**MAT150 Statistics Assignment #9** [**www.helpyourmath.com/150.5**](http://www.helpyourmath.com/150.5)

1. A sample of 200 persons is asked about their handedness. A two way table of observed counts follows:

|  |  |  |  |
| --- | --- | --- | --- |
|   | **Left-handed**  | **Right-handed**  | **Total**  |
| **Men**  | 11  | 79  |   |
| **Women**  | 9  | 101  |   |
| **Total**  |   |   |   |

Let M: selected person is a men; W: selected person is a women; L: selected person is left-handed; R: selected person is right-handed. If one person is randomly selected, find:

* + - 1. P(W)

* + - 1. P(R)

* + - 1. P(M ∩ R)

* + - 1. P(W ∪ L)

* + - 1. P(M | L)

* + - 1. P(R | W)

 If two persons are randomly selected with replacement,

* + - 1. What is the probability of the first selected person is a left-handed men and the second selected person is a right-handed men?

* + - 1. What is the probability of the first selected is a left-handed women and the second selected person is also a left-handed women?

 If two persons are randomly selected without replacement,

* + - 1. What is the probability of the first selected person is a left-handed men and the second selected person is a right-handed men?

* + - 1. What is the probability of the first selected is a left-handed women and the second selected person is also a left-handed women?

1. Flip a fair coin twice.

Let H: the coin lands on a head; T: the coin lands on a tail. S = {(H, H), (H, T), (T, H), (T, T)}

Find:

* 1. P(both are H)

* 1. P(1st is T  2nd is H)

* 1. P(both are T | at least one T)

* 1. P(2nd is H | both are T)

* 1. P(at least one H | 2nd is T)

1. Randomly select one card from a well shuffled deck of cards.

Let A: the select card is an ace; D: the select card is a diamond.

 Find:

* + 1. P(A)

* + 1. P(D)

* + 1. P(A ∩ D)

* + 1. P(A ∪ D)

* + 1. P(A | D)

* + 1. P(D | A)

Two cards are being randomly selected without replacement.

* + 1. What’s the probability that both cards are ace?

* + 1. What’s the probability that the first card is a red king and the second card is a black king?

1. Rolling two dice.

Let X1: faced value of the 1st die; X2: faced value of the 2nd die; Y: the sum of two dice. Find:

* 1. P(X1 = 3 ∩ X2 = 6)

* 1. P(X1 = 5 ∪ X2 = 1)

1. Given P(E) = 0.25, P(F) = 0.6, and P(E ∪ F) = 0.7.

Find:

* 1. What is P(E ∩ F)?

* 1. Are event E and event F mutually exclusive? Justify your answer.

* 1. Are event E and event F independent? Justify your answer.