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| **GRADE: 9** | |
| **Unit Title: Plot it up and tell me about it**  **Lesson Title: Don’t Be Mean**  **Estimated Duration: 1 day** | **Real-World Purpose:** 1. **To determine a ballplayers average points. 2. To compare the amount of sugar and calories in food** |
| ***I Can:***  **Standard(s): 9th grade** **S-ID.1 Represent and analyze data with plots on the real number line (box plots)**   * Construct a number line. * I can use the appropriate graph vocabulary * I can organize the data from least to greatest. | |
| **Performance Objective: (Evidence of Learning)**  The student will identify collect and display 2 sets of nutritional data (burgers, pizza) using a box plot with 80% accuracy.  Students will compare the visual display of 2 box plots, noting the mean, median, mode, 1st and 3rd quartiles with 80% accuracy | |
| **Prerequisite Skills:**   * Constructing a number line * Vocabulary * Organizing the data from least to greatest. * Calculating measures of central tendency (range, median and quartiles only | |
| **Materials/Resources:**  **Menus**  **Pencil**  **Pre-Made Intervention Sheet**  **Pre-Made Math Task Sheet** | **Key Vocabulary:**   1. Median 5. Interquartile range 2. Range 6. Number Line 3. Lower quartile 7. Data Points 4. Upper quartile |
| **Elements of Rigor:**   * **Conceptual understanding of key concepts** * **Procedural skill and fluency** * **Rigorous application of mathematics in real-world contexts** | |
| **Lesson Introduction** | |
| **How will you introduce the lesson?** Ask students to identify their favorite burger and pizza. | |
| **Lesson Activities** | |
| 1. The teacher will ask/list student’s favorite pizza and types of burgers.  2. The teacher will create a list of the favorite burgers and pizzas and students will use their computers to research calories and sugar of these food choices.   |  |  | | --- | --- | | Burgers | Calories | | Cheeseburger |  | | Big Mac |  | | Bacon Cheeseburger |  | | Fish Filet |  | | Whopper |  | | Turkey Burger |  |          |  |  | | --- | --- | | Pizza | Calories | | Beef |  | | Meat Lovers |  | | Supreme |  | | Cheese |  | | Veggie |  | | BBQ Chicken |  |       The teacher will ask students, “Do you realize how many calories you’re taking in when eating burgers?”  The teacher will review the key vocabulary.  The students will receive the math task worksheet and the teacher will ask the students to:   * Order the numbers from least to greatest on the number line * Next, find and record the median of the data. * Now, separate the data at the median into two equal groups (the lower half and the upper half). * Find the median of the first half, that’s the Q1. * Find the median of the second half, that’s the Q3. * Draw one number line when comparing data. (If comparing two sets, they share the number line) * Draw vertical lines above the number line for the quartiles (including the median). * Then draw the whiskers, by plotting a point at the smallest (minimum) value and a point at the greatest (maximum) value.     **The class will**  Look at the numbers in your data and decide how you want to label your number line.   1. Below the number line plot the points (be sure there is room above or below the points to do a second box plot) 2. Draw a vertical line through each of the three middle points and connect the three lines to form a box 3. Draw a line from the box to the least number 4. Draw a line from the box to the greatest number   **Discuss:**   1. What the box plot represents, tying back to the original data. 2. The line from the first point -- the least number -- to the box represents the range of the lowest 25% of the data. 3. The box itself represents the range of the middle 50% of the data with the line inside the box representing the median | |
| **Lesson Closure** | |
| **The teacher will/ask:**   * Review with students the five points every box plot has * What do you need to find in a set of data to create a box plot? * What information can a box plot provide? * Why might a box plot be more useful than another type of graph? * Review key points, giving specific details to and re-clarifying any of the missteps during the lesson | **Essential Questions:**   1. What information is needed to construct a box plot? 2. How does a box plot help us to break things into quarters? 3. Why is this helpful in interpreting and comparing data? 4. What does this double box plot enable us to learn? |
| **Standards for Mathematical Practice** (select all that apply) | |
| * Make sense of problems and persevere in solving them. * Reason abstractly and quantitatively. * Construct viable arguments and critique the reasoning of others. * Model with mathematics. * Use appropriate tools strategically. * Attend to precision. * Look for and make use of structure.   * Look for and express regularity in repeated reasoning. | |
| **Supplemental Activities**  Name:  The \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ is the difference between the highest and the lowest number.     The \_\_\_\_\_\_\_\_\_\_\_\_\_ is the number in the middle of an ordered list. If there are two numbers in the middle, average those two numbers to find the median.    The \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ quartile is the median of the lower half of the numbers.    The \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ quartile is the median of the upper half of the numbers.  The \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ is the middle 50%. | |
| **Performance Based Assessment Task** | |
| **Math Task**  number of calories in a slice of pizza  number of calories in a burger | **Rubric/ Plausible Student Response(s)**  *The student will score 100% if the line is labeled with*  *Range*  *Median*  *Upper/Lower Quartile*  *Highest/Lowest Calories* |