




Grade Level Content Standards about Data Displays and Analysis

The table below shows the grade level expectations for various content areas in the Arizona State Standards in reference to graphs and visual displays of data, as well as data analyses.

Grade	Math: Types of Graphs	Math: Analysis Arizona Mathematics Standards	Science AzSS K-12 Science and Engineering Practices Matrix of Elements	Social Studies 2018 History and Social Science Standards	Computer Science (CS) Educational Technology (EdTech)
K		Classify, sort, and organize by categories	Describe, measure, and compare quantitative attributes of different objects and display the data using simple graphs.	Construct maps, graphs and other geographical representations to support content focus.	CS: Display data in a bar graph, pie chart, or pictograph.
1		Organize, represent, and interpret data with up to three categories; ask and answer questions about totals, category counts, and comparisons.			
2	<ul style="list-style-type: none"> • line plot • picture graph • bar graph 	Generate measurement data to display on a line plot. Represent data up to four categories. Answer questions using information presented in graphs.			
3	<ul style="list-style-type: none"> • line plot • scaled picture graph • scaled bar graph 	Generate measurement data with whole numbers, halves, or quarters to display on a line plot. Solve problems using information in the graph.	Display data in tables and graphs. Compare data collected by different groups in order to discuss similarities and differences in their findings. Organize simple data sets to reveal patterns that suggest relationships.	Construct maps and graphs to represent changes.	CS: Collect, organize, and present data visually to highlight relationships and support a claim. EdTech: Standard 5, Indicator 5.b Organize and represent data using technology.
4	<ul style="list-style-type: none"> • line plot 	Make a line plot with $\frac{1}{2}$, $\frac{1}{4}$, and $\frac{1}{8}$ fractions. Solve problems using information in line plots.			
5	<ul style="list-style-type: none"> • line plot • Plot coordinates in quadrant I 	Make a line plot with $\frac{1}{2}$, $\frac{3}{4}$ and $\frac{1}{8}$ fractions. Solve problems using information in line plots.			
6	<ul style="list-style-type: none"> • histograms • dot plots • box plots • Plot coordinates in all 4 quadrants 	Summarize data by providing measures of center and variability, describe patterns and deviations in context, and explain how these relate to the data's distribution.			
7		Use representative random samples to make inferences about populations, estimate unknown traits, and assess variability. Compare data distributions by analyzing centers and variability to draw informal conclusions.			
8	<ul style="list-style-type: none"> • scatter plots 	Explore relationships in bivariate data. Fit and interpret linear models, assess patterns and deviations, and use statistics and simulations to analyze compound events and probabilities.	Construct, analyze, and interpret graphical displays of data to identify linear and nonlinear relationships. Distinguish between causal and correlational relationships. Use graphical displays (e.g., maps) of large data sets to identify temporal and spatial relationships. Use digital tools (e.g., computers) to analyze very large data sets for patterns and trends.	Construct maps, graphs, and other representations to explain spatial relationships and analyze political and economic events.	CS: Organize and present data visually to support a claim EdTech: Standard 5, Indicator 5.b. Organize and represent data using technology.

Instructional Routines that support data analysis for all content areas:	Slow Reveal Graphs : cross-curricular sensemaking about data 	Data Talks : classroom discussions to help students develop data literacy 	New York Times What's Going On in This Graph? 
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