Worksheet 1: Intro to Voting Theory

Group Names: _____

1. A class is voting on what kind of ice cream to have. The choices are strawberry (S), chocolate (C), and vanilla (V). The students in the class ranked their ice cream choices as in the following table.

student	Anne	Brian	Charlotte	Dafna	Eric	Frank	Genevieve	Horace	Isaac	Juan	Kate	Layla
1st choice	S	V	S	V	V	S	V	C	C	C	C	V
2nd choice	V	C	V	C	C	C	C	S	V	S	V	C
3rd choice	C	S	C	S	S	V	S	V	S	V	S	S

(a) How many possible columns can there be in a preference schedule for this ranking? How many columns does your preference schedule need?

(b) Fill in the preference schedule below. Add columns as you need to.

# votes	
1st choice	
2nd choice	
3rd choice	

(c) Who is the plurality winner?

(d) How many votes are needed for a majority winner? Is there a majority winner? Explain your answer to a classmate.

(e) Do you think the plurality winner accurately represents the class's preference for ice cream? Explain your answer in a sentence or two.

2. A group of 42 moviegoers is asked to rank the following three movies: "Inside out 2", "Deadpool and Wolverine", and "Despicable Me 4". Their results are provided in the following preference schedule:

number of voters	14	9	8	5	6
1st choice	Deadpool	Despicable Me	Inside Out	Inside Out	Despicable Me
2nd choice	Inside Out	Deadpool	Deadpool	Despicable Me	Inside Out
3rd choice	Despicable Me	Inside Out	Despicable Me	Deadpool	Deadpool

(a) How many voters were there? _____

(b) How many voters are needed to have a majority of the votes? _____ Why?

(c) What is the minimum number of votes needed for a movie to have a plurality of the votes? _____ Why?

(d) Find the winner using **Plurality Voting**, if one exists. Write a sentence to explain your answer to a classmate.

(e) Is there a **Condorcet winner**? Show some work and explain your answer. Compare your answer to your answer from (d) about a plurality winner.