Exam 2 Free Response

Netflix (and many other internet companies) are constantly running experiments designed to provide information about their users' preferences. In one experiment design type, they record typical user interactions with the product and then randomly change the interface: for instance, changing the order of the categories on the Netflix home screen. Netflix decides to test out the length of time an individual watches more content under two conditions: the regular recommendation algorithm, A, and a new recommendation algorithm, B. 300 users are randomly assigned to algorithm A, and 300 users are assigned to algorithm B. Netflix records the watch time for each user for the one evening the study is conducted.

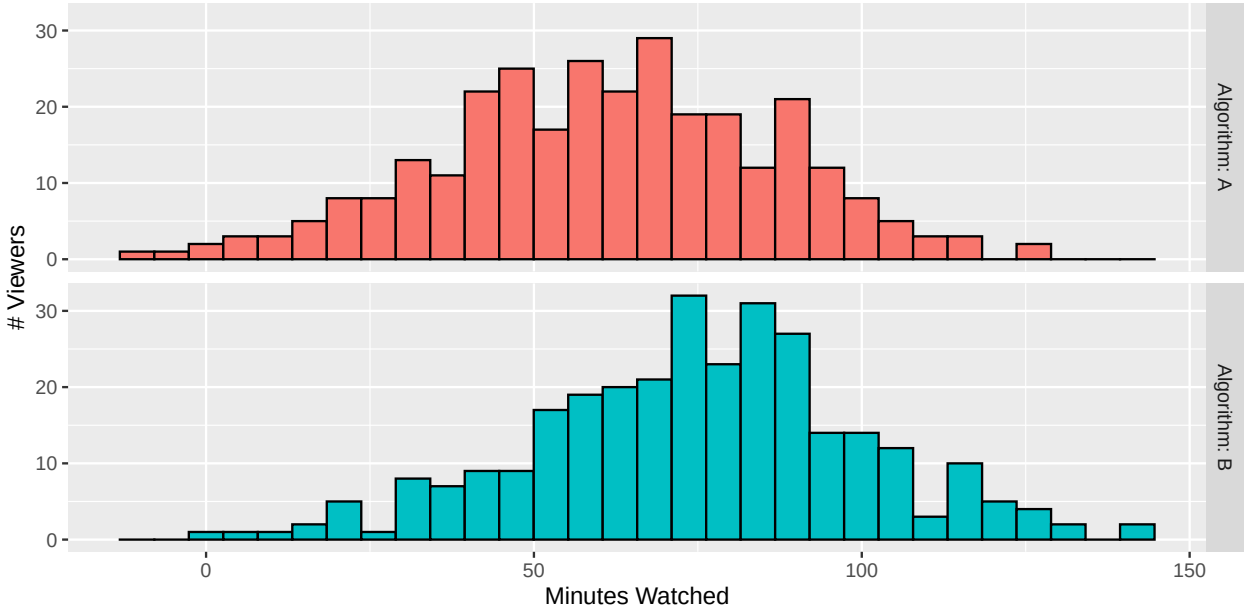

Table 1: Summary statistics for Groups A and B

Algorithm	Mean	SD
A	61.169	25.368
B	75.121	25.080

1. What is the explanatory variable? What type of variable is it? (1pt)

What is the response variable? What type of variable is it? (1pt)

2. In symbols and words, what is the population parameter? (1pt)

The sample statistic? (1pt)

Do you know the value of either quantity? (1pt)

3. Is this design a paired study or a two-group study? (1pt)

4. What are the null and alternative hypotheses, in words? (2pt)

In symbols? (1pt)

5. How would you improve on the design of this study? Is there any change you could make involving repeated measurements on the same individuals? How would that improve the study? (2pt)

6. Describe how you would conduct a physical simulation-based test of the hypothesis, if you only had the 600 measurements for each individual as well as what group they were in. (2pt)

7. Using the information provided above, calculate the theory-based standardized statistic. (1pt)

8. Interpret this standardized statistic in the context of the problem. What can Netflix conclude? (1pt)