Lab 1 Practice Prep

1. Determine all solutions to the equation $x + y + z = 8$ such that $x, y, z \in [0, 8]$ and x, y, z are integers.
    - use a list comprehension to generate triples (x, y, z) to represent solutions
    - you can reduce the value 8 to help yourself begin with smaller sets generated to check your work

---

Recall the formula:

$\binom{n+k-1}{k-1}$ for the number of integer solutions to the sum of k variables equal to n.

---

2. Count the number of solutions you get to Question 1.
    - use the `choose` function provided in `choose.hs` and combine with the `length` function to convince yourself that your work in Question 1 is correct
    - (does it matter how many elements are in the list passed to `choose`?)

3. Determine all solutions to the equation $x + y + z = 8$ such that $x, y, z \in \{0, 1, 2, 3, 6\}$
    - (the set `nums = [0, 1, 2, 3, 6]` is declared in `choose.hs` for your convenience
    - (a) with repetition allowed (e.g.: $(0, 2, 6)$ and $(2, 0, 6)$ are the same solution)
    - (b) with no repeated solutions (where repeated values for x, y, z are allowed)
    - (c) with all values of x, y, z unique and no repeated solutions
    - use only one list comprehension for each of (a), (b), and (c)
    - use predicates to help you filter solutions as needed