1.A researcher studying mouse behavior recorded in Table 3 the time (in seconds) it took 13 different mice to locate food in a maze. Find the mean, medium and mode in R: ( 10 points)

|  |  |
| --- | --- |
| Mouse No | Time for Mice to Locate Food in a Maze |
| 1 | 31 |
| 2 | 33 |
| 3 | 163 |
| 4 | 33 |
| 5 | 28 |
| 6 | 29 |
| 7 | 33 |
| 8 | 27 |
| 9 | 27 |
| 10 | 34 |
| 11 | 35 |
| 12 | 28 |
| 13 | 32 |

2. In fall 2004, students in the 2 p.m. section of my Biological Data Analysis class had an average height of 66.6 inches, while the average height in the 5 p.m. section was 64.6 inches. Are the average heights of the two sections significantly different? Here are the data:

|  |  |
| --- | --- |
| **2 p.m.** | **5 p.m.** |
| 69 | 68 |
| 70 | 62 |
| 66 | 67 |
| 63 | 68 |
| 68 | 69 |
| 70 | 67 |
| 69 | 61 |
| 67 | 59 |
| 62 | 62 |
| 63 | 61 |
| 76 | 69 |
| 59 | 66 |
| 62 | 62 |
| 62 | 62 |
| 75 | 61 |
| 62 | 70 |
| 72 |  |

3. An outbreak of Salmonella-related illness was attributed to ice cream produced at a certain factory. Scientists measured the level of Salmonella in 9 randomly sampled batches of ice cream. (10 points)

The levels (in MPN/g) were: 0.593 0.142 0.329 0.691 0.231 0.793 0.519 0.392 0.418 Is there evidence that the mean level of Salmonella in the ice cream is greater than 0.3 MPN/g?

4. Subjects were given a drug (treatment group) and an additional 6 subjects a placebo (control group). Their reaction time to a stimulus was measured (in ms). Perform a two-sample t-test for comparing the means of the treatment and control groups. (10 points)

Control = (91, 87, 99, 77, 88, 91)

Treat = (101, 110, 103, 93, 99, 104)

5. What are the advantages and disadvantages of using a student t-test vs Welch’s t –test? (10 points)

6. In this day of false media and ‘Fake news” , it is important to learn to discern the right interpretation of the data from the wrong: Following is a paper published by the cleveland clinic : <http://www.impactjournals.com/oncotarget/index.php?journal=oncotarget&page=article&op=view&path%5B%5D=21490&path%5B%5D=68289>

and following is the the news article that talks about the paper:

<https://www.medicalnewstoday.com/articles/319688.php>

Write a 1.5 page essay identifying two weaknesses in the paper and two weaknesses in the news article? Conclude your essay talking about strategies on how you shuld interpret data.