Chris Maxel & Matt Hapner

Contact Information: <https://elections.wi.gov/elections-voting/results-all>

Identify at least five ways that apportionment can be quantitatively measured for quality. Be specific and give the actual measurement. For example, one answer should not just be "shape", but it could be an equation that is big (or small) for "good" shapes. You may find these metrics from other sources, but you should identify where you found them. Indicate why you think the metric is a good or bad metric to use for apportionment.

1. Dividing the state into squares for each seat based on geographic square mileage.
2. one square = total square mileage of state / number of seats

Scatter these squares equally across the state. Take the square root in order to find the length of a side of the square.

1. This method gives no regard to the population of these geographic zones. Some zones will naturally have much higher populations than others which means that some people are being, percentage-wise, less represented than others. This would be a bad metric of apportionment.
2. Dividing the state by population sectors
3. one sector = total population of state / number of seats

Scatter these sectors equally across the state.

1. Some states with large rural areas will have those areas grouped into a small number of apportionments not representing the people living in those rural areas as well. Rather, near the urban areas, there will be a lot of small sectors representing many people from very similar areas.
2. Divide the state by population into groups of counties
3. Take the total population divided by the number of seats. Pick a number of random adjacent counties near this new population number and group those counties together.
4. This method is better than the previous two. However, it still involves randomness in choosing counties which would sometimes work out well to balance districts out, but it also could end up grouping two many like-minded people together and not have a diversity of beliefs within a district.
5. Put all “red” and “blue” counties together in the same districts
6. Take the number of counties in a state and divide by the number of seats for that state. Then find that number of “red” counties and make that a district. Next, find the number of “blue” counties and make that a district. Do the same for the rest of the “red” counties and the “blue” counties.
7. This method could not work properly because it can be difficult to group all of the “red” and “blue” counties together, they could be geographically spread out. It would be rare for there to be 9 evenly split regions that are all either “red” or “blue”.
8. Put as equal of a split between “red” and “blue” counties as possible in each division
9. Take the total proportion of “red” and “blue” votes by state, then fill each division with the corresponding proportion of counties.
10. This method would make it difficult for the minority to have their votes count. If the split was 60 “blue” to 40 “red”, it is highly likely that all 9 representatives' votes will be blue. This allows for no votes to count for “red” and 9 counting for “blue”, which is an unfair representation.