

## Week 5. STAT1020 Discussion section – Issac Lee

### 1. The impact of shifting and rescaling data sets.

- a. A company selling clothing on the internet reports that the packages it ships have a median weight of 68 ounces and an IQR of 40 ounces.
  - 1) The company plans to include a sales flyer weighing 4 ounces in each package. What will the new median and IQR be?
  - 2) If the company recorded the shipping weights of these new packages in pounds instead of ounces, what would the median and IQR be? (1 lb = 16 oz.)
- b. (Self test) Issac had a survey for men's shoe size from an university in Europe. The mean size was 44.65 with a standard deviation of 2.03.

$$USsize = EuroSize \times 0.7865 - 24.$$

- 1) Issac moved to USA and now he wants to continue his research again, so he wants to convert his past data into U.S. shoe size. What is the mean of men's shoe size for these respondents in U.S. units?
- 2) What is the standard deviation in U.S. units?

### 2. Normal Models

- a. The Stat section of the ACT test had a mean of 20.9 and an SD of 5.3 for the years 2013-2015. If these are well modeled by a Normal distribution, about what percent of students scored.
  - 1) Over 31?
  - 2) Under 18?
  - 3) Between 18 and 31?
  - 4) (Self test) Over 35? Under 15? Between these two?
- b. **Windy days** Let's assume that we observed wind speeds in Feb., June, and Aug. The summary statistics for each of those three months are as following:

	February	June	August
Mean	2.324	0.857	0.63
SD	1.577	0.795	0.597

The outliers had values of 6.73 mph, 3.93 mph, and 2.53 mph, respectively.

- 1) What are their z-scores?
- 2) Which was the most extraordinary wind event?