Sampling with Replacement

Example 1: A box contains 2 bananas, 5 oranges, and 3 peaches.

a) What is the probability of selecting a banana? What is the probability of selecting an orange?

b) Now, you are asked to pick 2 objects out of the box without looking. After picking the 1st object, you put it back inside the box, then pick the 2nd object (with replacement).

What is the probability that you pick 2 bananas?

What is the probability that you pick 1 banana, then 1 orange?

What is the probability that you pick 1 banana and 1 orange?

Sampling without Replacement

Example 1: A box contains 2 bananas, 5 oranges, and 3 peaches.

You are asked to pick 2 objects out of the box. After picking the 1st object, you continue picking the 2nd object without putting the 1st object back inside the box (without replacement).
What is the probability that you select 2 bananas?

What is the probability that you pick 1 banana, then 1 orange?

What is the probability that you pick 1 banana and 1 orange?

Example 2:

A study is conducted on a group of 48 STAT 430 students. Each student is asked whether he/she lives in the Champaign-Urbana area for Fall 2020. The results are recorded in the following table:

<table>
<thead>
<tr>
<th></th>
<th>Live in CU</th>
<th>Not live in CU</th>
<th>Totals</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male</td>
<td>13</td>
<td>11</td>
<td>24</td>
</tr>
<tr>
<td>Female</td>
<td>5</td>
<td>19</td>
<td>24</td>
</tr>
<tr>
<td>Totals</td>
<td>18</td>
<td>30</td>
<td>48</td>
</tr>
</tbody>
</table>

Draw 5 students WITHOUT replacement. What is the probability that at least 1 student lives in CU?

To-do:

- Finish HW 4 on PL!