Name:

Directions: Show all work.

1. [3 points] A store sells packs of light bulbs in colors red, blue, green, purple, orange, and white. How many ways are there to purchase 8 packs of light bulbs?

2. [4 points] How many integer solutions are there to $x_1 + x_2 + x_3 = 50$ such that $x_1 \ge 4$, $x_2 \ge -8$, and $x_3 \ge 0$?

3. [3 points] How many ways are there to choose 3 integers from $\{1, \ldots, 20\}$ if every chosen integer must be at most distance 9 from some other chosen integer? For example, $\{3, 12, 17\}$ works since $|12 - 3| \le 9$ and $|17 - 12| \le 9$, but $\{3, 13, 17\}$ does not since |13 - 3| = 10 > 9.