

Bonus Problem: Covariance of linear combinations

Situation. We roll a fair die twice. Let X represent the sum of pips on the two rolls, and let Y represent the number of pips on the first roll minus the number of pips on the second roll.

Problem. Compute $Cov(X, Y)$.

Hint. Let W_1 represent the number of pips on the first roll, and let W_2 represent the number of pips on the second roll. Now express X and Y in terms of W_1 and W_2 , and then use formulas associated with the covariance of linear combinations.