

## Order of Operations HW 1: Field Trip

OK – so an old friend of mine from high school was helping her kids do their homework, and I got this panicked message:

Need your help friend. So nicholas only tallied up first choice and got zoo as popular vote. I told him her is wrong and must do 1st choice and second choice to see popular vote. Trick question. Help!!!!

Which one of us was correct. I am betting Nicholas and I made him get it wrong

(this happens frequently, with a lot of my old HS friends. 😊)

The basic gist is this: A class of elementary school students is going to go on a field trip. They can either go to the zoo, the science museum, or the aquarium. Each student made their top two selections: “1<sup>st</sup> choice” for the place they most wanted to go, and “2<sup>nd</sup> choice” for their runner-up.

The class voted on which place to visit. Those tables show the results.

Name	First Choice	Second Choice
Olivia	Zoo	Science Museum
Grace	Science Museum	Aquarium
Jessica	Aquarium	Zoo
Ruby	Zoo	Science Museum
Emily	Science Museum	Aquarium
Sophie	Aquarium	Zoo
Chloe	Aquarium	Science Museum
Lucy	Aquarium	Science Museum
Lily	Science Museum	Aquarium
Ellie	Science Museum	Aquarium
Ella	Zoo	Science Museum
Charlotte	Science Museum	Aquarium
Katie	Science Museum	Aquarium
Min	Zoo	Science Museum
Hannah	Zoo	Science Museum

Name	First Choice	Second Choice
Jack	Aquarium	Zoo
Thomas	Zoo	Aquarium
Joshua	Zoo	Aquarium
Oliver	Science Museum	Aquarium
Harry	Aquarium	Zoo
James	Zoo	Science Museum
William	Science Museum	Science Museum
Samuel	Zoo	Aquarium
Daniel	Zoo	Science Museum
Charlie	Aquarium	Aquarium
Benjamin	Science Museum	Zoo
Joseph	Zoo	Aquarium
Callum	Zoo	Aquarium
George	Aquarium	Science Museum
Jake	Science Museum	Aquarium

1. Based only on the results of the class votes, where would you recommend the class go on the field trip? Aquarium  
 Show your work below or in the space on the side of the chart and then explain how you found your answer. Be clear and convincing with your explanation. 1st choice: 200 1st choice: 114 2nd choice: 112 = 200 114 = 112 = 5 12 11 12

Here are the results (in case, like me, you can't read the text in that picture at right above):

Name	1 <sup>st</sup> Choice	2 <sup>nd</sup> Choice
Olivia	Zoo	Science Museum
Grace	Science Museum	Aquarium
Jessica	Aquarium	Zoo
Ruby	Zoo	Science Museum
Emily	Science Museum	Aquarium
Sophie	Aquarium	Zoo
Chloe	Aquarium	Science Museum
Lucy	Aquarium	Science Museum
Lily	Science Museum	Aquarium
Ellie	Science Museum	Aquarium
Ella	Zoo	Science Museum
Charlotte	Science Museum	Aquarium
Katie	Science Museum	Aquarium
Min	Zoo	Science Museum
Hannah	Zoo	Science Museum

Name	1 <sup>st</sup> Choice	2 <sup>nd</sup> Choice
Jack	Aquarium	Zoo
Thomas	Zoo	Aquarium
Joshua	Zoo	Aquarium
Oliver	Science Museum	Aquarium
Harry	Aquarium	Zoo
James	Zoo	Science Museum
William	Science Museum	Science Museum
Samuel	Zoo	Aquarium
Daniel	Zoo	Science Museum
Charlie	Aquarium	Aquarium
Benjamin	Science Museum	Zoo
Joseph	Zoo	Aquarium
Callum	Zoo	Aquarium
George	Aquarium	Science Museum
Jake	Science Museum	Aquarium

1. (2 points) Based only on the results of the class votes you see here, where would you recommend the class go on the field trip? Circle your answer.

**Zoo**

**Science Museum**

**Aquarium**

2. (3 points) How did you decide? (Make sure you use words here, though you can use calculations as well.)

Now, my buddy who sent me the message was convinced that one way was “right” and another “wrong”...but that’s not the way stuff in life always **goes**! Rating systems like this one, for example, are usually agreed upon through some sense of communal fairness, as there’s no one “right way” to rank...there’s just the “most fairly agreed upon” way.

Here’s the way *I* attacked it: I said, “Count each vote that in the ‘1<sup>st</sup> choice’ column as worth “2 points”, and each vote in the 2<sup>nd</sup> choice column as “1 point” (my logic here was that a “first choice” should count **more** than a “second choice”).

So, here’s how the Zoo fared: if you look at Zoo votes, you see that 12 students voted for it as “1<sup>st</sup> choice” and 5 voted for it as “2<sup>nd</sup> choice”. So, the total number of “weighted” votes would be

$$12*2 + 5*1, \text{ or } 24 + 5, \text{ or } 29.$$

3. **(4 points) (w)** Do the same calculation (“first choice vote counts as 2, second choice counts as 1”) for the Aquarium and the Science Museum.
4. **(1 point)** Based on these calculations, which location “wins?”

**Zoo**

**Science Museum**

**Aquarium**

5. **(extra 2 points)** Can you think of any **other** rating system you like better than mine? Explain it to me, and then apply it to the votes and tell me who wins! (Make sure it is different than what you used in #1 and #2...and also different than the one *I* used. 😊 ) Also! Be sure to use **both** columns of votes (first and second choices).