M 362K Synopses for 2/19

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Sometimes more than one random variables occur at the same experiment. For example, when rolling a pair of fair dice, X can be the face of the first dice and Y can be the face of the second dice. If the outcome of the first random variable does not affect the outcome of the second random variable, then we can say that the two random variables are independent of each other. If so, we can know that $E[X \cdot Y] = E[X] \cdot E[Y]$ and $Var[X + Y] = Var[X] + Var[Y]$. However, we have to know that $E[X + Y] = E[X] + E[Y]$ regardless of the dependence between X and Y.