

Statistics and Probability - Interpreting Categorical and Quantitative Data

Grades 9 – 12

Summarize, represent, and interpret data on a single count or measurement variable

1. Represent data with plots on the real number line (dot plots, histograms, and box plots).
2. Use statistics appropriate to the shape of the data distribution to compare center (median, mean) and spread (interquartile range, standard deviation) of two or more different data sets.
3. Interpret differences in shape, center, and spread in the context of the data sets, accounting for possible effects of extreme data points (outliers).
4. Use the mean and standard deviation of a data set to fit it to a normal distribution and to estimate population percentages. Recognize that there are data sets for which such a procedure is not appropriate. Use calculators, spreadsheets, and tables to estimate areas under the normal curve.

Summarize, represent, and interpret data on two categorical and quantitative variables

5. Summarize categorical data for two categories in two-way frequency tables. Interpret relative frequencies in the context of the data (including joint, marginal, and conditional relative frequencies). Recognize possible associations and trends in the data.
6. Represent data on two quantitative variables on a scatter plot, and describe how the variables are related.
 - a. Fit a function to the data; use functions fitted to data to solve problems in the context of the data. *Use given functions or choose a function suggested by the context. Emphasize linear, quadratic, and exponential models.*
 - b. Informally assess the fit of a function by plotting and analyzing residuals.
 - c. Fit a linear function for a scatter plot that suggests a linear association.

Interpret linear models

7. Interpret the slope (rate of change) and the intercept (constant term) of a linear model in the context of the data.
8. Compute (using technology) and interpret the correlation coefficient of a linear fit.
9. Distinguish between correlation and causation.

Description

- These Standards define what students should understand and be able to do in their study of mathematics. The Standards set grade-specific standards but do not define the intervention methods or materials necessary to support students who are well below or well above grade-level expectations.
- *The complexity options for these standards assure that all students, including those with the significant cognitive disabilities, have access to these core standards through appropriate instructional tasks.*

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Extended Standards

Essence of the Standards:

- *Represent data with bar graphs and dot plots.*
- *Use measures of center to compare data.*
- *Interpret data on a scatter plot.*
- *Interpret the slope and intercept on a graph.*

Most Complex



Least Complex

Summarize, represent and interpret data on a single count or measurement variable.

SP.ID.912.1a Create a bar graph to represent given or collected data.	SP.ID.912.1b Create a dot plot to represent given or collected data.	SP.ID.912.1c Match a dot plot with a given data set.
SD.ID.912.2a Compute mean, median and mode of a given or collected data set.	SP.ID.912.2b Compute mean (average), median or mode of a given or collected data set involving numbers less than 100.	SP.ID.912.2c Identify the median and mode of a given data set involving numbers less than 100.
SP.ID.912.3a Interpret a bar graph.	SP.ID.912.3b Interpret a dot plot.	SP.ID.912.3c Complete an incomplete dot plot (e.g., adding missing labels and missing data points).

Summarize, represent and interpret data on two categorical and quantitative variables.

SP.ID.912.4a Create a scatter plot to represent given or collected data and interpret the relation between the two variables as positive, negative or no correlation.	SP.ID.912.4b Interpret the relation between two variables in a scatter plot as positive, negative or no correlation.	SP.ID.912.4c Match a scatter plot with a given data set.
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Interpret linear models.

SP.ID.912.5a Graph a line with a given slope and y-intercept.	SP.ID.912.5b Identify the slope of a line.	SP.ID.912.5c Match a line graph with a given data set.
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