Lesson 7.2 - **Combining Random Variables**

Rules for Means:

 Rule 1:

 Rule 2:

It’s Christmahanakwanzika and your family is going to be sending you gift cards, which is fine with you because gift cards are awesome. Based on previous years, the number X of Starbucks gift cards that you expect to get has the distribution:

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| # SB Cards | 0 | 1 | 2 | 3 |
| Probability | .1 | .3 | .2 | .4 |

You estimate that the number Y of Target gift cards you will get has the distribution:

|  |  |  |  |
| --- | --- | --- | --- |
| # Target Cards | 0 | 1 | 2 |
| Probability | .2 | .1 | .7 |

Find the expected # of either type of gift card you will get.

Based on past years, you expect that each Starbucks card will be for $10 and each Target gift card will be for $25. You also expect to be given $15 in cash. What is the expected total value of your gift cards?

Rules for Variances: (CAN ONLY USE IF THE VARIABLES ARE **INDEPENDENT**)

 Rule 1:

 Rule 2:

 Rule 3:

Find the standards deviation of your expected gift card $$$$$.

Find the standard deviation of your expected holiday profit.

**Normal Dist. Problems:**

It’s thanksgiving, which means PIES! Emily and Michelle decide to have a pie eating contest. Based on their pie-eating pasts, Emily determines that the # of pies she can eat in one hour has the N(25, 2) distribution while Michelle’s pie eating follows the N(21, 5) distribution.

1. If they eat their pies independently, what is the probability that Michelle will eat more than Emily?
2. What the probability that Emily will eat at least 2 more pies than Michelle?