

ISTA 350 Lab 8 Worksheet, 3/30/2020 Name:

Draw a histogram representing the estimated probability density function for the weights of adult Ridgenose Rattlesnakes in grams using the following sample: 3.24, 4.01, 3.08, 3.56, 3.34, 3.43, 2.98, 3.81, 3.29, 3.52, 3.47, 3.38, 3.31, 3.19, 3.21, 3.35, 3.17, 3.22, 3.31, 3.41. Make your bins to be width 0.1 with bin edges lying on 2.9, 3.0, 3.1... What is the estimated probability that a Ridgenose Rattlesnake will weigh between 3.3 and 3.4 grams? Between 3.3 and 3.5 grams? Greater than 3.3 grams? Less than 3.3 grams?

Draw a bar chart representing the frequency distribution of the following values representing the ages of the students in a hypothetical UA class: 19, 20, 21, 17, 20, 19, 20, 22, 19, 18, 21, 20, 26, 35, 27, 19, 20, 20. On the right-hand side of your chart, add an axis and label it so that the bar chart represents a probability mass function (probability distribution).

Create a bar plot of the probability mass function for the following sequence of values: [33, 35, 28, 32, 33, 32, 32, 34, 33, 32].

Write a couple of lines of code that create a Series which has the integers between 28 and 35 inclusive as its index and their associated probabilities as determined above as its data.

Write a function called `frequency_series` that takes a list of values as its sole argument. It returns a Series whose index is the values in the list without duplicates and whose values are the corresponding frequencies.

Write a function called `frequencies` that takes a list of values as its sole argument. It returns two lists: the first list has the same values as the argument in the same order, but with no duplicates. The second list is the same length and each element is the number of times the corresponding element in the first list appears in the argument. For example, if the argument is `[99, 77, 99, 77, 77]`, return `[99, 77]`, `[2, 3]`. There is a list method called `count` that does what it sounds like.

What is the estimated probability that there will be a tornado on May 21st of 2019? (Hints: What is the probability that there will NOT be a tornado? You will need to turn these frequencies into probabilities. What is the number of observations, N ?) What is our estimated probability that there will be a double-digit number of tornadoes? What is our estimated probability that there will be one or two tornadoes?