1. Distribution of Math Scores:

Visualization: Histogram

- Analysis: This visualization helps in understanding the overall performance in math among students. It shows the distribution of scores, indicating how many students fall into different score ranges. This makes it easier to identify patterns such as the most common scores, the range of scores, and any outliers. It can also highlight any skewness in the distribution, which may suggest areas where additional support might be needed.

2. Reading Scores by Gender:

Visualization: Bar Chart

- Analysis: By visualizing the average reading scores for male and female students, we can easily compare the performance between genders. This helps in identifying if there are significant differences in reading abilities between male and female students. It can also be used to guide gender-specific interventions or support programs if one group is found to be underperforming compared to the other.

3. Writing Scores by Parental Level of Education:

Visualization: Bar Chart

- Analysis: This visualization shows the impact of parental education on students' writing scores. By comparing the average writing scores across different levels of parental education, it becomes easier to see if higher parental education correlates with better student performance. This can inform policies or programs aimed at supporting students whose parents have lower levels of education.

4. Math Scores by Gender:

Visualization: Box Plot

- Analysis: This box plot shows the distribution of math scores for male and female

students. It provides a clear comparison of performance between genders by displaying the median, quartiles, and potential outliers for each group. This visualization helps in identifying if there are any significant differences in math performance between male and female students. It can be used to inform gender-specific educational strategies and support programs, ensuring that both groups receive appropriate attention based on their performance trends.

5. Correlation Heatmap of Scores:

Visualization: Heatmap

- Analysis: The heatmap shows the correlation between math, reading, and writing scores. It makes it easier to identify the strength and direction of relationships between these variables. High positive correlations indicate that students who perform well in one subject tend to perform well in others, suggesting that improving skills in one area could have positive effects on other areas. This can guide integrated academic support strategies.