Intro to Statistics Activity Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Class Boundaries

In our last class, we constructed a **categorical** frequency distribution, in which each class was nominal or ordinal. Today, we’ll build a frequency distribution from quantitative data.

Below is a list of the twenty wealthiest people in the world as of 2018:

1. Jeff Bezos, American, age 54, worth $112 billion
2. Bill Gates, American, age 62, worth $90 billion
3. Warren Buffett, American, age 87, worth $84 billion
4. Bernard Arnault, French, age 69, worth $72 billion
5. Mark Zuckerberg, American, age 33, worth $71 billion
6. Amancio Ortega, Spanish, age 81, worth $70 billion
7. Carlos Slim Helu, Mexican, age 78, worth $67.1 billion
8. Charles and David Koch (tied), American, ages 82 and 77 respectively, worth $60 billion each
9. Larry Ellison, American, age 73, worth $58.5 billion
10. Michael Bloomberg, American, age 76, worth $50 billion
11. Larry Page, American, age 44, worth $48.8 billion
12. Sergey Brin, American, age 44, worth $47.5 billion
13. Jim Walton, American, age 69, worth $46.4 billion
14. Rob Walton, American, age 73, worth $46.2 billion
15. Alice Walton, American, age 68, worth $46 billion
16. Ma Huateng, Chinese, age 46, worth $45.3 billion
17. Francoise Bettencourt Meyers, age 64, worth $42.2 billion
18. Mukesh Ambani, Indian, age 60, worth $40.1 billion
19. Jack Ma, Chinese, age 53, worth $39 billion

**Warm-up:** You should be able to build a categorical frequency table from the citizenship data above. What would the classes be?

Building a frequency table for the ages or net worths of these billionaires will require you to **group** numerical answers into classes by setting class limits. Often, with ages, we group by 5 or 10 years. The size of the class is called the **class width**. You can obtain this by taking the **upper limit** of the class and subtracting the **lower limit.**

You will need to cover every possible age with your classes. Below are the rules for constructing classes:

1. There should be 5 to 20 classes total.
2. It is preferable to have an odd class width, so that the class midpoint is rounded to the same decimal place as the class limits.
3. The classes must be mutually exclusive. If you group your ages as 10-20, 20-30, 40-40, etc, someone who is 20 cannot be placed in only one class.
4. The classes must be continuous. Even if a class is empty, you should include it to cover all possible outcomes.
5. The classes must be exhaustive. No datum can be excluded.
6. The classes must be equal in width, unless the data are open ended (e.g. we will often end an age class as 100 or older, since there is no fixed maximum age for humans).

Using these rules, define classes for the ages of the billionaires listed above. Then fill out a grouped frequency table on the next page. Ms. Burchfield will go through the net worth data for a second grouped frequency table.

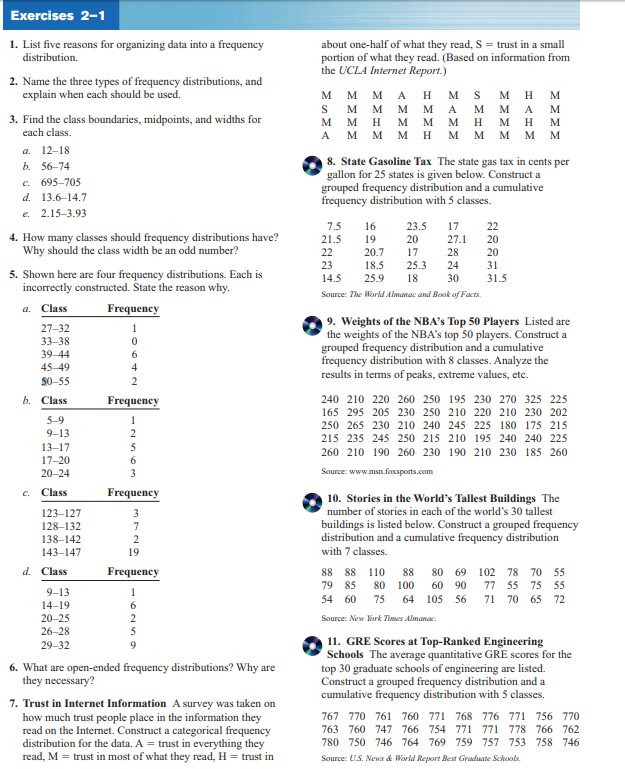
NB **Class boundaries** formalize how you would round data at the class limits. Often these go to .5 above or below the limit.

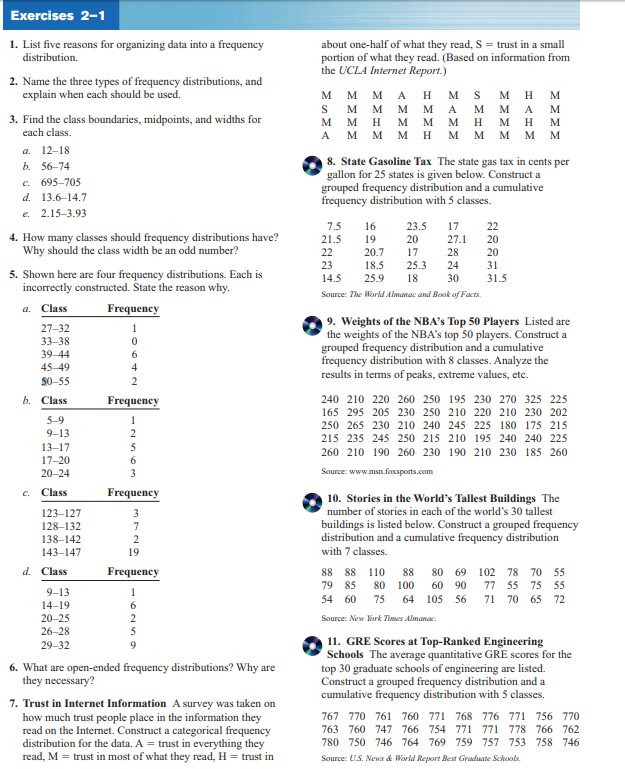
Ages

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| **Class Limits** | **Class Boundaries** | **Tally** | **Frequency** | **Percent** |
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Net worth

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| --- | --- | --- | --- | --- |
| **Class Limits** | **Class Boundaries** | **Tally** | **Frequency** | **Percent** |
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Homework: do the problems below:



source: https://www.cbsnews.com/pictures/richest-people-in-world-forbes/2/