PART II: CHANGE THE SAMPLE SIZE?

The students randomly selected 65 boxes in performing their test of significance. It was calculated earlier, via simulation, that the students’ test, using $\alpha = .05$, has a power of approximately 0.226 against the alternative hypothesis of $p = 0.15$.

What would happen to the power against $p = 0.15$ if the sample size was increased?

Suppose the students decide to perform a second test, only this time they will randomly select 130 boxes. If the students use the same hypotheses as in their first 65 box test and use $\alpha = .05$, they would have the following rule for concluding the company is cheating.

Conclude the company is cheating if you obtain _______________ or fewer boxes with vouchers out of 130.

1. Pretend the company is cheating with $p = 0.15$. Simulate the selection of a random sample of 130 cereal boxes from a population in which 15% of all boxes contain a voucher. Repeat your simulation for a total of 20 times and record your results in the table below. Calculator Command: `randBin(130,.15)`

<table>
<thead>
<tr>
<th>Trial</th>
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<th>19</th>
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</thead>
<tbody>
<tr>
<td>Voucher Boxes</td>
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</table>

Remember, the assumption in the simulation is the company is cheating: $p = 0.15$. Out of your 20 trials in question #1, in how many of them did you conclude that the company is cheating?

Personal Probability:

Class Probability:

2. Comment on which sample size—$n = 65$ or $n = 130$—would result in the higher power against the alternative $p = 0.15$. 