Q1. If you have any, what are your choices for increasing the comparison between different figures on the same graph?

- Answer: To increase comparison between different figures on the same graph, you can use techniques like adjusting the axis scales, using different line styles or markers, employing color coding, adding legends, and using annotations.

Q2. Can you explain the benefit of compound interest over a higher rate of interest that does not compound after reading this chapter?

- Answer: Compound interest allows your money to grow exponentially over time because it not only earns interest on the initial principal but also on the interest earned previously. This compounding effect can result in significantly higher returns compared to a simple interest rate, especially over long periods.

Q3. What is a histogram, exactly? Name a NumPy method for creating such a graph.

- Answer: A histogram is a graphical representation of the distribution of data. It divides data into intervals (bins) and displays the frequency or count of data points within each bin. In NumPy, you can create a histogram using the `numpy.histogram` function.

Q4. How do you change the aspect ratios between the X and Y axes, if necessary?

- Answer: You can change the aspect ratios between the X and Y axes by setting the aspect ratio in the plot using the `plt.gca().set\_aspect()` function in Matplotlib. For example, `plt.gca().set\_aspect('equal')` ensures equal aspect ratios.

Q5. Compare and contrast the three types of array multiplication between two NumPy arrays: dot product, outer product, and regular multiplication of two NumPy arrays.

- Answer:

- Dot Product: The dot product is a scalar product of two arrays and results in a single value. It involves element-wise multiplication followed by summation.

- Outer Product: The outer product produces a matrix by computing all possible combinations of products between elements of two arrays.

- Regular Multiplication: Regular multiplication between two NumPy arrays is element-wise multiplication, where each element in one array is multiplied with the corresponding element in the other array, resulting in a new array of the same shape.

Q6. Before you buy a home, which NumPy function will you use to measure your monthly mortgage payment?

- Answer: To calculate your monthly mortgage payment, you would use financial functions provided by libraries like NumPy or financial modules in Python. The `numpy.pmt` function can be used to calculate mortgage payments.

Q7. Can string data be stored in NumPy arrays? If so, list at least one restriction that applies to this data.

- Answer: Yes, string data can be stored in NumPy arrays. However, NumPy arrays have a fixed data type, so all elements in the array must have the same length or be padded to a common length. This can lead to inefficient memory usage for variable-length strings.