HPISD Fifth Grade TAG Math

UNIT NAME	ESTIMATED DURATION	9 WEEKS			
UNIT 6: MEASUREMENT AND DATA	14 DAYS	1	2	**3**	4

Unit Overview

The student applies mathematical process standards to solve problems by collecting, organizing, displaying and interpreting data.
The student applies mathematical process standards to use statistics to describe or solve problems and analyze data.
The student applies mathematical process standards to use numerical or graphical representations to analyze and solve problems.

Enduring Understandings

The student will understand that:	• Numeric data is represented, compared, and interpreted using graphs. • Graphical representations show distribution of values and can be analyzed to draw conclusions. • Graphical representations can be used to describe data distribution.

Concepts

Measures of Center	Measure used to describe the middle of a data set; the mean, median, and mode are measures of central tendency
Graph	Visual representation showing the relation between variable quantities
Statistical Question	Question that has many different, or variable, answers
Numeric Data	Data that can be measured or identified on a numerical scale
Range	Difference of the greatest value and the least value in a data set
Sample	Part of the population that is chosen to represent the entire group
Outliers	Data values that are either much greater or much less than the other data values
Categorical Data	Data that are sorted into categories on the basis of qualitative characteristics
Interquartile Range	Difference of the third (upper) and first (lower) quartiles in a data set, representing the middle half of the data
Measures of Spread	Measure that describes how far apart the data are distributed

Guiding/Essential Questions

• How can you use measures of center to describe a data set?
• How can you use box plots and measures of spread to describe a data set?
• How can you summarize and display numeric data?
• How can you display data in a stem and leaf plot and in a histogram?
• How can you solve real-world problems by displaying, analyzing, and summarizing data?
• How can you summarize and display categorical data?
• How can scatterplots represent categorical data?

Learning Targets & Progressions

- **Students will represent numeric data graphically and use the graphical representation to describe the measures of spread.**
  - Recognize and plot ordered pairs
  - Define and determine measures of center (mean, median, mode, and range)
  - Compare skewed and normally distributed data sets
- **Students will apply summary statistics to describe numeric and categorical data and make comparisons.**
  - Distinguish between categorical and numerical data questions
  - Organize data appropriately
- **Students will interpret sets of data in various graphical representations to make distinctions regarding measures of variability.**
  - Recognize outliers and underlying implications of an outlier in a data set
  - Analyze each type of graphical representation and connect it to the appropriate data set
- **Students will graphically represent and interpret data from a scatterplot.**
  - Label the correlation of a scatterplot (none, strong/weak, positive/negative)
  - Draw conclusions about the independent and dependent variables based on the correlation

Formative Assessments	Summative Assessments

TEKS: Readiness Standards	TEKS: Supporting Standards
5.9C solve one- and two-step problems using data from a frequency table, dot plot, bar graph, stem-and-leaf plot, or scatterplot **6.12C** summarize numeric data with numerical summaries, including the mean and median (measures of center) and the range and interquartile range (IQR) (measures of spread), and use these summaries to describe the center, spread, and shape of the data distribution **6.12D** summarize categorical data with numerical and graphical summaries, including the mode, the percent of values in each category (relative frequency table), and the percent bar graph, and use these summaries to describe the data distribution **6.13A** interpret numeric data summarized in dot plots, stem-and-leaf plots, histograms, and box plots	**5.9A** represent categorical data with bar graphs of frequency tables and numerical data, including sets of measurements in fractions or decimals, with dot plots or stem-and-leaf plots **5.9B** represent discrete paired data on a scatterplot **6.12A** represent numeric data graphically, including dot plots, stem-and-leaf plots, histograms, and box plots **6.12B** use the graphical representation of numeric data to describe the center, spread, and shape of the data distribution **6.13B** distinguish between situations that yield data with and without variability

TEKS Process Standards

5.1A/6.1A apply mathematics to problems arising in everyday life, society, and the workplace
5.1B/6.1B use a problem-solving model that incorporates analyzing given information, formulating a plan or strategy, determining a solution, justifying the solution, and evaluating the problem-solving process and the reasonableness of the solution
5.1C/6.1C select tools, including real objects, manipulatives, paper and pencil, and technology as appropriate, and techniques, including mental math, estimation, and number sense as appropriate, to solve problems
5.1D/6.1D communicate mathematical ideas, reasoning, and their implications using multiple representations, including symbols, diagrams, graphs, and language as appropriate

5.1E/6.1E create and use representations to organize, record and communicate mathematical ideas
5.1F/6.1F analyze mathematical relationships to connect and communicate mathematical ideas
5.1G/6.1G display, explain, and justify mathematical ideas and arguments using precise mathematical language in written or oral communication

Processes and Skills: What students should be able to DO	Facts: What students should KNOW
• Display numeric data graphically • Analyze graphical representations to describe distribution • Summarize numeric and categorical data including quantitative and qualitative measures • Make interpretations based on sets of data	• Types of graphs and their purpose (appropriate display for a given data set) • Measures of Center (mean, median, and mode) • Difference between numeric and categorical data • Measures of Spread (range and interquartile range)

Topics

Analyzing Categorical Data Box Plots Categorical Data Comparing Data Displayed in Box Plots Comparing Data Displayed in Dot Plots Dot Plots Frequency Histogram	Interquartile Range Measures of Center Measures of Spread Outliers Scatterplots Statistical Questions Stem-and-Leaf Plots

Language of Instruction

box plots categorical data center comparisons data distribution dot plots frequency histograms interquartile range mean	measures of center measures of spread median mode numeric Data outliers range scatterplots stem-and-leaf plots

State Assessment Connections	National Assessment Connections

Resources

HMH, Texas Go Math! Unit 6 Page 479-522