

For the questions below, you do not need to come up with a final numerical answer. You can and should leave your solution as a mathematical expression, including $\binom{n}{k}$ or $P(n, k)$ notation as appropriate.

1. A company has different 10 warehouses for storing their inventory. They will be storing 100 identical crates of widgets in the 10 warehouses.
 - (a) How many ways are there for the company to distribute the crates of widgets among the warehouses?
 - (b) How many ways are there for the company to distribute the crates of widgets among the warehouses if at most 50 can be stored at any one warehouse?
 - (c) How many ways are there for the company to distribute the crates of widgets among the warehouses if at least 5 must be stored at each warehouse?
2. Susan plans on studying four different subjects (Math, Science, French, and Social Studies) over the course of the summer. There are 100 days in her summer break and each day she will study one of the four subjects. A schedule consists of a plan for which subject she will study on each day.
 - (a) How many ways are there for her to plan her schedule if there are no restrictions on the number of days she studies each of the four subjects?
 - (b) How many ways are there for her to plan her schedule if she decides that the number of days she studies each subject will be the same?
3. A candy store sells 50 varieties of taffy. Each pieces of taffy is sold individually. How many ways are there to select 10 pieces of taffy?