

# Unit 8 Data Analysis and Probability

Content Area: **Math**  
Course(s): **CP Algebra 1, Accelerated Algebra I, Accelerated Algebra I**  
Time Period: **Marking Period 4**  
Length: **4**  
Status: **Published**

## Unit Overview

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This unit allows students to master basic statistics. They will be able to make inferences, justify conclusions, interpret quantitative data, and read data from many forms.

Link to optional Desmos Curriculum resource:

<https://teacher.desmos.com/collection/61bcc95700581818dff1d4d7?intro-banner-expanded=true>

## Enduring Understandings

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- Different measures can be used to interpret and compare sets of data.
- When collecting data, it is important for the results to accurately represent the situation.
- Data can be organized in matrices or in intervals. Separating data into subsets is a useful way to summarize and compare data sets.
- Counting methods can be useful to find the number of possible ways to choose objects with and without regard to order.
- The probability of an event, or  $P(\text{event})$ , tells how likely the event will occur. Probabilities can be found by reasoning mathematically or by using experimental data.
- The probability of a compound event can sometimes be found from expressions of the probabilities of simpler events.

## Essential Questions

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How can collecting and analyzing data help you make decisions or predictions?

How can you make and interpret different representations of data?

How is probability related to real-world events?

## New Jersey Student Learning Standards (No CCS)

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MA.S-ID.A.1	Represent data with plots on the real number line (dot plots, histograms, and box plots).
MA.S-ID.A.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.
MA.S-ID.A.3	Interpret differences in shape, center, and spread in the context of the data sets, accounting for possible effects of extreme data points (outliers).
MA.S-ID.A.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.
MA.S-ID.B.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.
MA.N-Q.A.1	Use units as a way to understand problems and to guide the solution of multi-step problems; choose and interpret units consistently in formulas; choose and interpret the scale and the origin in graphs and data displays.
MA.N-Q.A.2	Define appropriate quantities for the purpose of descriptive modeling.
MA.S-IC.B.5	Use data from a randomized experiment to compare two treatments; use simulations to decide if differences between parameters are significant.
MA.S-CP.A.1	Describe events as subsets of a sample space (the set of outcomes) using characteristics (or categories) of the outcomes, or as unions, intersections, or complements of other events (“or,” “and,” “not”).
MA.S-CP.A.2	Understand that two events $A$ and $B$ are independent if the probability of $A$ and $B$ occurring together is the product of their probabilities, and use this characterization to determine if they are independent.
MA.S-CP.A.3	Understand the conditional probability of $A$ given $B$ as $P(A \text{ and } B)/P(B)$ , and interpret independence of $A$ and $B$ as saying that the conditional probability of $A$ given $B$ is the same as the probability of $A$ , and the conditional probability of $B$ given $A$ is the same as the probability of $B$ .
MA.S-CP.A.4	Construct and interpret two-way frequency tables of data when two categories are associated with each object being classified. Use the two-way table as a sample space to decide if events are independent and to approximate conditional probabilities.
MA.S-CP.A.5	Recognize and explain the concepts of conditional probability and independence in everyday language and everyday situations.
MA.S-CP.B.7	Apply the Addition Rule, $P(A \text{ or } B) = P(A) + P(B) - P(A \text{ and } B)$ , and interpret the answer in terms of the model.
MA.S-CP.B.8	Apply the general Multiplication Rule in a uniform probability model, $P(A \text{ and } B) = [P(A)] \times [P(B A)] = [P(B)] \times [P(A B)]$ , and interpret the answer in terms of the model.

## Interdisciplinary Connections

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LA.W.9-10.6	Use technology, including the Internet, to produce, share, and update individual or shared writing products, taking advantage of technology’s capacity to link to other information and to display information flexibly and dynamically.
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SCI.HS-ETS1-2	Design a solution to a complex real-world problem by breaking it down into smaller, more manageable problems that can be solved through engineering.
TECH.8.1.12.C.CS4	Contribute to project teams to produce original works or solve problems.

## Technology Standards

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TECH.8.1.12.C.CS4	Contribute to project teams to produce original works or solve problems.
TECH.8.1.12.D.CS3	Exhibit leadership for digital citizenship.
TECH.8.1.12.E.CS4	Process data and report results.
TECH.8.1.12.F.CS3	Collect and analyze data to identify solutions and/or make informed decisions.
TECH.8.1.12.F.CS4	Use multiple processes and diverse perspectives to explore alternative solutions.
TECH.8.2.12.C.CS2	The application of engineering design.

## 21st Century Themes/Careers

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CAEP.9.2.12.C.3	Identify transferable career skills and design alternate career plans.
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## Financial Literacy Integration

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PFL.9.1.12.C.1	Compare and contrast the financial benefits of different products and services offered by a variety of financial institutions.
PFL.9.1.12.C.2	Compare and compute interest and compound interest and develop an amortization table using business tools.
PFL.9.1.12.C.3	Compute and assess the accumulating effect of interest paid over time when using a variety of sources of credit.

## Instructional Strategies & Learning Activities

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- Use graphing calculator to explore tables.
- Spend time with modeling problems.
- Use problems and activities from book involving modeling problems.
- ~~Provide access to online book~~
- Provide access to book pages and problems through Canvas
- Provide access to review keys
- Use ~~Pearson~~ Quizzes to review and reinforce.
- ~~Provide access to Pearson Review.~~
- ~~Examview~~ Quizzes to assess HW.
- Desmos
- Delta Math

## **Formative Assessments**

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- Daily homework checks
- Quizzes
- ~~Exam View~~ HW Checks
- Warm-ups
- Desmos
- Delta Math

## **Summative Assessment**

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- Unit Quizzes
- Gathering Data Activity - students gather their own data, display and compare the data sets with a complete analysis. (Optional)

## **Benchmark Assessments**

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Students will take ~~PARCC~~ NJ State Test