Example 2

① Define A and B

A { Head Side of First Coin }

B { Head Side of Second Coin }

② Get Sample Spaces

Total Sample Space Before Any Events Occur { HH, HT, TH, TT } = 4

Sample Space of A { HH, HT } = 2

Sample Space of B Given That A occured = { HH } = 1

A = 2 , B = 1

$$P(B \mid A) = \frac{1}{2} \approx 0.50$$

Example 1

① Define A and B

A { First Card is an Ace }

B { Second Card is an Ace }

② Get Sample Spaces

Total Sample Space Before Events 52 cards = 52

Sample Space of A { 4 aces } = 4

Total Sample Space after Event A = 51

Sample Space of B { 3 aces } = 3

$$P(B \mid A) = \frac{3}{51} \approx 0.06$$

Example 4

① Define A and B

A { Card is red }

B { Card is an ace }

B | A { card is an ace given card is red }

② Get Sample Spaces

Total Sample Space Before Events is 52 cards = 52

Sample Space of A { 26 cards } = 26

Sample Space of B { 4 aces } = 4 ← don't need this

Sample Space of B | A { 2 aces } = 2

$$P(A|B) = \frac{P(A \cap B)}{P(B)} \overset{B|A}{=} \frac{2/52}{26/52} = \frac{1}{13} \approx .08$$