Task 1.1  
  
A screenshot of a computer

AI-generated content may be incorrect.

Task 1.2  
  
A screenshot of a computer

AI-generated content may be incorrect.

Task 1.3

A computer screen shot of a group

AI-generated content may be incorrect.

Task 1.4

A computer screen shot of a number

AI-generated content may be incorrect.

Task 2.1

A graph of water and water

AI-generated content may be incorrect.

Task 2.2

A graph with red bars

AI-generated content may be incorrect.

Task 2.3

A graph of a number of stations

AI-generated content may be incorrect.

Task 3

A computer screen shot of a code

AI-generated content may be incorrect.A screenshot of a computer code

AI-generated content may be incorrect.A computer screen shot of a computer code

AI-generated content may be incorrect.

Task 4.1

A white background with blue text

AI-generated content may be incorrect.

Task 4.2

A screenshot of a computer code

AI-generated content may be incorrect.

Task 4.3

A screenshot of a computer code

AI-generated content may be incorrect.

**Answer 1**

The two statements sf::st\_intersection(d.stations, del.counties) and sf::st\_intersection(del.counties, d.stations) are not equivalent because the order of the layers matters in the st\_intersection() function. The first layer determines the geometry of the output. For example, if d.stations is first, the output will have the geometry of d.stations when it overlaps with del.counties. But if del.counties is first, the output will have the geometry of del.counties when it overlaps with d.stations. The attributes in the output also depend on the first layer. It includes attributes from both layers, but the main ones come from the first layer. For example, if d.stations has "station\_id" and del.counties has "county\_name," the first statement will prioritize "station\_id," while the second will prioritize "county\_name. "Even if the data types differ (e.g., points vs. polygons), the output still depends on the first layer.

**Answer 2**

In this lab, one of the main challenges I faced was understanding how to work with different data types in R, especially when converting between them. Another tricky part was figuring out how to fix errors in my code since the error messages weren’t always easy to understand. Learning how to create plots and customize them with different colors and labels was also a new experience for me, but it was exciting to see how R could visualize data.

**Answer 3**

For future lab activities, I would really appreciate having more opportunities to work with common R tasks that are useful in real-world data analysis. Specifically, it would be great to focus on hands-on practice for things like data cleaning, which is such an important skill when working with messy data sets. I think it would also be helpful to learn how to create summary tables and perform data aggregation. These tasks are often used in both academic and professional settings and getting more practice with them would help solidify my understanding of R. Additionally, it would be useful to work on visualizing data and performing basic statistical analysis, as these are also essential skills for data analysis. Overall, I think focusing on practical skills would help me feel more confident when using R for research or future projects.