PURPOSE:
To demonstrate the extreme variances between wild guessing and estimating with data and tools, where each guess becomes more focused as more information is provided to the teams.

OUTCOMES:
A better understanding of estimating techniques, and knowledge that accuracy of estimates improves with more knowledge of scope, historical information, and other useful estimating techniques.

APPROACH
1. Each table gets a bag (must use 12 oz or “Medium” size bag. Ask participants not to open bags. Then ask each team to guess the number of green M&Ms in the bag using whatever information they have at their disposal (but cannot open bags). They will google-search and start looking up information if they have devices. Others will use the weight of the bag and divide by the number of colors, and so on. Give them a minute and then ask each team to report a number. Maintain responses on a grid (see below).

2. Next, tell them the average Medium 12.6 oz. M&M bag has approximately 550 M&Ms. Give them another minute and call each table asking for estimates and record responses. They can revise or keep original estimate.

3. Next, tell them the vending machine size bag (small one) has about 56 M&Ms and 7 of them are green. Give them a minute and ask for estimate. They can revise or keep.

4. Next, hand out the graph of last 15 bags and numbers of green M&Ms (histogram of data collected from recent workshops). Ask for estimates.

5. Next, tell them we spoke with a product manager from M&M Mars Company and we were told the green M&Ms have a reputation which is rumored to be an aphrodisiac, and Mars has embraced this perception and is capitalizing on it with marketing and media, and wants the green ones to appear rare, so they are putting less green M&Ms in each bag. As for final estimates.

6. Now – have tables open bags and count green M&Ms (no eating them!). Call out responses and record final numbers. Evaluate the grid and discuss what happened with each piece of information;
   - A: raw estimate (best guess)
   - B: meta data (using comparisons – average bag contains xx )
   - C: small sampling (extrapolation from smaller size )
   - D: historical data (histogram analysis, averaging)
   - E: rumor, anecdotal (does that help?)

CONCLUSIONS
Summarize points about estimating successfully;
- Have the right person give the estimate
- Break down the task
- Estimate in context (relationships, dependencies)
- Use best practices (comparative data, 3-point estimates, historical data)
## Estimation Tracking Sheet

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<th>Estimate</th>
<th>Thoughts</th>
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**General Notes and Thoughts:**