

1) Events A and B are independent of one another. They cannot be mutually exclusive because of the fact that there are movie goers who enjoy both marvel and dc movies at the same time. If events A and B were mutually exclusive it would not be possible for events A and B to occur at the same time and due to this contradiction the events are independent.

2)

3) Of the 45% of Canadians that get the flu shot, 30% of them still get the flu. This means that $45 \times 0.3 = 13.5\%$ of Canadians get the flu and took the flu shot. 55% of Canadians don't get the flu shot and 50% of them get the flu, meaning that $55 \times 0.50 = 22.5\%$ of Canadians get the flu and did not take the flu shot. Therefore $22.5 + 13.5 = 46\%$ of Canadians get the flu.

b) The probability that a Canadian has the flu is 46% and the probability that a Canadian has the flu and got the flu shot is $46 \times 0.3 = 27.6\%$

5) There are 7 men and 7 women. They have to dance with someone of the opposite gender reducing the pairing options by half. The number of different combinations is $(7+7)/2 = 7$