

To calculate the median, we first need to find the cumulative frequency of the data. We can do this using the `cumsum()` function:

```
cum_freq <- cumsum(freq_table)
cum_freq
```

#Now, we can use the `which()` function to find the index of the median value:

```
median_index <- which(cum_freq >= sum(freq_table)/2)[1]
median_index
```

#Finally, we can find the median value by taking the average of the value at the median index and the value at the previous index:

```
median <- mean(as.numeric(names(freq_table)[median_index-1:median_index]))
median
```

#To calculate the mode, we can use the `which.max()` function to find the index of the maximum frequency:

```
mode_index <- which.max(freq_table)
mode_index
```

#Finally, we can find the mode value by taking the value at the mode index:

```
mode <- as.numeric(names(freq_table)[mode_index])
mode
```

Comparing the results, we can see that the mean is, the median is, and the mode is This is because the data is slightly skewed to the right, with a longer tail on the right side. As a result, the mean is pulled slightly higher than the median, but both are still fairly close to each other. The mode is lower than both the mean and median, indicating that there is no clear peak in the data.

6) Use R for test the given data In order to compare the effectiveness of two sources of nitrogen, namely ammonium chloride (NH₄Cl) and urea, on grain yield of Coarse cereal, an experiment was conducted. The results on the grain yield of Coarse Cereal (kg/plot) under the two treatments are given below.

NH₄Cl : 13.4, 10.9, 11.2, 11.8, 14.0, 15.3, 14.2, 12.6, 17.0, 16.2, 16.5, 15.7.

Urea : 12.0, 11.7, 10.7, 11.2, 14.8, 14.4, 13.9, 13.7, 16.9, 16.0, 15.6, 16.0.

Assess which source of nitrogen is better for Coarse Cereal.

To assess which source of nitrogen is better for Coarse Cereal, we can compare the mean grain yield for each treatment. Here's how you can do this in R:

```
# Define the grain yield data for each treatment
```

```
NH4Cl <- c(13.4, 10.9, 11.2, 11.8, 14.0, 15.3, 14.2, 12.6, 17.0, 16.2, 16.5, 15.7)
```

```
Urea <- c(12.0, 11.7, 10.7, 11.2, 14.8, 14.4, 13.9, 13.7, 16.9, 16.0, 15.6, 16.0)
```

```
# Calculate the mean for each treatment
```

```
mean_NH4Cl <- mean(NH4Cl)
```

```
mean_Urea <- mean(Urea)
```

```
# Compare the means
```

```
if (mean_NH4Cl > mean_Urea) {
  print("NH4Cl is better for Coarse Cereal")
} else if (mean_Urea > mean_NH4Cl) {
  print("Urea is better for Coarse Cereal")
}
```