

Name: _____

Date: _____

Aim: How can we use _____ averages to manipulate our interpretation of data?

Warm-up:

1. Based on the given data, which state has a higher percentage of people who like pineapple pizza?

	New York	California
People who like pineapple pizza	80/138	42/80

Pizzeria Competition Part 1

	1. Jose Kneaded Pizza	2. Sellis & Moore Pizza	3. Jess Ashley's Pizza	4. Ant-Yan's Fusion Pizza	5. Evina and Pei's Pies
Pepperoni	68/81	28/32	42/49	51/60	73/87
Pineapple	15/22	88/119	72/98	42/59	10/15

Ranking of the Pizzerias:

- 1.
- 2.
- 3.
- 4.
- 5.

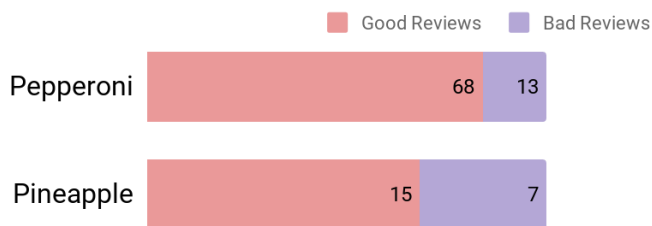
Pizzeria Competition Part 2

Yelp wants the TOTAL average of positive ratings for each store. How do we find that?

	1. Jose Kneaded Pizza
Pepperoni	$68/81 \approx .836$
Pineapple	$15/22 \approx .682$
Total Avg. of Positive Reviews	

What is the average of total positive reviews for Jose Kneaded Pizza? Show your work.

Reviews for Jose Kneaded Pizza



... Pause for Mini-Lesson ...

_____ **Average (or _____ Mean)**

A kind of _____ where some data points contribute more “_____” than others.

How do we calculate it generally?

_____ Mean =

When is it used?

- When we consider some data points more _____ than others
- When each data points has a _____ associated with it
- When we want to _____ averages or rates

Simple Average vs. _____ Average

Simple Average	_____ Average
<ul style="list-style-type: none"> • Formula: • Values are _____ weighted • _____, median, and mode are types of central tendency 	<ul style="list-style-type: none"> • Formula: • Each value has a _____ weight • _____ a type of central tendency

... Back To Pizzeria Competition Part 2 ...

What do you predict? (Check the box you predict)

After calculating the weighted averages, will the Pizza Pyramid Ranking:

- ☐ Change a lot?
☐ Change a little?
☐ Stay the same?

Let's Find Out!

	1. Jose Kneaded Pizza	2. Sellis & Moore Pizza	3. Jess Ashley's Pizza	4. Ant-Yan's Fusion Pizza	5. Evina and Pei's Pies
Pepperoni	68/81	28/32	42/49	51/60	73/87
Pineapple	15/22	88/119	72/98	42/59	10/15
Average of Positive Reviews					

NEW Ranking of the Pizzerias:

- 1.
- 2.
- 3.
- 4.
- 5.

What do you notice about the old and new rankings? Why do you think that happened?

_____ **Paradox**

A paradox that occurs when trends that appear in subgroups are _____ when the data are _____, or combined.

Conclusion: Who won?

Congratulations _____!

Challenge Problems

Use your knowledge about the weighted average and Simpson's Paradox.

1. Is this statement true or false? Why?

Given $\frac{a}{b} > \frac{e}{f}$ and $\frac{c}{d} > \frac{g}{h}$, then $\frac{a+c}{b+d} > \frac{e+g}{f+h}$.

Hint: Did we use fraction addition to calculate the weighted average?

2. Based on your answer, explain why the results in Competition Part 1 differ from the results in Part 2.
