Problem of the Week 2:
Due on Thursday November 6th at 5pm. Turn solutions in to the Problem of the Week box in Olin 380. Please write your solution on the back of this sheet. Any additional pages should be stapled to the problem sheet in the upper left hand corner. Remember to include your name to receive credit for your work. Good luck!

We have 50 chips numbered 1 to 50 and we want to paint them blue or green. We know chip number 5 is blue and to color the rest, we need to follow these two rules:

- if chip number $x$ and chip number $y$ are of different colors, then chip number $|x - y|$ is to be painted green
- if chip number $x$ and chip number $y$ are of different color and $xy$ is a number less than 50, then chip number $xy$ is to be painted blue.

Determine the number of all possible colorings of these 50 chips we can make, and justify that you have found them all.