NAME: _____

WHAT'S THE VIBE?

How to Calculate Range

Zoo Keeper Anne Knapp is responsible for deciding how big an enclosure should be for a given animal. At the Franklin Park Zoo in Boston, where Knapp works, enclosures are grouped together into habitats to help visitors find their way around the park and understand which
animals live near each other in the wild.

Explore:

Here is a table of how many species each habitat at the Franklin Park Zoo has. (Some habitats have the same number of species.):

Habitat	Number of Species
African Penguin Coast	1
Aussie Aviary	2
Bird's World	30
Children's Zoo	14
Franklin Farm	8
Giraffe Savannah	3
Gorilla Grove	1
Kalahari Kingdom	7
Outback Trail	4
Raptor Ridge	2
Serengeti Crossing	3
Tropical Forest	33

- Which habitat has the most species?
- How many species does it have?
- Which two habitats have the fewest species?
- How many species do they have?

Apply:

- In a data set, the lowest number is called the minimum and the highest is called the maximum. When we subtract the minimum from the maximum, we get the *range*.
- Range is important for two reasons. The first is that it gives us a sense of how much variation there is in a dataset. Are most of the values pretty similar? Or are they very different? (This can help us with other statistical problems later on!)

- Look at the minimum and maximum values you calculated for the number of species in a habitat at the Franklin Park Zoo. What is the range?



Remember: Maximum - Minimum = Range

- The second reason why range is important is that it helps us find outliers. Outliers are numbers that are much larger or much smaller than the other numbers in a data set.
- If the Franklin Park Zoo added an exhibit with 36 different species, how much would this change the range by?
- Would this exhibit be an outlier? Why or why not?
- If the Franklin Park Zoo added an exhibit with 60 different species, how much would this change the range by?
- Would this exhibit be an outlier? Why or why not?

Practice: Get better at calculating range by solving these problems.

Biostatistician Andrew Vickers uses data to research cancer. One of the problems that many cancer studies face is that not enough of the participants in the study are able to finish the study. The number of participants who finish a study is called the study's accrual. Vickers and his colleagues came up with several different ways that cancer studies can improve their accrual, like by changing how they give information about the study to participants.

Here is a table of several cancer studies that used Vickers' teams strategies and were able to have very high accrual rates. The table compares the percentage of people who finished the study to how many the researchers hoped would finish the study. Some of the percentages are over 100% because the researchers were able to exceed their goal!

Trial	Accrual Percent
Trial A	85
Trial B	137
Trial C	95
Trial D	135
Trial E	99
Trial F	100
Trial G	102
Trial H	55

Use the table above to answer the following questions

- What is the minimum?
- What is the maximum?
- What is the range?
- Are there any outliers, why or why not?

Environmental Scientist Eric Pallant studies how colleges can make their campuses more eco-friendly. Below is a table of colleges he's studied from around the world and how many students each one has.

College	Number of Students
North-Western University	64,081
University of Nigeria	36,000
Allegheny College	1,931
Brasilia University	38,475
Hamburg University of Applied Sciences	16,800



Use the table above to answer the following questions.
- What is the minimum?
- What is the maximum?
- What is the range?
- Are there any outliers, why or why not?