# Math 7 Strategies 1

Q1 2024
Week 1-5

# DATA SAMPLING objectives from Math PSSA 7th grade

**PA Grade 7, Math Anchor**

**M07.D-S.1.1.1**

Determine whether a sample is a random sample given a real-world situation.

**M07.D-S.1.1.2**

Use data from a random sample to draw inferences about a population with an unknown characteristic of interest.
*Example 1:* Estimate the mean word length in a book by randomly sampling words from the book.
*Example 2:* Predict the winner of a school election based on randomly sampled survey data.

**M07.D-S.2.1.1**

Compare two numerical data distributions using measures of center and variability.
*Example 1:* The mean height of players on the basketball team is 10 cm greater than the mean height of players on the soccer team. This difference is equal to approximately twice the variability (mean absolute deviation) on either team. On a line plot, note the difference between the two distributions of heights.
*Example 2:* Decide whether the words in a chapter of a seventh-grade science book are generally longer than the words in a chapter of a fourth-grade science book.

- Range, Interquartile Range, DEVIATION

- Various charts/plots
- Box plot create/interpret (min, Q1, median, Q3, max)

- Mean, Mode, Mean

# Week Sept. 23-27 Lesson Overview

**Monday**         -  Studyisland Comparing DATA sets more practice sessions individually after using the handout of missed problems from the class is covered.

**Tuesday** - Lumo Learning  Book pgs 112-128 complete for homework if necessary.

**Wednesday** - Review for TEST and organize our notebooks

**Thursday - TEST** on paper of the Statistical Measures for comparing data

*Friday - no class as HOMECOMING activities*

# KNOW

min

$Q_1$  $Q_3$

median
$Q_2$

max - $Q_4$

No. line
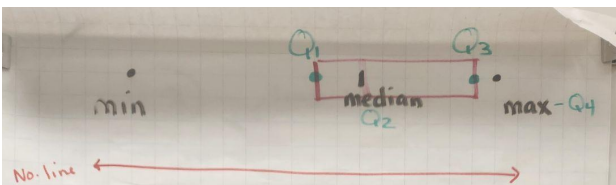
Range $R = max - min$

Interquartile Range $= Q_3 - Q_1$
IQR        Box width

Quartile (25 %)
1. Put in Order
2. Halfway $Q_2$ Median
3. Halfway of Halves $Q_1$
                       $Q_3$

min   84 $Q_1$   Median $Q_2$
      92 $Q_3$   87

8th Pd Math 7

Random Sample (Part of Population)

Bias • none, be Represented in our Population Sample

Most = Over 50% = $\frac{1}{2}$ = Majority

Mean = $\frac{\text{sum add up}}{\text{number of items}}$

Mode = most occurring

Median = middle when order

| Term | Definition | Grade |
|---|---|---|
| Box-and-Whisker Plot | A plot that visually represents a set of data. A rectangle (the box) is used to represent the dispersion of points between the first and third quartiles, and line segments (the whiskers) are used to represent the dispersion of points between the minimum value and the first quartile and between the maximum value and the third quartile. A line segment drawn within the box represents the median value.<br><br>The plot provides a five-number summary of the data—the minimum, first quartile, median, third quartile, and maximum values. This five-number summary of the data is specified on the plot or is evident from a number line drawn above or below the plot.<br><br>The example below shows a horizontal *box-and-whisker plot. Box-and-whisker plots* can also be vertically oriented.<br><br>median<br>first quartile     third quartile   maximum<br>minimum<br><br>0  2  4  6  8  10  12  14  16  18  20  22  24  26  28  30  32<br><br>Box-and-Whisker Plot<br><br>See also Median, Quartile, and Interquartile Range. | 6 |

A survey was done on the number of hours that teenagers, in urban and rural areas, spend on the Internet every week.



Time Spent on the Internet
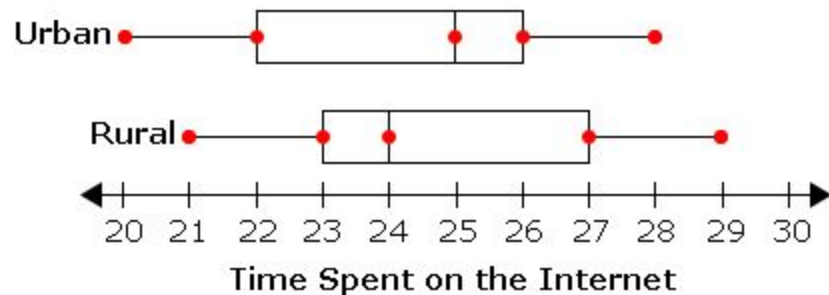
Which statement correctly compares the data?

    **A.**   The time spent on the Internet by teenagers in both areas is approximately the same.

    **B.**   Teenagers in rural areas generally spend more time on the Internet than teenagers in urban areas.

✕ **C.**   Teenagers in urban areas generally spend more time on the Internet than teenagers in rural areas.

⭐ **D.**   Although the median hours spent on the Internet by teenagers in urban areas is generally more than that in rural areas, the variability creates too much overlap for any conclusion to be made.

**Directions: Select ALL the correct answers.**

Bernice lives in Lansing, Michigan. She looked up the low temperatures, in degrees Fahrenheit, in her hometown during January and February of 2015. She created the following table from her data.

|  | January | February |
|---|---|---|
| Mean | 13.2 | 1.9 |
| Median | 16 | 0.5 |
| Mean Absolute Deviation | 8.6 | 8.3 |
| Interquartile Range | 17 | 14.5 |

Which of the following statements are true from Bernice's data about Lansing, Michigan during that period?

☐ The low temperatures in February are about the same as in January.

☐ The low temperatures in February vary much less than in January.

✗ ☐ The low temperatures in February vary about the same amount as in January.

✗ ☑ The low temperatures in February vary much more than in January.

★ ☑ The low temperatures in February are much lower than in January.

☐ The low temperatures in February are much higher than in January.

during that

**Explanation** ✗

To determine which of the statements are true from Bernice's data, start by looking at the measures of center.
The mean low temperature for January is 13.2°F, while the mean low temperature for February is 1.9°F.
The median low temperature for January is 16°F, while the median low temperature for February is 0.5°F.
Since 13.2 and 16 are considerably higher than 1.9 and 0.5, **the low temperatures in February are much lower than in January**.
Next, look at the measures of variation.
The mean absolute deviation of the low temperatures for January is 8.6°F, while the mean absolute deviation of the low temperatures for February is 8.3°F. The interquartile range of the low temperatures for January is 17°F, while the interquartile range of the low temperature for February is 14.5°F. Since 8.6 is close to 8.3 and 17 is close to 14.5, **the low temperatures in February vary about the same amount as in January**.