

Design and Simplification of a Circuit using K-Maps

Best 2 out of 3 Voters Problem

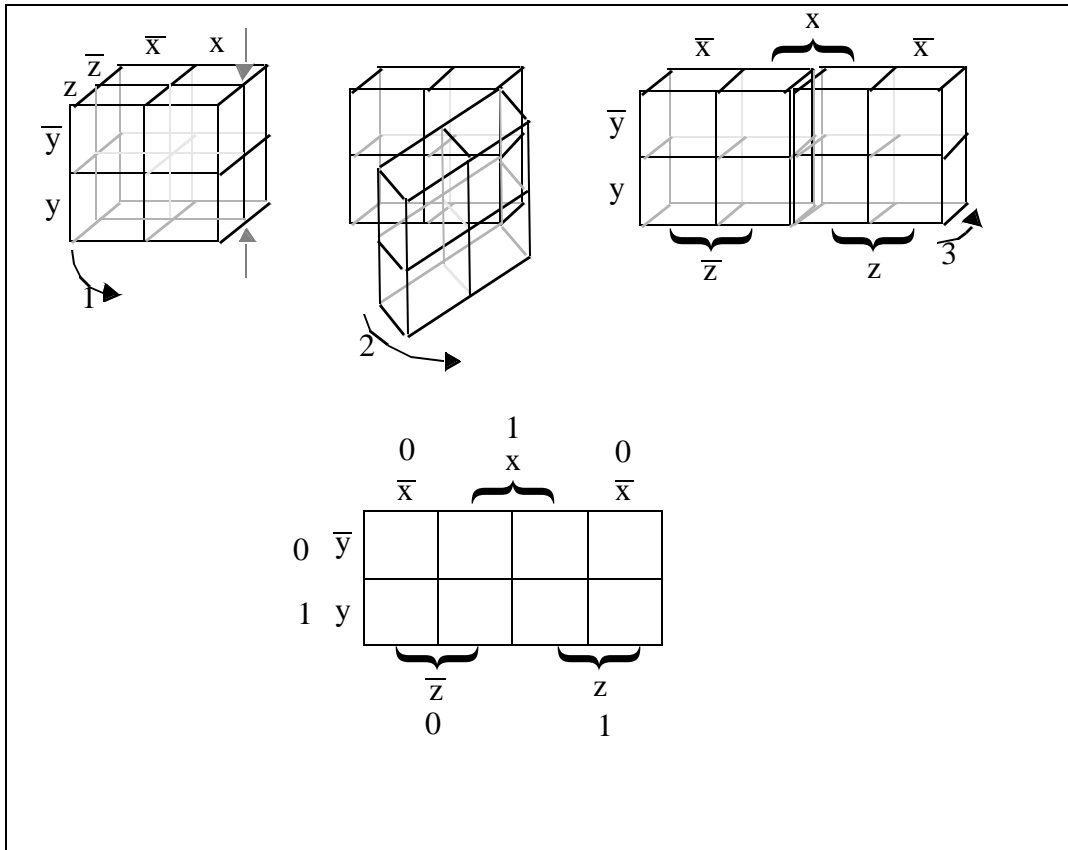
Consider a 3-unit apartment building sharing a single furnace, where each apartment has a thermostat. The furnace (or AC) will go on if at least 2 of the three thermostats indicate it should.

1. Truth Table

	x	y	z	f
1.				
2.				
3.				
4.				
5.				
6.				
7.				
8.				

In the table at left x , y , and z are inputs (each of the three thermostats), and f is the output. The output is a **1** if the furnace is turned on, a **0** otherwise

2. K-Map Simplification



3. Formula:

4. Circuit Diagram: