Combinatorics. Quiz 3. Name _____ Time_____

Show all work for full or partial credit. Put a box around your final answer in each part. Try the problem on your own before helping each other understand it.
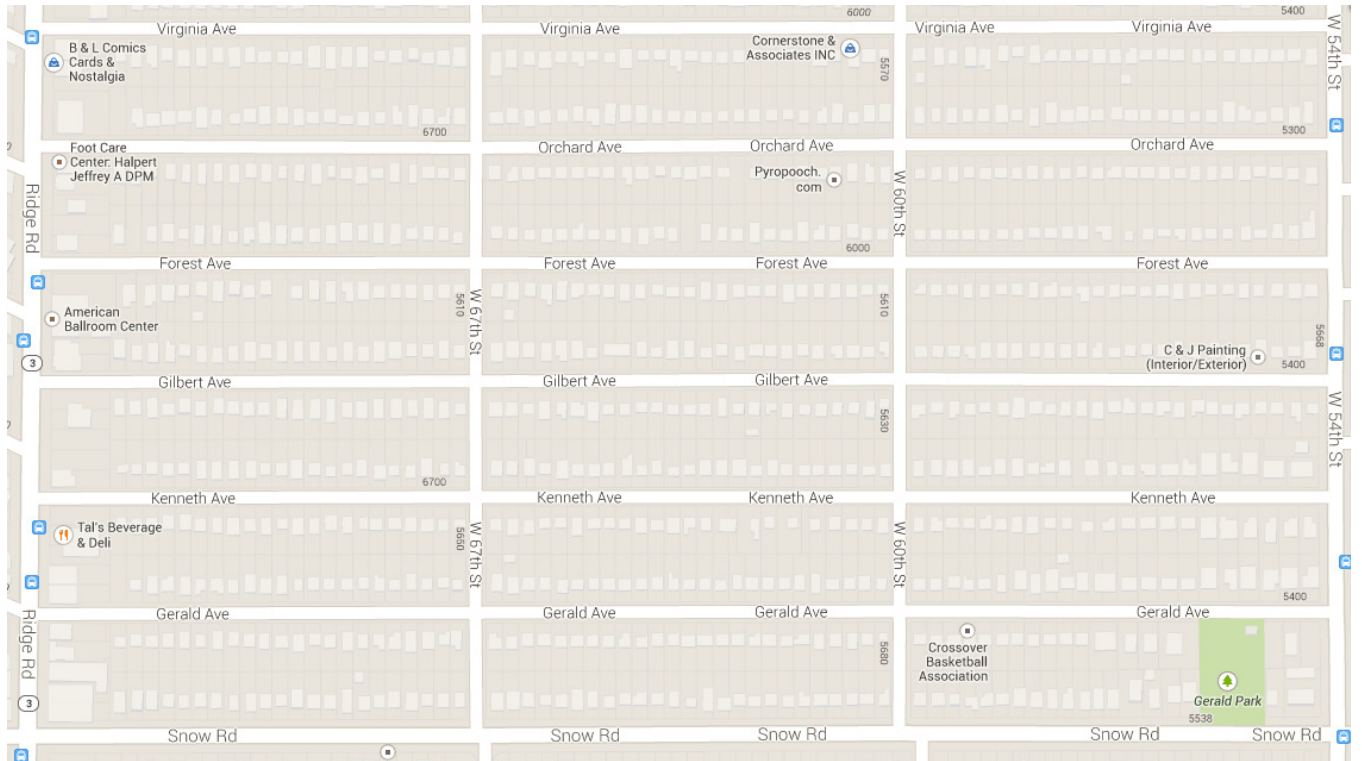
1. What is the coefficient of $x^4 y^{11} z^3$ in the expansion of $(2x - 3y + z)^{18}$?

2. Find the value of the following sum:

$$\sum_{k=0}^{9073} \binom{9073}{k} (-2)^k$$

3. Find the value of the following sum, where j, m, k are all ≥ 0:

$$\sum_{j+m+k=100} \frac{100!}{j!m!k!} (-1)^k$$

4.

You are going to walk east and north along the roads from the corner of Snow and Ridge to the corner of Virginia and 54th.

• How many total paths are there that you can take?

• How many ways are there if you must walk the block of 67th from Kenneth to Gilbert?

• How many ways are there if you must visit the corner of 60th and Gilbert, but you may not walk the block of Orchard from 60th to 54th?