Quiz1

QUESTION 1 OF 2

For each variable below, identify each as either **quantitative** or **categorical**.

Categorical | Quantitative | Quantitative | Categorical | Quantitative

VARIABLE	DATA TYPE
Zip Code	C
Age	Q
Income	Q
Marital Status (Single, Married, Divorced, etc.)	C
Height	Q

QUESTION 2 OF 2

For each variable below, identify each as either **quantitative** or **categorical**.

Categorical | Quantitative | Categorical | Quantitative | Quantitative

VARIABLE	DATA TYPES
Letter Grades (A+, A, A-, B+, B, B-, ...)	C
Travel Distance to Work	Q
Ratings on a Survey (Poor, Ok, Great)	C
Temperature	Q
Average Speed	Q

Quiz 2

Text:

Recap of Previous Video

The table below summarizes our data types. To expand on the information in the table, you can look through the text that follows.

Data Types		
Quantitative:	**Continuous**	**Discrete**
	Height, Age, Income	Pages in a Book, Trees in Yard, Dogs at a Coffee Shop
Categorical:	**Ordinal**	**Nominal**
	Letter Grade, Survey Rating	Gender, Marital Status, Breakfast Items

Below is a little more detail of the information shared in the above table.

Another Look

To break down our data types, there are two main blocks:

Quantitative and **Categorical**
Quantitative can be further divided into `Continuous` or `Discrete`.
Categorical data can be divided into `Ordinal` or `Nominal`.
You should have now mastered what types of data in the world around us falls into each of these four buckets: Discrete, Continuous, Nominal, and Ordinal. In the next sections, we will work through the numeric summaries that relate specifically to quantitative variables.

Quantitative vs. Categorical

Some of these can be a bit tricky - notice even though zip codes are a number, they aren't really a quantitative variable. If we add two zip codes together, we do not obtain any useful information from this new value. Therefore, this is a categorical variable.

Height, **Age**, the **Number of Pages in a Book** and **Annual Income** all take on values that we can add, subtract and perform other operations with to gain useful insight. Hence, these are `quantitative`.
Gender, **Letter Grade**, **Breakfast Type**, **Marital Status**, and **Zip Code** can be thought of as labels for a group of items or individuals. Hence, these are `categorical`.

Continuous vs. Discrete

To consider if we have continuous or discrete data, we should see if we can split our data into smaller and smaller units. Consider time - we could measure an event in years, months, days, hours, minutes, or seconds, and even at seconds we know there are smaller units we could measure time in. Therefore, we know this data type is continuous. **Height**, **age**, and **income** are all examples of `continuous data`. Alternatively, the **number of pages in a book**, **dogs I count outside a coffee shop**, or **trees in a yard** are `discrete data`. We would not want to split our dogs in half.

Ordinal vs. Nominal

In looking at categorical variables, we found **Gender**, **Marital Status**, **Zip Code** and your **Breakfast items** are `nominal variables` where there is no order ranking associated with this type of data. Whether you ate cereal, toast, eggs, or only coffee for breakfast; there is no rank ordering associated with your breakfast.
Alternatively, the **Letter Grade** or **Survey Ratings** have a rank ordering associated with it, as `ordinal data`. If you receive an A, this is higher than an A-. An A- is ranked higher than a B+, and so on... Ordinal variables frequently occur on rating scales

from very poor to very good. In many cases we turn these ordinal variables into numbers, as we can more easily analyze them, but more on this later!

Final Words

In this section, we looked at the different data types we might work with in the world around us. When we work with data in the real world, it might not be very clean - sometimes there are typos or missing values. When this is the case, simply having some expertise regarding the data and knowing the data type can assist in our ability to 'clean' this data. Understanding data types can also assist in our ability to build visuals to best explain the data. But more on this very soon!

QUIZ QUESTION

This quiz will assure you have a clear understanding of the differences between categorical nominal vs. categorical ordinal variables. All of the variables below are categorical. Your task is to select the **check** box next to each variable that is **nominal**; do not check the ordinal categorical variables.

- [ ] Letter Grades (A, B+, B, B-, etc.)
- [x] Types of Fruit (Apple, Banana, etc.)
- [ ] Ratings on a Survey (Poor, Ok, Great)
- [x] Types of Dog Breeds (German Shepherd, Collie, etc.)
- [x] nres of Movies (Horror, Comedy, etc.)
- [x] Gender
- [x] Nationality
- [x] Education (HS, Associates, Bachelors, Masters, PhD, etc.)

Quiz 3

QUIZ QUESTION

This quiz will ensure you have a clear understanding of the differences between quantitative continuous vs. discrete variables. All of the variables below are quantitative. Your task is select the **check** box next to each variable that is **continuous**; do not check the discrete variables.

- [x] Travel Distance from Home to Work
- [ ] Number of Pages in a Book
- [x] Amount of Rain in a Year
- [x] Time to Run a Mile
- [ ] Number of Movies Watched in a Week
- [x] Amount of Water Consumed in a Day
- [ ] Number of Phones per Household

Quiz 4

QUESTION 1 OF 2

Which of the below are measures of center (Check all that apply)?

- [x] Mean
- [ ] Standard Deviation
- [ ] Variance
- [x] Median
- [ ] Inter-quartile Range
- [x] Mode
- [ ] Range
- [ ] Maximum
- [ ] Minimum

QUESTION 2 OF 2

If we have the data:

5, 8, 15, 7, 10, 22, 3, 1, 15

What is the mean?

- 7
- 9.56
- 15
- 8
- 8.5

Quiz 5

QUESTION 1 OF 2

If we have the data:

5, 8, 15, 7, 10, 22, 3, 1, 15

What is the median?

- ○ 7
- ○ 9.56
- ○ 15
- ● 8
- ○ 7.5

QUESTION 2 OF 2

If we have the data:

5, 8, 15, 7, 10, 22, 3, 1, 15, 2

What is the median?

- ○ 7
- ○ 9.56
- ○ 15
- ○ 8
- ● 7.5

Quiz 6

QUESTION 1 OF 5

We want to summarize the number of dogs our friends have into a single number. We will use the measures of center for this problem. Ashley has 1 dog, Steve has 1 dog, Jeff has 2 dogs, Kylie has 3 dogs, and Lisa has 8 dogs.

There is no best measure of center so we need to try all three to see what makes sense.

What is the mean, median, and mode for the number of dogs our friends have?

- [x] Mean: 3 Median: 2 Mode: 1
- [ ] Mean: 2 Median: 2 Mode: 8
- [ ] Mean: 3 Median: 3 Mode: 1
- [ ] Mean: 2 Median: 1 Mode: 8

QUESTION 2 OF 5

Check all of the below that are true with regards to our measures of center.

- [ ] The mode is the middle number in the dataset when the numbers are rank ordered.
- [x] The median is the middle number in the dataset when the numbers are rank ordered.
- [ ] The mean is always the best measure of center for any dataset.
- [ ] The mean is always less than the median.
- [ ] The median is always the best measure of center for any dataset.
- [ ] The mode is always the best measure of center for any dataset.

QUESTION 3 OF 5

If we have the data:

5, 8, 15, 7, 10, 22, 3, 1, 15

What is the mode?

- ( ) 7
- ( ) 9.56
- ( ) 9
- (x) 15
- ( ) 5

QUESTION 4 OF 5

For the dataset below match the correct measure to the value:

8, 12, 32, 10, 3, 4, 4, 4, 4, 5, 12, 20

9.83 | 6.5 | 4 | 8

MEASURE	VALUE
Mean	9.8
Median	6.4
Mode	4
None of the Above	8

QUESTION 5 OF 5

If we have the data:

5, 8, 15, 7, 10, 22, 3, 1, 15, 10

Mark all statements that are true.

- [ ] The mode is 15.
- [ ] The mean is 15.
- [x] The mode is 10.
- [ ] None of the above are true.

Quiz 7

Text:

Example Dataset

An example of the data we might have collected in the previous video is shown here:

Date	Day of Week	Time Spent On Site (X)	Buy (Y)
June 15	Thursday	5	No
June 15	Thursday	10	Yes
June 16	Friday	20	Yes

QUESTION 1 OF 2

What type of variable is the random variable X in the video in the previous concept?

- ○ Categorical - Ordinal
- ○ Categorical - Nominal
- ● Quantitative - Continuous
- ○ Quantitative - Discrete

QUESTION 2 OF 2

What type of variable is the random variable Y in the video in the previous concept?

- Categorical - Ordinal
- Categorical - Nominal
- Quantitative - Continuous
- Quantitative - Discrete

Quiz 8

Text:

Consider we have the following table:

Years Experience	Department	Part/Full Time
5	IT	Part Time
10	Finance	Full Time
8	HR	Full Time
1	Finance	Part Time

Consider we have the following labels:

\bold{X}**X**= years of experience
\bold{Y}**Y**= Department
\bold{Z}**Z**= Part/Full Time
Match the following notation to their corresponding:

A. \bold{x_1}$\mathbf{x_1}$
B. \bold{y_2}$\mathbf{y_2}$
C. \bold{z_3}$\mathbf{z_3}$
D. \bold{n}**n**

QUIZ QUESTION

Use the information above to match the correct notation label to its corresponding value.

16 | Years Experience | Part Time | Department | 5 | Finance

Full Time | 4

NOTATION	VALUE
A. (this refers to the letter with the corresponding notation above)	
B. (this refers to the letter with the corresponding notation above)	
C. (this refers to the letter with the corresponding notation above)	
D. (this refers to the letter with the corresponding notation above)	

Quiz 9

Text:

Match The Notation

For this quiz, you will be matching the notation attached the letters below to the corresponding numeric value to make sure you understand exactly what is being done with each part of the notation.

Imagine, we have the following table of values:

x_1	x_2	x_3	x_4	x_5	x_6	x_7
5	15	3	3	8	10	12

A. n

B. $\sum_{i=1}^{n} x_i$

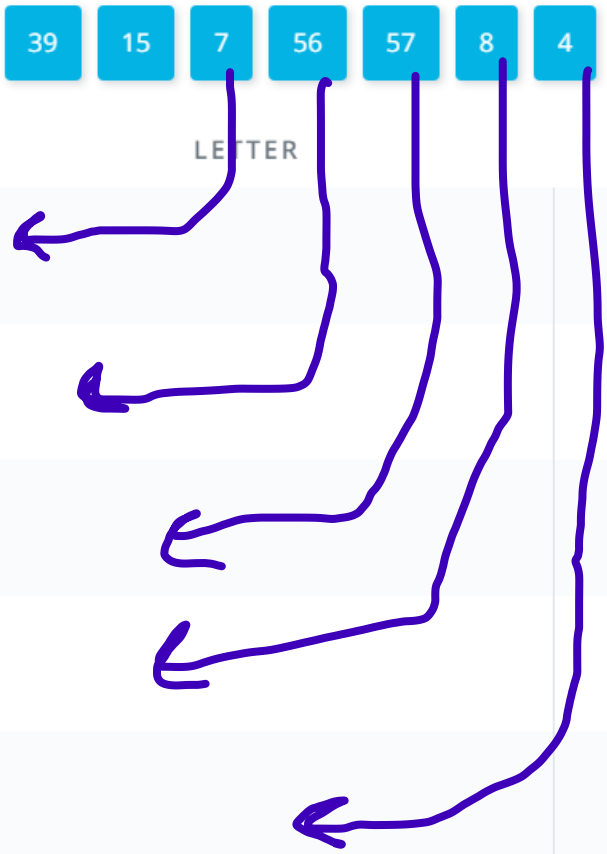
C. $\sum_{j=2}^{7} x_j + 6$

D. x_5

E. $\frac{\sum_{i=3}^{6} x_i}{n-1}$

QUIZ QUESTION

Use the letters, numbers, and notation as defined above to match each letter to the appropriate value.



LETTER	VALUE
A.	
B.	
C.	
D.	
E.	

Quiz 10

Notation for Quizzes

For the below quiz, let the following letters denote the corresponding notation:

A. $\mathbf{X}$

B. $\mathbf{Y}$

C. $\mathbf{x_1}$

D. $\mathbf{n}$

E. $\sum_{\mathbf{i=1}}^{\mathbf{n}} \mathbf{x_i}$

QUESTION 1 OF 2

Use the letter next to the notation above to match the notation to the description of what the notation represents.

The notation for all of the values in our dataset.

The notation for all of the values in our dataset.

The notation for the number of columns in our dataset.

The notation for a random variable.

The notation for a random variable.

The notation for the first observed value of a random variable.

The notation for the number of rows in our dataset.

The notation for the sum of all the values in our dataset.

NOTATION LETTER	DESCRIPTION
A	
B	
C	
D	
E	

Notation for Quizzes

For the below quiz, let the following letters denote the corresponding notation:

A. $\sum_{i=1}^{n} x_i$

B. $\frac{\sum_{i=1}^{n} x_i}{n}$

C. $\bar{x}$

D. $\bar{y}$

E. $\frac{\sum_{j=1}^{n} y_j}{n}$

QUESTION 2 OF 2

If we wanted to provide notation for the mean of a particular dataset, which of the following letters would correspond to the notation attached to calculating the mean? (Mark all that apply.)

- [ ] A
- [x] B
- [x] C
- [x] D
- [x] E