Updated August 2024

| Marking Period | Unit Title Equations | Recommended Instructional Days |
|---|---|---|
| 4 | Data Analysis and Displays | 14-22 days |

| Domain: Number and Quantity, Statistics and Probability | | Recommended Activities, Investigations, Interdisciplinary Connections, and/or Student Experiences to Explore NJSLS-CLKS within Unit |
|---|---|---|
| **Key**:<br><br>■ Major Cluster<br>□ Supporting Cluster<br>◎ Additional Cluster<br><br>**Standards (Taught and Assessed):**<br>◎ **S.ID.A.1** Represent data with plots on the real number line (dot plots, histograms, and box plots).<br>□ **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.<br>◎ **S.ID.A.2** Use statistics appropriate to the shape of the | ***Progress Indicator:***<br>***Tests ● Quizzes ● Practice problems for homework ● Workbook pages ● Worksheets ● Focus Packet ● Leveled assessments*** | **Essential Question/s:**<br><br>1. **What information about data sets can you get from different data displays?**<br>2. **How can you use measure of center and spread to compare data sets?**<br>3. **How does the shape of a data set help you understand the data?**<br>4. **Why does the way data is spread out matter?**<br>5. **How can you use two-way frequency tables to analyze data?**<br><br>**Activity Description:**<br><br>• **Measure of center and variation**<br>• **Box and whiskers plot**<br>• **Shapes of distributions**<br>• **Two way tables**<br>• **Choosing a data display**<br><br>**Interdisciplinary Connections: Earth and Space Science**<br>**Content: Earth and Human Activity**<br>**NJSLS#: HS-ESS3-1; ESS2.D**<br><br>Local meteorologists from 20 cities wanted to calculate the total number of rain they had last year for the month of April. The table shows the amount of rain, in inches, for the 20 cities last year. |

data distribution to compare center (median, mean) and spread (interquartile range, standard deviation) of two or more different data sets.

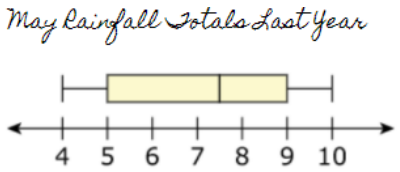
**S.ID.A.3** Choose a level of accuracy appropriate to limitations on measurement when reporting quantities.

**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.

**Mathematics Practices**

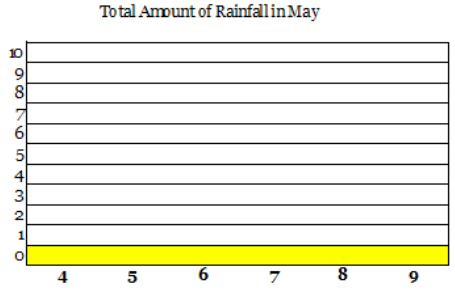
| | | | | |
|---|---|---|---|---|
| 5.32 | 6.48 | 4.25 | 8.05 | 7.23 |
| 5.37 | 5.12 | 6.26 | 5.31 | 4.43 |
| 6.08 | 7.16 | 5.52 | 5.21 | 6.53 |
| 4.46 | 5.02 | 6.33 | 5.54 | 6.20 |

The rainfall totals, in inches for the same 20 cities last year for the month of May are summarized in the box plot shown below.




**Part A**

Create a histogram showing the data for the 20 cities in the month of April.



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.

| **Social and Emotional Learning:** ***Competencies*** | **Social and Emotional Learning:** ***Sub-Competencies*** |
|---|---|
| Self- awareness<br><br>Social Awareness<br><br>Self- Management<br><br>Relationship Skills<br><br>Responsible Decision-Making | Recognizing the importance of self-confidence in handling daily tasks and challenges.<br>Demonstrate an awareness of the expectations for social interactions in a variety of ways.<br>Demonstrate an understanding of the need for mutual respect when viewpoints differ.<br>Recognize the skills needed to establish and achieve personal and educational goals. |

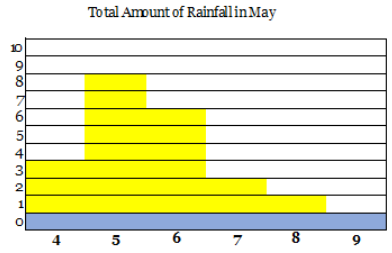
**Part B**

Which statement(s) are true about the given data for the 20 cities in April and May rainfall totals?
Select all that apply.

A. The median amount of rainfall for April is less than the median amount of rainfall for May.
B. The median amount of rainfall for April is greater than the median amount of rainfall of May.
C. The interquartile range of rainfall in April is less than the interquartile range of rainfall in May.
D. The interquartile range of rainfall in April is equal to the interquartile range of rainfall in May.
E. The data for April is skewed left.
F. The data for May includes an outlier.

***KEY:***

**Part A**




**Part B - Select the following choices:**

**Part B**

Which statement(s) are true about the given data for the 20 cities in April and May rainfall totals?
Select all that apply.

| | | |
|---|---|---|
| | Utilize positive communication and social skills to interact effectively with others.<br>Develop, implement, and model effective problem solving and critical thinking skills. | A. The median amount of rainfall for April is less than the median amount of rainfall for May.<br>B. The median amount of rainfall for April is greater than the median amount of rainfall of May.<br>C. The interquartile range of rainfall in April is less than the interquartile range of rainfall in May.<br>D. The interquartile range of rainfall in April is equal to the interquartile range of rainfall in May.<br>E. The data for April is skewed left.<br>F. The data for May includes an outlier.<br>Highlight on:<br>Community Surveys<br>Teach students how to write surveys, and then survey your school or local community about any social issue.<br><br>**Climate Change**<br><br>Example: Students may represent geoscience data, with plots on the real number line, as they analyze results from global climate models.<br><br>Example: Students may use units to guide the solution of multi-step problems about how variations in the flow of energy into and out of the Earth's systems result in climate change. Note: Changes in climate are limited to changes in surface temperatures,<br><br>Example: Students may, when reporting quantities related to how variations in the flow of energy into and out of the Earth's systems result in climate change, choose a level of accuracy appropriate to limitations on how quantities were measured. |

precipitation patterns, glacial ice volumes, sea levels, and biosphere distribution.

**Example Tasks:**

**Task 1**

**Find the range and standard deviation of each data set. Then compare your results.**

4.

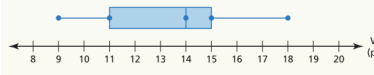
| Bowling Scores | | | |
|---|---|---|---|
| Player A | | Player B | |
| 205 | 190 | 228 | 205 |
| 185 | 200 | 172 | 181 |
| 210 | 219 | 154 | 240 |
| 174 | 203 | 235 | 235 |

5.

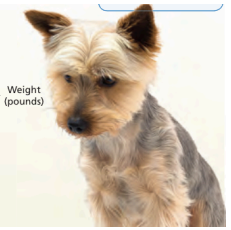
| Fitness Tracker Prices | | | |
|---|---|---|---|
| Store A | | Store B | |
| $140 | $180 | $225 | $310 |
| $200 | $250 | $260 | $190 |
| $150 | $190 | $190 | $285 |
| $250 | $160 | $160 | $240 |

**Task 2**

The box-and-whisker plot represents the weights (in pounds) of Australian Terriers owned by a dog breeder.




**a.** Find and interpret the range of the data.
**b.** Describe the distribution of the data.
**c.** Find and interpret the interquartile range of the data.
**d.** Are the data more spread out below Q1 or above Q3? Explain.



**Task 3**

The two-way table shows the results of a survey that asked adults whether they have seen the latest superhero movie. Is there an association between age and seeing the movie? Explain.

| | | Age | | | |
|---|---|---|---|---|---|
| | | 15–24 | 25–34 | 35–44 | 45–54 |
| Seen Movie | Yes | 58 | 23 | 19 | 23 |
| | No | 18 | 18 | 21 | 79 |

| | | |
|---|---|---|
| **Assessments (Formative)**<br>***To show evidence of meeting the standard/s, students will successfully engage within:*** | | **Assessments (Summative)**<br>***To show evidence of meeting the standard/s, students will successfully complete:*** |
| **<u>Formative Assessments:</u>**<br>● Entry and Exit Slips<br>● Quizzes<br>● Self Assessments | | **<u>Benchmarks:</u>**<br>● Chapter Tests<br>● Projects<br><br>**<u>Summative Assessments:</u>**<br>● District Assessments<br>● Midterms<br>● Standardized Tests |
| **Differentiated Student Access to Content:**<br>**Teaching and Learning *Resources/Materials*** | | |
| **Core Resources** | **Alternate Core Resources** ***IEP/504/At-Risk/ESL*** | **ELL Core Resources** | **Gifted & Talented Core Resources** |
| ● Big Ideas<br>● Achieve the core<br>● Khan Academy<br>● Desmos | ● Skill building worksheets<br>● Math Manipulatives | ● Dictionary for native languages | ● Leveled Assessments<br>● Enrichment worksheets |
| **Supplemental Resources** | | | |
| **Technology:**<br>● **Chromebooks, Graphing Calculators**<br>**Other:**<br>● **Zoom and Google Meets, Schoology, Interactive Textbooks** | | | |
| **Differentiated Student Access to Content:**<br>**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, repeat** | **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 student to related** |

| | | |
|---|---|---|
| **NJSLS CAREER READINESS, LIFE LITERACIES & KEY SKILLS** | **Disciplinary Concept: Global and Cultural Awareness** | |
| | ***Core Ideas:*** | **Solutions to the problems faced by a global society require the contribution of individuals with different points of view and experiences.** |
| | ***Performance Expectation/s:*** | **9.4.12.GCA.1: Collaborate with individuals to analyze a variety of potential** |

| | | |
|---|---|---|
| | | **solutions to climate change effects and determine why some solutions (e.g., political. economic, cultural) may work better than others (e.g., SL.11-12.1., HS-ETS1-1, HS-ETS1-2, HS-ETS1-4, 6.3.12.GeoGI.1, 7.1.IH.IPERS.6, 7.1.IL.IPERS.7, 8.2.12.ETW.3).** |
| | **Career Readiness, Life Literacies, & Key Skills Practices** | |
| | **Act as a responsible and contributing community member and employee.**<br>**Attend to financial well-being.**<br>**Consider the environmental, social and economic impacts of decisions.**<br>**Demonstrate creativity and innovation.**<br>**Utilize critical thinking to make sense of problems and persevere in solving them.**<br>**Model integrity, ethical leadership and effective management.**<br>**Plan education and career paths aligned to personal goals.**<br>**Use technology to enhance productivity, increase collaboration and communicate effectively.**<br>**Work productively in teams while using cultural/global competence.** | |

| New Jersey Legislative Statutes and Administrative Code<br>(place an "X" before each law/statute if/when present within the curriculum map) | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| x | 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* |