

Answer each question to the best of your ability. Be sure to stay positive.

1. Fill out table. 4

Information	Population	Sample
Mean	$\mu$	$\bar{x}$
Standard Deviation	$\sigma$	$S$
Variance	$\sigma^2$	$s^2$
Proportion	$p$	$\hat{p}$

2. Specify the type of variable. Use a check or X. 5

Variable	Nominal	Ordinal	Interval	Ratio
GPA				X
Gender	X			
City	X			
Shirt Size (Small, Medium, Large)		X		
Birth Year			X	

← GPA has a meaningful zero, but a GPA of 4.0 isn't necessarily "twice as good" as a 2.0. In that sense you could argue that GPA is interval data.

Usually, birth year is used to calculate age (which is ratio) or differences in age (also ratio). If you think of birth year

3. Which type of sampling design allows for each element in the population to have the same probability of being in sample? 2

Simple Random Sampling

as "time since year 0" then you could argue that it too is ratio data.

4. Find the following statistics from this data set: 1, 2, 2, 4, 5, 6, 7, 5, 9, 10, 3 3

1. Mean  $\approx 4.909$
2. Median 5
3. Mode 2, 5

5. In a histogram, what are the three characteristics that you can determine from looking at the plot? 3

- shape (distribution, skewness, outliers, etc.)
- center (mean, median, etc.)
- spread (variance, standard deviation, range, IQR, etc.)

6. Describe the shape of the distribution based on the following relationships between the  $\bar{x}$  (mean) and  $M$  (Median). 3

- $\bar{x} > M$  right (positive) skew
- $\bar{x} < M$  left (negative) skew
- $\bar{x} \approx M$  symmetric (no skew)

