Trimester:	Unit Title:	Recommended Instructional Days:
2	Data Analysis and Displays	11-14 days

Domain

Strand:

8.SP.A.1 Construct and interpret scatter plots for bivariate measurement data to investigate patterns of association between two quantities. Describe patterns such as clustering, outliers, positive or negative association, linear association, and nonlinear association.

8.SP.A.2 Know that straight lines are widely used to model relationships between two quantitative variables. For scatter plots that suggest a linear association, informally fit a straight line, and informally assess the model fit (e.g. line of best fit) by judging the closeness of the data points to the line.

8.SP.A.3 Use the equation of a linear model to solve problems in the context of bivariate measurement data, interpreting the slope and intercept. *For example, in a linear model for a biology experiment, interpret a slope of 1.5 c/hr as meaning that an additional hour of sunlight each day is associated with an additional 1.5 cm in mature plant height.*

8.SP.A.4 Understand that patterns of association can also be seen in bivariate categorical data by displaying frequencies and relative frequencies in a two-way table. Construct and interpret a two-way table summarizing data on two categorical variables collected from the same subjects. Use relative frequencies calculated for rows or columns to describe possible association between the two variables. *For example, collect data from students in your class on whether or not they have a curfew on school nights and whether or not they have assigned chores at home. Is there evidence that those who have a curfew also tend to have chores?*

Key:

Major Cluster **Supporting Cluster** **Additional Cluster** **Climate Change Opportunity**

Progress Indicators: ◊ Tests ◊ Homework / Classwork ◊ Projects ◊ Formative Assessments ◊ Summative Assessments

Mathematical Practices:

1. Make sense of problems and persevere in solving them.
2. Reason abstractly and quantitatively.
3. Construct viable arguments and critique the reason of others.
4. Model with mathematics.
5. Use appropriate tools strategically.
6. Attend to precision.
7. Look for and make use of structure.
8. Look for and express regularity in repeated reasoning.

Recommended Activities, Investigations, Interdisciplinary Connections, and/or Student Experiences to Explore NJSLS-CLKS within Unit

Essential Questions:
How is a scatter plot different from other types of graphs such as line graphs or bar graphs?
What purpose does a scatter plot serve, and when would it be helpful to display data on a scatter plot?
How can you construct and interpret scatter plots?
How can you describe the association of two data sets?
How does a scatter plot show the relationship between paired data?
How can you use a trend line to make a prediction from a scatter plot?
How can you construct and interpret two-way frequency tables?
How can categorical data be organized and analyzed?
How does a two-way frequency table show the relationship between sets of paired data?
What is the advantage of a two-way relative frequency table for showing relationships between sets of paired data?

Essential Understandings:
Scatter plots can be used to display, analyze and problem solve with bivariate categorical data.
Straight lines and their equations can be used to make predictions with scatter plots that display linear patterns.
Two-way tables are used to display two types of categorical data for a single population at the same time.
Relative frequency tables can be used to display, analyze and problem solve with bivariate categorical data.

Vocabulary:
- Scatter plot
- line of fit

- two-way table
- joint frequency

**Encourage students to practice using the unit vocabulary as they talk and write about mathematics. Understanding vocabulary will aid their understanding of the concepts. When students encounter a new definition, encourage them to write in their Big Ideas Student Journals. They will revisit these definitions during the Chapter Review.*

Suggested Activity Descriptions:

- STEAM Video *Fuel Economy* and Performance Task *Cost vs. Fuel Economy*
- Getting Ready for Chapter 6 Chapter Exploration TB page 236
- Chapter Exploration TB page 237 Finding Relationships Between Data
- Chapter Exploration TB page 243 Representing Data by a Linear Equation
- Chapter Explorations TB page 249 Analyzing Data
- Chapter Exploration TB page 255 Displaying Data
- Puzzle Time for each section (teacher resources)
- Enrichment and Extension Worksheets

Interdisciplinary Connections:
Science:

1. Question # 12 TB page 242 *Modeling Real Life:* The scatter plot shows the amount of rainfall and the amount of corn produced by a farm over the last 10 years…
2. Example # 3 TB page 246 *Modeling Real Life:* The table shows the number of bats in a cave each year from 2010 to 2017 …
3. Question # 5 TB page 246 The ordered pairs show amount y (in inches) of rainfall equivalent to x inches of snow…
4. Question # 18 TB page 262 *Patterns:* A scientist gathers data about a decaying chemical compound and creates a scatter plot as shown…

Physical Education:

1. Example # 2 TB page 245 *Identifying Relationships:* The table shows the numbers of goals scored and games won by 8 hockey teams.
2. Question # 6 TB page 246 The table shows the heights (in feet) of a high jump bar and the number of people who successfully complete each jump…
3. Question # 15 TB page 248 *Dig Deeper:* The table shows the heights y (in feet) of a baseball x seconds after it was hit…
4. Question # 19 TB page 262 *Reasoning:* A survey asks 100 students to choose their favorite sports. The results are shown in the circle graph…

Technology:

1. Question # 16 TB page 242 *Problem Solving:* The table shows the memory capacities (in gigabytes) and prices (in dollars) of tablet

computers…

2. Question # 14 TB page 248 *Modeling Real Life:* The table shows the numbers (in millions) of active accounts for two social media websites over the past five years…
3. Example # 2 TB page 257 *Identifying an Appropriate Data Display:* You record the number of hits for your school's new website for 5 months…
4. Question # 20 TB page 262 *Structure:* With the help of computers, mathematicians have imputed and analyzed trillions of digits of the irrational number pi...

Language Arts:

1. Writing Question #13 TB page 261 When should you use a histogram instead of a bar graph to display data? Use an example to support your answer.

Spot Light On: Climate Change After completing the unit, students will be able to use concepts learned to answer questions in the STEAM video performance task. Students will be given fuel economies and purchase prices of hybrid and nonhybrid car models. Students will create graphs to compare car models. Students can discuss the pros and cons of gas powered vehicles, electric vehicles, and hybrid vehicles in regards to the economy and climate change.

Social and Emotional Learning: *Competencies*	**Social and Emotional Learning: *Sub-Competencies***
SEL Competencies: • Self-Awareness • Social Awareness • Self-Management • Relationship Skills • Responsible Decision-Making	• Recognizing the importance of self-confidence in handling daily tasks and challenges. • Demonstrate an awareness of the expectations for social interactions in a variety of ways. • Demonstrate an understanding of the need for mutual respect when viewpoints differ. • Identify and apply ways to persevere through alternative methods to achieve goals. • Utilize positive communication and social skills to interact effectively with others. • Develop, implement, and model effective problem solving and critical thinking skills.

Assessments (Formative) ***To show evidence of meeting the standard/s, students will successfully engage within:***	**Assessments (Summative)** ***To show evidence of meeting the standard/s, students will successfully complete:***
Formative Assessments: • Teacher Observations • Exit Tickets • Quizzes • Self Assessments • Big Ideas Student Journals • Homework/Classwork • Teacher Created Assessments • Progress Monitoring Items • Formative Assessment Tips in Big Ideas Teacher Edition	**Benchmarks & Summative Assessments:** • Chapter/Unit Assessments • Standardized Tests • Project-based Assessments • Benchmark Tests

Differentiated Student Access to Content:
Teaching and Learning *Resources/Materials*

Core Resources	**Alternate Core Resources** ***IEP/504/At-Risk/ESL***	**ELL Core Resources**	**Gifted & Talented Core Resources**
Big Ideas Student Journal, Dynamic Assessment System, iReady, Khan Academy, Illustrative Mathematics, Learn360, TeacherTube, BrainPOP, Freckle, LearnZillion, MobyMax, 60 minutes of weekly ST Math, Edulastic, Achieve the Core, Desmos	Reteach worksheets, Extra Practice worksheets, Math manipulatives, Scaffolding Instructions in each section of textbook, Tutorial Videos, Skills Review Handbook, Skills Trainer	Dictionary for native language, Video tutorial in native language, ELL Support in each section of Big Ideas Teacher's Edition	ST Math Challenge Objectives, G&T tasks, Enrichment and Extension worksheets, Art of Problem Solving, Leveled assessments

Supplemental Resources

Technology:
• Chromebooks • Scientific Calculators • Online math manipulatives
Other:
• Google Classroom, Google Meets, Schoology, Interactive Workbooks • Illustrative Mathematics • insidemathematics.org • National Library of Virtual Manipulatives

Differentiated Student Access to Content: **Recommended *Strategies & Techniques***			
Core Resources	**Alternate Core Resources** ***IEP/504/At-Risk/ESL***	**ELL Core Resources**	**Gifted & Talented Core**
Deliver instruction utilizing varied learning styles including audio, visual, and tactile/kinesthetic, provide individual instruction as needed, modify assessments and/or rubrics.	Utilize a multi-sensory (VAKT) approach during instruction, provide alternate presentations of skills by varying the method (repetition, simple explanations, additional examples, modeling, etc.), modify test content and/or format, allow students to retake test for additional credit, provide additional times and preferential seating as needed, review, restate and repeat directions, provide study guides, and/or break assignments into segments of shorter tasks.	Extend time requirements, preferred seating, positive reinforcement, check often for understanding/review, oral/visual directions/prompts when necessary, supplemental materials including use of an online bilingual dictionary, and modified assessment and/or rubric.	Create an enhanced set of introductory activities, integrate active teaching/learning opportunities, incorporate authentic components, propose interest-based extension activities, and connect students to related content.

NJSLS CAREER READINESS, LIFE LITERACIES & KEY SKILLS	**Disciplinary Concept(s):** Planning and Budgeting	
	Core Ideas:	A budget aligned with an individual's financial goals can help prepare for life events.
	Performance Expectation/s:	9.1.8.PB.1: Predict future expenses or opportunities that should be included in the budget planning process.
	Career Readiness, Life Literacies, & Key Skills Practices	
	Act as a responsible and contributing community member and employee. **Attend to financial well-being.** **Consider the environmental, social and economic impacts of decisions.** **Demonstrate creativity and innovation.** **Utilize critical thinking to make sense of problems and persevere in solving them.** **Model integrity, ethical leadership and effective management.**	

	Plan education and career paths aligned to personal goals. **Use technology to enhance productivity, increase collaboration and communicate effectively.** **Work productively in teams while using cultural/global competence.**

New Jersey Legislative Statutes and Administrative Code (place an "X" before each law/statute if/when present within the curriculum map)									
	Amistad Law: *N.J.S.A. 18A 52:16A-88*		Holocaust Law: *N.J.S.A. 18A:35-28*		LGBT and Disabilities Law: *N.J.S.A. 18A:35-4.35*		Diversity & Inclusion: *N.J.S.A. 18A:35-4.36a*	**X**	Standards in Action: *Climate Change*