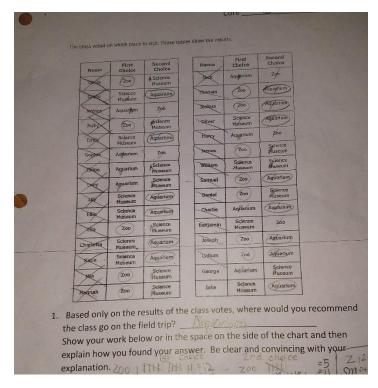
Order of Operations HW 1: Field Trip

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. (a) 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: "1st choice" for the place they most wanted to go, and "2nd choice" for their runner-up.



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

Name	1 st Choice	2 nd 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 st Choice	2 nd 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 '1st choice' column as worth "2 points", and each vote in the 2nd 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 "1st choice" and 5 voted for it as "2nd choice". So, the total number of "weighted" votes would be

- 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.
 - (irst and second choices).