ASBD Tutorial -2

Q1. The grades on a history midterm at Springer are roughly symmetric with μ=81, σ=2.5. Luis scored 84 on the exam.
Find the z-score for Luis's exam grade. Round to two decimal places.

Q2. A town hosted two races—a full marathon and a half marathon—and recorded the finishing times for both races. Here are some summary statistics: (Use z-score)

Race	Mean	Standard deviation
Full	$\mu = 285\,\text{min}$	$\sigma = 50\,\text{min}$
Half	$\mu = 140\,\text{min}$	$\sigma = 20\,\text{min}$

Rex ran the full marathon in 185 minutes, and his friend Lisa ran the half marathon in 100 minutes.
Relative to their race, who finished with a faster time?

Q3. Given the below set of data. Normalize the below give data 1000, 2000, 3000, 9000 using min-max normalization by setting min:10 and max:100

Q4. Use normalization by ***decimal scaling*** to transform the values of the given data such that the transformed value is less than 1.
Data: 41000, 75000, 89000, 99900.

Q5. Given the Sorted price values 4, 8, 9, 15, 21, 21, 24, 25, 26, 28, 29, 34, partition into 3 bins and smooth the data as mentioned below
a. Equal-depth or Equal-frequency bins

- Smoothing by bin-means
- Smoothing by bin-medians
- Smoothing by bin-boundaries

b. Equal width bins.

- Smoothing by bin-means
- Smoothing by bin-medians
- Smoothing by bin-boundaries