



# Standard #: MAFS.912.S-ID.3.8

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Compute (using technology) and interpret the correlation coefficient of a linear fit. ★

Grade: 912

Cluster: Interpret linear models. (Algebra 1 - Major Cluster) -

Clusters should not be sorted from Major to Supporting and then taught in that order. To do so would strip the coherence of the mathematical ideas and miss the opportunity to enhance the major work of the grade with the supporting clusters.

Date Adopted or Revised: 02/14

Content Complexity Rating: Level 2: Basic Application of Skills & Concepts - [More Information](#)

Date of Last Rating: 02/14

Status: State Board Approved

Assessed: Yes

## TEST ITEM SPECIFICATIONS

Assessed with:

MAFS.912.S-ID.2.6

## Related Courses

Course Number	Course Title
<a href="#">1200310:</a>	Algebra 1 (Specifically in versions: 2014 - 2015, 2015 and beyond (current))
<a href="#">1200320:</a>	Algebra 1 Honors (Specifically in versions: 2014 - 2015, 2015 and beyond (current))
<a href="#">1200380:</a>	Algebra 1-B (Specifically in versions: 2014 - 2015, 2015 and beyond (current))
<a href="#">1200400:</a>	Intensive Mathematics (Specifically in versions: 2014 - 2015, 2015 and beyond (current))
<a href="#">1210300:</a>	Probability & Statistics with Applications Honors (Specifically in versions: 2014 - 2015, 2015 and beyond (current))
<a href="#">2107310:</a>	Psychology 2 (Specifically in versions: 2014 - 2015, 2015 and beyond (current))
<a href="#">7912090:</a>	Access Algebra 1B (Specifically in versions: 2014 - 2015, 2015 - 2018, 2018 - 2019, 2019 and beyond (current))
<a href="#">2000520:</a>	Bioscience 3 Honors (Specifically in versions: 2014 - 2015, 2015 and beyond (current))
<a href="#">1200315:</a>	Algebra 1 for Credit Recovery (Specifically in versions: 2014 - 2015, 2015 and beyond (current))
<a href="#">1200385:</a>	Algebra 1-B for Credit Recovery (Specifically in versions: 2014 - 2015, 2015 and beyond (current))
<a href="#">7912100:</a>	Fundamental Algebraic Skills (Specifically in versions: 2013 - 2015, 2015 - 2017 (course terminated))
<a href="#">7912075:</a>	Access Algebra 1 (Specifically in versions: 2014 - 2015, 2015 - 2018, 2018 - 2019, 2019 and beyond (current))

## Related Access Points

Access Point

Access Points Number	Access Points Title
<a href="#">MAFS.912.S-ID.3.AP.8a:</a>	Identify the correlation coefficient ( $r$ ) of a linear fit.
<a href="#">MAFS.912.S-ID.3.AP.8b:</a>	Describe the correlation coefficient ( $r$ ) of a linear fit (e.g., a strong or weak positive, negative, perfect correlation).

## Related Resources

Lesson Plan

Name	Description
<a href="#">Basketball - it's a tall man's sport - or is it?:</a>	Basketball is a tall man's sport in most regards. Shooting, rebounding, blocking shots - the taller player seems to have the advantage. But is that still true when shooting free throws?  The students will use the data of NBA players to construct scatter plots to determine if there is a correlation between the height of a basketball player and his free throw percentage. The students will use technology to create the graphs, find the regression line and calculate the correlation coefficient.

<a href="#">Compacting Cardboard:</a>	Students will investigate the amount of space that could be saved by flattening cardboard boxes. The analysis includes linear graphs and regression analysis along with discussions of slope and a direct variation phenomenon.
<a href="#">Hand Me Your Data:</a>	Students will gather and use data to calculate a line of best fit and correlation coefficient with their classmates' height and hand size. They will use their line of best fit to make approximations.
<a href="#">Heart Rate and Exercise: Is there a correlation?:</a>	In this lesson, Algebra 1 students will use supplied heart rate data to determine if heart rate and the amount of time spent exercising each week are correlated. Students will create their own scatter plots and lines of best fit for the data and study correlation using GeoGebra. Students will gather evidence to support or refute statistical statements made about correlation. The lesson provides easy to follow steps for using GeoGebra, a free online application, to generate a correlation coefficient for two given variables.
<a href="#">Height Scatterplot Lab:</a>	This lesson is a Follow Up Activity to the Algebra Institute and allows students to apply their skills on analyzing bivariate data. This STEM lesson allows students the opportunity to investigate if there is a linear relationship between a person's height and foot length. Using technology the students can determine the line of best fit, correlation coefficient and use the line for interpolation.
<a href="#">How technology can make my life easier when graphing:</a>	Students will use GeoGebra software to explore the concept of correlation coefficient in graphical images of scatter plots. They will also learn about numerical and qualitative aspects of the correlation coefficient, and then do a matching activity to connect all of these representations of correlation coefficient. They will use an interactive program file in GeoGebra to manipulate the points to create a certain correlation coefficient. Step by step instructions are included to create the graph in GeoGebra and calculate the correlation coefficient "R."
<a href="#">Scatter Plots and Correlations:</a>	In this lesson, students will interpret and analyze data to create a scatter plot and line of best fit. Students will make predictions for the number of views of a video for any given number of weeks on the charts. The lesson provides suggestions for finding the line of best fit using different technologies to graph, GeoGebra free online software, Excel spreadsheets, and graphing calculators. Teachers can determine which technology will best suit their class or incorporate all three as part of the lesson.
<a href="#">Scrambled Coefficient:</a>	Students explore correlation of data through an activity allowing them to order situations from negative correlation to positive correlation. Students make an initial prediction of order given just the written situation and make adjustments to the order as each component is introduced: data table and scatter plot, line of best fit, correlation coefficient. Discussion after each step allows students to explain how they change their predictions as they are given more information. At the end of the lesson, students are provided with a real life example of how correlation coefficient is used to determine strength of relationships among real data.
<a href="#">Span the Distance Glider - Correlation Coefficient:</a>	Students will learn how to use the Linear Regression feature of graphing calculators to find the true line of best fit and the correlation coefficient. The lesson includes the guided card sorting task, a formative assessment, and a summative assessment.
<a href="#">Steel vs. Wooden Roller Coaster Lab:</a>	This lesson will provide students with an opportunity to collect and analyze bivariate data and use technology to create scatter plots, lines of best fit, and determine the correlation strength of the data being compared. Students will have a hands on inquire based lesson that allows them to create gliders to analyze data. This lesson is an application of skills acquired in a bivariate unit of study.
<a href="#">Study of Crowd Ratings at Disney:</a>	This lesson is a Follow Up Activity to the Algebra Institute and allows students to apply their skills on analyzing bivariate data. This STEM lesson allows students the opportunity to investigate if there is a linear relationship between a coaster's height and speed. Using technology the students can determine the line of best fit, correlation coefficient and use the line for interpolation. This lesson also uses prior knowledge and has students solve systems of equations graphically to determine which type of coaster is faster.
<a href="#">Why Correlations?:</a>	In this lesson, students develop a strong use of the vocabulary of correlation by investigating crowd ratings for a month at Disney. Students will find weekly crowd rating regression lines and regression correlations and discuss what this means for a Disney visit. This lesson is an introductory lesson to correlation coefficients. Students will engage in research prior to the teacher giving any direct instruction. The teacher will provide instruction on how to find the correlation coefficient by hand and using Excel.
<a href="#">Why do I have to have a bedtime?:</a>	This is a predict, observe, explain type lesson that allows students to make predictions based on prior knowledge, observe both the teacher and their peers in order to create a discussion, and receive the opportunity to express themselves and their ideas while explaining what they learned. Students will be participating in an activity where they will collect data after making a prediction and then construct a scatter plot. From the scatterplot, students will make an interpretation of the data by calculating the correlation coefficient (r value) and deciding if there is a correlation or not in terms of its strength and magnitude, then explaining what that means.

#### Problem-Solving Task

Name	Description
<a href="#">Coffee and Crime:</a>	This problem solving task asks students to examine the relationship between shops and crimes by using a correlation coefficient.

#### Formative Assessment

Name	Description
<a href="#">Correlation for Life Expectancy:</a>	Students are asked to compute and interpret the correlation coefficient for a given set of data.

<a href="#">Correlation Order:</a>	Students are asked to estimate a correlation coefficient for each of four data sets and then order the coefficients from least to greatest in terms of the strength of relationship.
<a href="#">How Big Are Feet?:</a>	Students are asked to compute and interpret the correlation coefficient for a given set of data.
<a href="#">July December Correlation:</a>	Students are asked to compute and interpret the correlation coefficient for a given set of data.

Perspectives Video: Professional/Enthusiast

Name	Description
<a href="#">Determining Strengths of Shark Models based on Scatterplots and Regression:</a>	Chip Cotton, fishery biologist, discusses his use of mathematical regression modeling and how well the data fits his models based on his deep sea shark research.

Virtual Manipulative

Name	Description
<a href="#">Line of Best Fit:</a>	This manipulative allows the user to enter multiple coordinates on a grid, estimate a line of best fit, and then determine the equation for a line of best fit.

Assessment

Name	Description
<a href="#">Sample 2 - High School Algebra 1 State Interim Assessment:</a>	This is a State Interim Assessment for 9th-12th grades.
<a href="#">Sample 3 - High School Algebra 1 State Interim Assessment:</a>	This is a State Interim Assessment for 9th-12th grades.

Unit/Lesson Sequence

Name	Description
	<p>This sample Algebra 1 CMAP is a fully customizable resource and curriculum-planning tool that provides a framework for the Algebra 1 Course. The units and standards are customizable and the CMAP allows instructors to add lessons, worksheets, and other resources as needed. This CMAP also includes rows that automatically filter and display Math Formative Assessments System tasks, E-Learning Original Student Tutorials and Perspectives Videos that are aligned to the standards, available on CPALMS.</p> <p>Learn more about the sample Algebra 1 CMAP, its features and customizability by watching the following video:</p> <p><a href="#">Sample Algebra 1 Curriculum Plan Using CMAP:</a></p> <p><b>Using this CMAP</b></p> <p>To view an introduction on the CMAP tool, please <a href="#">click here</a>.</p> <p>To view the CMAP, click on the "Open Resource Page" button above; be sure you are logged in to your iCPALMS account.</p> <p>To use this CMAP, click on the "Clone" button once the CMAP opens in the "Open Resource Page." Once the CMAP is cloned, you will be able to see it as a class inside your iCPALMS My Planner (CMAPs) app.</p> <p>To access your My Planner App and the cloned CMAP, click on the iCPALMS tab in the top menu.</p> <p>All CMAP tutorials can be found within the iCPALMS Planner App or at the following URL: <a href="http://www.cpalms.org/support/tutorials_and_informational_videos.aspx">http://www.cpalms.org/support/tutorials_and_informational_videos.aspx</a></p>

Student Resources

Name	Description
<a href="#">Coffee and Crime:</a>	This problem solving task asks students to examine the relationship between shops and crimes by using a correlation coefficient.

[Line of Best Fit:](#)

This manipulative allows the user to enter multiple coordinates on a grid, estimate a line of best fit, and then determine the equation for a line of best fit.

## Parent Resources

Name	Description
<a href="#">Coffee and Crime:</a>	This problem solving task asks students to examine the relationship between shops and crimes by using a correlation coefficient.