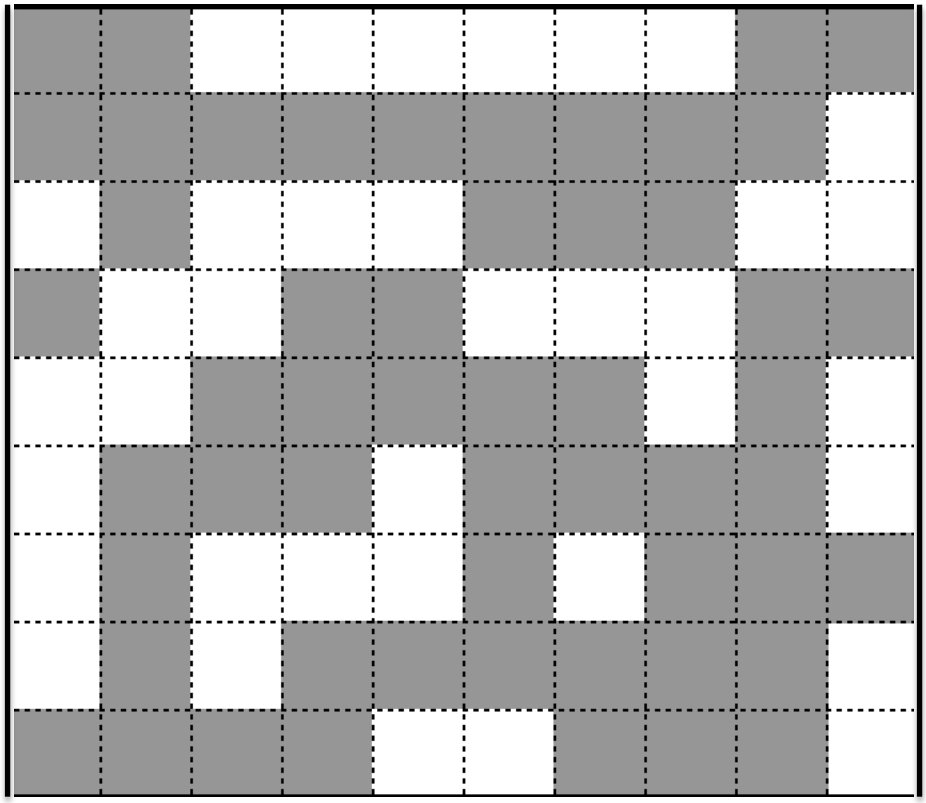
Redistricting for Gray

Squaretopia consists of 90 census tracts.

Challenge: Divide the 90 tracts into **10 districts with 9 seats each** such that "Gray" wins the most possible seats. Fill in the first three columns of the chart below.



#	Gray	White	Winner		Wasted G	Wasted W	Wg + Ww	Wg – Ww
1								
2								
3								
4								
5								
6								
7								
8								
9								
10								
Tot								

How many districts does gray win? _____[1]

[1] This works was inspired by:

Squaretopia

For each of the following measures, calculate its *average* over all the districts on your four maps. Also, record its minimum value on each paper (i.e. its value for the worst district).

To help you with the calculations, enter the data for each district in the googlesheet. Summarize your answers in the chart below.

- **Total Perimeter:** Just count the units on a side. This measure is used by itself and as part of other calculations

- **Isoperimetric measure**: (math name-the lawyers who used it were Polsby and Popper and it is also known by that name) $\frac{16A}{P^2}$, where A is the district's area (in our case always 9), and P is its perimeter.

- **Square Reock measure:** A/S, where A is the district's area and S it the area of the smallest square containing the district. (The area for us is always 9. Divide 9 by the length of the longest dimension squared)

- **Convex Hull:** A/H, where A is the district's area and H is the area of its convex hull. (Pretend a rubber band is put around the edges and calculate the area).

	Total Per.	Isop. $\left(\frac{16A}{P^2}\right)$	Reock $\frac{A}{L^2}$	Convex Hull
Compact Ave. Min				
Proportional Ave. Min				
For Gray Ave. Min				
Against Gray Ave Min				

Summary: