Unit #6: Descriptive Statistics

Content Area: **Math**
Course(s):
Time Period: **June**
Length: **3 weeks**
Status: **Published**

State Mandated Topics Addressed in this Unit

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Descriptive Statistics	

Descriptive Statistics

Learning Objectives

- Objection 5 - Use mean and standard deviation fo data set to fit a normal distribution and estimate population percentages.
- Objection 6 - Recognize when appropriate to use mean and Standard deviation for data sets.
- Objection 7 - Use Calculators, spreadsheets and tables to estimate area under the normal curve.
- Objective 1 - Represent data with plots on the real number line
- Objective 10 - Recognize possible trends and associations in the data.
- Objective 11 - Represent data on two quantitative variables on a scatter plot.
- Objective 12 - Describe how variables are related.
- Objective 13 - Fit a function to the data.
- Objective 14 - Use functions fitted to the data to solve problems.
- Objective 15 - Use given functions or choose a function based on the context with an emphasis on linear and exponential models
- Objective 16 - Informally assess the fit of a function through plotting and analyzing residuals.
- Objective 17 - Fit a linear function for a scatterplot with a linear association.
- Objective 18 - Interpret the slope (rate of change) of a linear model.
- Objective 19 - Compute the correlation coefficient of a linear fit.
- Objective 2 - Use statistics appropriate to the shape of a data distribution.
- Objective 20 - Interpret the correlation coefficient of a linear fit.
- Objective 3 - Compare the center(mean/median) and spread (interquartile range, standard deviation) of two (or more) different data sets.
- Objective 4 - Interpret differences in shape, center, and spread in data sets, accounting for the effects of outliers.
- Objective 8 - Summarize data in a two-way frequency table.

- Objective 9 - Interpret the relative frequencies including joint, marginal and conditional relative frequencies.

Essential Skills

- Essential Skill 1 - Artists will be able to represent data with plots on the real number line.
- Essential Skill 10 - Artists will be able to recognize possible trends and associations in the data.
- Essential Skill 11 - Artists will be able to represent data on two quantitative variables on a scatter plot.
- Essential Skill 12 - Artists will be able to describe how variables are related.
- Essential Skill 13 - Artists will be able to fit a function to the data.
- Essential Skill 14 - Artists will be able to use functions fitted to the data to solve problems.
- Essential Skill 15 - Artists will be able to use given functions or choose a function based on the context with an emphasis on linear and exponential models.
- Essential Skill 16 - Artists will be able to informally assess the fit of a function through plotting and analyzing residuals.
- Essential Skill 17 - Artists will be able to fit a linear function for a scatterplot with a linear association.
- Essential Skill 18 - Artists will be able to interpret the slope (rate of change) of a linear model.
- Essential Skill 19 - Artists will be able to compute the correlation coefficient of a linear fit.
- Essential Skill 2 - Artists will be able to use statistics appropriate to the shape of a data distribution
- Essential Skill 20 - Artists will be able to interpret the correlation coefficient of a linear fit.
- Essential Skill 21 - Artists will be able to distinguish between correlation and causation.
- Essential Skill 3 - Artists will be able to compare the center (mean/median) and spread (interquartile range, standard deviation) of two (or more) different data sets.
- Essential Skill 4 - Artists will be able to interpret differences in shape, center, and spread in data sets, accounting for the effects of outliers.
- Essential Skill 5 - Artists will be able to use mean and standard deviation for a data set to fit a normal distribution and estimate population percentages.
- Essential Skill 6 - Artists will be able to recognize when appropriate to use mean and Standard deviation for data sets.
- Essential Skill 7 - Artists will be able to use calculators, spreadsheets and tables to estimate area under the normal curve.
- Essential Skill 8 - Artists will be able to summarize data in a two-way frequency table.
- Essential Skill 9 - Artists will be able to interpret the relative frequencies including joint, marginal and conditional relative frequencies.

Standards

MATH.9-12.S.ID.A.1	Represent data with plots on the real number line (dot plots, histograms, and box plots).
MATH.9-12.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.
MATH.9-12.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).

MATH.9-12.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.
MATH.9-12.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.
MATH.9-12.S.ID.B.6	Represent data on two quantitative variables on a scatter plot and describe how the variables are related.
MATH.9-12.S.ID.B.6.a	Fit a function to the data (including with the use of technology); 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 and exponential models.
MATH.9-12.S.ID.B.6.b	Informally assess the fit of a function by plotting and analyzing residuals, including with the use of technology.
MATH.9-12.S.ID.B.6.c	Fit a linear function for a scatter plot that suggests a linear association.
MATH.9-12.S.ID.C.7	Interpret the slope (rate of change) and the intercept (constant term) of a linear model in the context of the data.
MATH.9-12.S.ID.C.8	Compute (using technology) and interpret the correlation coefficient of a linear fit.
MATH.9-12.S.ID.C.9	Distinguish between correlation and causation.

Instructional Tasks/Activities

- Activity 1 - Ladder Activity
- Activity 2 - Academic games & Competitions
- Activity 3 - Worksheets
- Activity 4 - Formative Assessments
- Activity 5 - Arts inspired projects

Assessment Procedure

- Classroom Total Participation Technique
- Classwork
- DBQ
- Essay
- Exit Ticket/Entrance Ticket/Do Now
- Journal / Student Reflection
- Kahoot
- Other named in lesson
- Peer Review
- Performance
- Problem Correction
- Project

- Quiz
- Rubric
- Teacher Collected Data
- Test
- Worksheet

Recommended Technology Activities

- Appropriate Content Specific Online Resource
- Chromebook
- Gimkit
- GoGuardian
- Google Classroom
- Google Docs
- Google Forms
- Google Slides
- Kahoot
- MagicSchool AI
- Other- Specified in Lesson
- Quizizz
- Screencastify

Accommodations & Modifications & Differentiation

Accommodations and Modifications should be used to meet individual needs. Their IEP and 504 plans should be used in addition to the following suggestions.

Gifted and Talented

- Compare & Contrast
- Conferencing
- Debates
- Jigsaw
- Peer Partner Learning
- Problem Solving
- Structured Controversy
- Think, Pair, Share
- Tutorial Groups

Instruction/Materials

- alter format of materials (type/highlight, etc.)
- color code materials
- eliminate answers
- extended time
- extended time
- large print
- modified quiz
- modified test
- Modify Assignments as Needed
- Modify/Repeat/Model directions
- necessary assignments only
- Other (specify in plans)
- other- named in lesson
- provide assistance and cues for transitions
- provide daily assignment list
- read class materials orally
- reduce work load
- shorten assignments
- study guide/outline
- utilize multi-sensory modes to reinforce instruction

Environment

- alter physical room environment
- assign peer tutors/work buddies/note takers
- assign preferential seating
- individualized instruction/small group
- modify student schedule (Describe)
- other- please specify in plans
- provide desktop list/formula

Honors Modifications

Resources

- Resource - www.KhanAcademy.com