

Warmup

True or False: $E(X + Y) = E(X) + E(Y)$

True or False: $E(XY) = E(X)E(Y)$

I roll a die, add 7 to the number, then subtract 3. What is the expected value?

I flip 3 coins and get 1 dollar for every head. What is the expected value?

Indicator Variables

I roll a red and a blue die. I get a dollar if the red die has a bigger number and nothing otherwise. What is the expected value?

There is an event $E \subset S$. I get a dollar if E and nothing if \overline{E} . What is the expected value?

Outcome of a fair coin: weird or normal?

- HHHHHHHHHHHHHHHHHHHHHHHHHHHHHHH
- HHHHHHHHHHHHTTTTTTTTTTTT
- HTHTHTHTHTHTHTHTHTHTHT
- THHTTTHTHTTTHHHHHHTHTT
- 10 coins flipped: 8 heads, 2 tails
- 10000 coins flipped: 6530 heads, 3470 tails
- 10000 coins flipped: 5000 heads, 5000 tails

Variance

Here are two games you can play. Game 1: You get 100 dollars! Game 2: Heads you get 300 dollars, tails you lose 100. Which game would you rather play?

There are 3 friends who weigh an average of 150 pounds. How much can the heaviest friend weigh?

There are 10 friends who weigh an average of 150 pounds. How many friends can weigh 300 pounds or more?