Chapter 19-21 Practice Problems

I really love Snickers, but unfortunately the only store near my house that has them only sells them in a claw candy machine. This machine has an equal chance of pulling out any of the candy bars that are inside. It has 40 Snickers, 25 Baby Ruths, 10 Good and Plenty (blech!), 10 Necco Wafers (when was the last time this thing was stocked?!?! 1950?), 10 Eggo waffles, 4 Pop Rocks and 1 nasty hard boiled egg. Amazingly, despite the disgusting contents the machine is pretty high tech, and replaces the prizes that were won after each play.

1. I'm pretty hungry, so I'll eat Baby Ruths and Snickers. What's the (exact) chance that in the first 10 plays I get at most 2 things I won't eat?

2. What's the approximate chance that in the first 10 plays I get at most 2 things I won't eat?

3. What's the chance that in my 10 draws I get 4 Snickers, 2 Baby Ruths, 3 Good and Plentys and a waffle?

4. Today when I went down the machine's replacement feature was broken. I had enough money for 10 plays though, and I wanted my Snickers! Actually it was dinner time, so I wanted 3. What's the (approximate or exact) chance that I got at least 3 Snickers in my 10 plays? (You may compute the expected value as if there were replacement, but not the SE.)

5. There's a special this weekend where I can buy plays in bulk. I want to play, but I really want at least 39% of the candy I win to be Snickers. How many plays should I buy to give myself a 90.32% chance of getting more than 39% Snickers?

Answers

Here are the answers I got. If you keep getting something different send me an email with your work and I'll check it out.

1. $0.26 = 26\%$
2. $0.25 = 25\%$
3. 0.002016
4. $0.845 = 84.5\%$
5. 4056 plays