



Marietta City Schools
2024-2025 District Unit Planner

Enhanced Algebra: Concepts & Connections (Grade 8)

Unit title	<i>Unit 6: Investigating Data and Statistical Reasoning</i>	MYP year	3	Unit duration (hrs)	<i>Enter Hours</i> MSGA- (5 hours per week) MMS- (4.5 hours per week) MHS- (7.5 hours per 2 weeks)
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Mastering Content and Skills through INQUIRY (Establishing the purpose of the Unit): *What will students learn?*

GA DoE Standards

Standards

8.FGR.6: Solve practical, linear problems involving situations using bivariate quantitative data.

8.FGR.6.1 Show that straight lines are widely used to model relationships between two quantitative variables. For scatter plots that suggest a linear association, visually fit a straight line, and informally assess the model fit by judging the closeness of the data points to the line of best fit.

8.FGR.6.2 Use the equation of a linear model to solve problems in the context of bivariate measurement data, interpreting the slope and intercepts.

8.FGR.6.3 Explain the meaning of the predicted slope (rate of change) and the predicted intercept (constant term) of a linear model in the context of the data. A.DSR.10.4 Interpret the slope (predicted rate of change) and the intercept (constant term) of a linear model in the framework of the data.

8.FGR.6.4 Use appropriate graphical displays from data distributions involving lines of best fit to draw informal inferences and answer the statistical investigative question posed in an unbiased statistical study.

A.DSR.10: Collect, analyze, and interpret univariate quantitative data to answer statistical investigative questions that compare groups to solve real-life problems; Represent bivariate data on a scatter plot and fit a function to the data to answer statistical questions and solve real-life problems.

A.DSR.10.1 Use statistics appropriate to the shape of the data distribution to compare center (median and mean) and variability (interquartile range, standard deviation) of two or more distributions by hand and using technology.

A.DSR.10.2 Interpret differences in shape, center, and variability of the distributions in the framework (context), accounting for possible effects of extreme data points (outliers).

A.DSR.10.3 Represent data on two quantitative variables on a scatter plot and describe how the variables are related.

A.DSR.10.5 Calculate the line of best fit and interpret the correlation coefficient, r , of a linear fit using technology. Use r to describe the strength of the goodness of fit of the regression. Use the linear function to make predictions and assess how reasonable the prediction is in context.

A.DSR.10.6 Decide which type of function is most appropriate by observing graphed data.

A.DSR.10.7 Distinguish between correlation and causation

A.MM.1: Apply mathematics to real-life situations; model real-life phenomena using mathematics

A.MM.1.1 Explain applicable, mathematical problems using a mathematical model.

A.MM.1.2 Create mathematical models to explain phenomena that exist in the natural sciences, social sciences, liberal arts, fine and performing arts, and/or humanities domains.

A.MM.1.4 Use various mathematical representations and structures with this information to represent and solve real-life problems.

A.MM.1.5 Define appropriate quantities for the purpose of descriptive modeling.

A.MP.1-8 : Display perseverance and patience in problem-solving. Demonstrate skills and strategies needed to succeed in mathematics, including critical thinking, reasoning, and effective collaboration and expression. Seek help and apply feedback. Set and monitor goals.

Concepts/Skills to support mastery of standards

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MCS Gifted Standards

MSC.Gifted.S2B.

MSC.Gifted.S3B.

MSC.Gifted.S4B.

Vocabulary

[K-12 Mathematics Glossary](#)

association	bivariate data	box plot	categorical values	causation	center	conditional frequencies
constant	correlation	correlation coefficient	data distribution	dot plot	First Quartile (Q1)	five-number summary
frequency table (two-way table)	histogram	intercept	deviation	interquartile range	joint frequencies	line of best fit
linear model	linear fit	marginal frequencies	Mean Absolute Deviation (MAD)	prediction	outlier	quantitative data
quantitative variables	range	rate of change	regression	scatter plot	Second Quartile (Q2)	shape of data distribution
Shape Symmetry, Number of Peaks, Direction of Skew, Uniformity	slope	standard deviation	third quartile	trend	univariate data	variability
deterministic interpretation	informal inferences	predicted intercept (constant term)	predicted slope (rate of change)	probabilistic interpretation	statistical investigative question	unbiased statistical study
x - intercept	y - intercept					

Notation

\bar{x} - mean, σ - standard deviation

Key concept	Related concept(s)	Global context
Relationships	Change, Space, Quantity	Scientific and Technical Innovation

Statement of inquiry

Exploring multiple representations of quantifiable data using models enhances understanding of relationships

Inquiry questions

Factual— How is data measured? How can we represent information?

- What is a dot plot?
- What is a histogram?
- What is a box plot?
- How do I graph a line of best fit?

Conceptual— What makes a good survey question? How do we interpret/analyze results?

- How does the correlation coefficient affect a graph?
- What classifies a strong/weak correlation coefficient?

Debatable- Who makes decisions? How do we ensure our decisions are based in logic?

- What graph is easiest to read: a histogram, dot plot or a box plot?

MYP Objectives	Assessment Tasks	
<i>What specific MYP objectives will be addressed during this unit?</i>	<i>Relationship between summative assessment task(s) and statement of inquiry:</i>	<i>List of common formative and summative assessments.</i>
<p>Criteria C: Communication in Mathematics</p> <p>Criterion D: Applying Mathematics In real life contexts.</p>	<p>Students will demonstrate how modeling relationships can help us make logical decisions.</p>	<p><u>Formative Assessment(s):</u></p> <p>Unit 6 - CFA</p> <p><u>Summative Assessment(s):</u></p> <p>Unit 6 - Summative Assessment</p> <p>Unit 6 - Summative Assessment Retake</p> <p>MYP Project: A Penny a Day</p>

Approaches to learning (ATL)

Category: Communication Skills

Cluster: Communication

Skill Indicator: Negotiate ideas and knowledge with peers and teachers

Design Cycle Transdisciplinary

- Inquiring and Analyzing
- Developing Ideas
- Creating a Solution
- Evaluating

Learning Experiences

Add additional rows below as needed.

Objective or Content	Learning Experiences	Personalized Learning and Differentiation
8.FGR.6.1- Construct a Scatter Plot	<p>Scatter Plots (Desmos)</p> <p>Brief Description: In this activity, students will explore various types of scatter plots and will build their understanding of positive and negative associations, linear and nonlinear associations, and outliers. (8.SP.1)</p> <p>This activity serves as a great precursor to an investigation of lines of best fit.</p> <p>Learning Goals:</p> <ul style="list-style-type: none">● I can explore various types of Scatter plots and their associations● I can describe the type of association in a Scatter plot	Students will explore various types of scatter plots and build their understanding of positive and negative association, linear and nonlinear associations and outliers. Precursor to Line of Best Fit
<i>8.FGR.6.4- Use the Line of Best Fit to draw inferences</i>	<p>Line of Best Fit (Illuminations)</p> <p>Brief Description: This activity allows the user to enter a set of data, plot the data on a coordinate grid, and determine the equation for a line of best fit.</p> <p>Learning Goals:</p>	This activity allows the user to enter a set of data, plot the data on a coordinate grid, and determine the equation for a line of best fit.

	<ul style="list-style-type: none"> ● I can state the correlation coefficient (r) for a set of data. ● I can explain why changing the regression equation affects r value. ● I can explain what has the greatest impact on the regression equation and r value. ● Can you explain the changes that occurred when data is removed? 	
<p>A.DSR.10.1 Use statistics appropriate to the shape of the data distribution to compare center (median and mean) and variability (interquartile range, standard deviation) of two or more distributions by hand and using technology.</p> <p>A.DSR.10.2 Interpret differences in shape, center, and variability of the distributions in the framework, accounting for possible effects of extreme data points (outliers).</p>	<p><u>The Basketball Star- Performance Task The Basketball Star</u></p> <p>Description: In this learning plan, students will focus on comparing univariate data in different contexts. Students will analyze data that has already been collected and interpret the results. Once students understand different ways to compare data, they will seek to create their own statistical questions, collect their own data, and analyze and interpret the results.</p> <p>Learning Goals:</p> <ul style="list-style-type: none"> ● I can compare univariate data sets by shape. ● I can compare the center and variation of two or more different data sets. 	<p>Supporting the Learning: To assist students who are having difficulty, the teacher might consider having students work with smaller data sets to simplify calculations. Interpretation / comparison of statistics can still be the central purpose of this task. Language Supports: Provide a hard copy of the 2 graphic organizers: Representing Data Graphically and Measures of Center and Spread. Guide students through completing the organizers by projecting them on board and completing with the whole group. Extending the Learning: Ask students to suppose Bob and Alan each had their best game ever, scoring 16 points in a game. How would this affect the statistics for each boy? Note what their work reveals about their current levels of understanding.</p>
<p>A.DSR.10: Collect, analyze, and interpret univariate quantitative data to answer statistical investigative questions that compare groups to solve real-life problems; Represent bivariate data on a scatter plot and fit a function to the data to answer statistical questions and solve real-life problems. o</p> <p>A.DSR.10.3: Represent data on two quantitative variables on a scatter plot and describe how the variables are related. o</p> <p>A.DSR.10.5: Calculate the line of best fit and interpret the correlation coefficient, r, of a linear fit using technology. Use r to describe the strength of the goodness of fit of the regression. Use the linear function to make</p>	<p><u>Sports Analysis- Explore and Engage</u></p> <p>Description: In this learning plan, students will collect, analyze and interpret the strength of a correlation, describe how two variables are related, and fit a linear function for a scatter plot that suggests a linear association</p> <p>Learning Goals:</p> <ul style="list-style-type: none"> ● I can fit a linear function for a scatter plot that suggests a linear association. ● I can describe how two variables are related. ● I can describe the strength of a correlation. 	<p>Language Supports: Provide a hard copy of a graphic organizer that illustrates several different models: positive/strong correlation, positive/weak correlation, negative strong correlation, negative weak correlation, no correlation, and perfect correlation. All students work in small groups to complete the graphic organizer. Ask probing, scaffolding questions to support students as they work to complete the graphic organizer. Supporting the Learning: Guide students through the discovery process to recognize how the scatter box changes when the correlation coefficient is closer to 1, closer to 0, closer to -1?</p>

predictions and assess how reasonable the prediction is in context.

Extending the Learning: Name different pairs of variables that are likely to have a positive correlation, a negative correlation, a perfect correlation, and no correlation.

[GADOE Link](#)

SAVVAS Correlated Lessons 8th Grade Volume 1

8.FGR.6

- Lesson 4-1 (Construct and Interpret Scatterplots)
- Lesson 4-2 (Analyze Linear Relationships)
- Lesson 4-3 (Use Linear Models to Make Predictions)

SAVVAS Correlated Lessons Algebra 1 Envision

A.DSR.10

A.DSR.10.1 - Lesson 11-2, 11-3, 11-4, Topic 11 - Mathematical Modeling in 3 Acts

A.DSR.10.2 - Lessons 11-2, 11-3, Topic 11 - Mathematical Modeling in 3 Acts

A.DSR.10.3 - Lesson 3-5, 3-6, Topic 3 - Mathematical Modeling in 3 Acts

A.DSR.10.4 - Lessons 3-5, Topic 3 - Mathematical Modeling in 3 Acts

A.DSR.10.5 - Lessons 3-6

A.DSR.10.6 - Lesson 8-5

A.DSR.10.7 - Lesson 3-6

YouTube

ATL Skills - [TEDEd](#)

A.DRS.10 - [Erin's Essential Questions Playlist: Intro to Statistics](#)