 = 15.7$

Median - 15

Mode - 15

Range - $25 - 5 = 20$

A data set's **Measure of Center** refers to a single value that best describes the data set. **Outliers** affect a data sets measure of center. If a data set HAS OUTLIERS, the MEDIAN is the best choice to represent the measure of center because it is NOT affected by outliers. If a data set DOES NOT HAVE OUTLIERS, the MEAN or MEDIAN will be relatively close so either is acceptable to represent the measure of center.
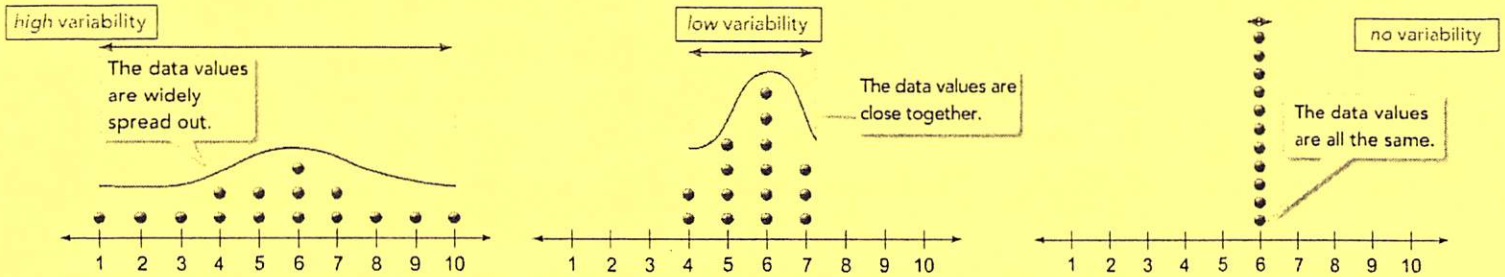
*Which measure of center best represents Mr. Falci's data __median 20__
because the outliers affect the mean

*Which measure of center best represents Mr. Burke's data __mean or median 15__
because there are no outliers

Which teacher's class do you say spends more time on their homework? Explain.

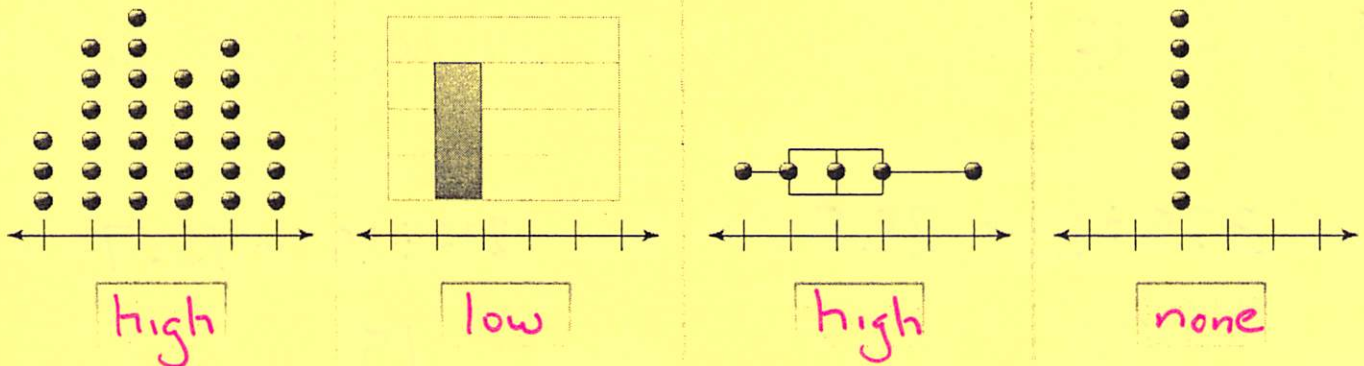*Mr. Falci's beccuse the measure of center is higher*

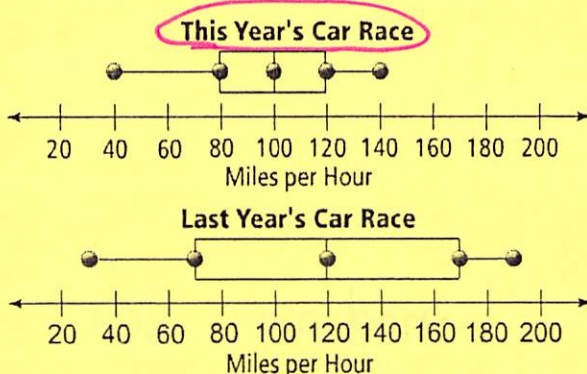**Variability** describes how much the data values in a data set differ, or vary, from each other.

high variability	low variability	no variability
The data values are widely spread out.	The data values are close together.	The data values are all the same.

Example
Label each data display to describe its level of variability.

High   **Low**   **None**

high   *low*   *high*   *none*

Got It?

Which race was more competitive, this year's or last year's?

This Year's Car Race

20 40 60 80 100 120 140 160 180 200
Miles per Hour

Last Year's Car Race

20 40 60 80 100 120 140 160 180 200
Miles per Hour

The data isn't as spread out as last years race

Got It?

A coffee shop wants to serve coffee at the same temperature every time for the best taste. On average, both shop workers hit the shop goal. However, the shop manager thinks one worker does a better job than the other.

Tell what temperature the shop wants the coffee to be. Then explain who the manager thinks did a better job.

mean for both A and B = 160

Coffee Temperature by Cup (°F)

Worker A	155	160	150	145	170	175	165
Worker B	155	160	163	157	162	158	165

Worker B had less varicbility and was closer to the goal more often