1. You are going to play 2 games of chess with an opponent whom you have never played

against before (for the sake of this problem). Your opponent is equally likely to be a

beginner, intermediate, or a master. Depending on

1. What is your probability of winning the first game?

**Answer:**

W1=wining first game

P(W1) = P(W1/beginner) P(beginner)+P(W1/intermediate) P(intermediate)

+P(W1/master) P(master)

=1/3(0.9+0.5+0.3)

=17/30=0.567

(b) Congratulations: you won the first game! Given this information, what is the probability

that you will also win the second game

**Answer:**

W1=wining first game

W2=wining second game

P(W1,W2)=P(W1,W2/beginner)P(beginner)+P(W1,W2/intermediate)P(intermediate)+P(W1,W2/master) P(master)

=1/3(0.9^2+0.5^2+0.3^2)

=23/60=0.383

(c) Explain the distinction between assuming that the outcomes of the games are

independent and assuming that they are conditionally independent given the opponent’s

skill level. Which of these assumptions seems more reasonable, and why?

**Answer:**

* + Independence means outcome of one event(game) does not affect the probability of winning in next event(game).
  + Conditional independence means outcome of one event (game) verses some rank does not affect the probability of winning in next event(game) which is also verses that rank.
  + Conditional independence is reasonable because in general independence winning 1st game(event) can provide information about rank of 2nd opponent.