**Practical: 2**

**Write a python program to solve the following problems:**

**A) Find the probability of drawing two kings from a deck**

**B) A math teacher gave her class two tests. 25% of the class passed both tests and 42% of the class passed the first test. What percent of those who passed the first test also passed the second test?**

**Solution A:**

Using Computation to determine the occurrence of 2 kings from total number of kings in a deck

Also determining possible ways to draw 2 cards from a deck And using event probability to determine the occurrence of 2 kings from a deck.

1. There are total 4 kings in the deck and the no. of possible ways to draw 2 kings is

4C2 = 4! / (2! × 2! ) = 6

1. the possible number of ways to draw 2 cards from a pack of 52 cards is

52C2 = 52! / (50 ! ×2 ! ) = 26 ×51 = 1326

Therefore the probability of drawing two kings from a deck is

4C2 / 52C2 = (6 / 1326)

= 1/221

**Code:**

import math

kings = 4

cards = 52

n\_kings = int(input("Enter no of kings you want to take: "))

if n\_kings > 4:

raise Exception("Kings cannot be greater than 4! try again.")

C\_kings = math.factorial(kings) / (math.factorial(kings - n\_kings) \* math.factorial(n\_kings))

C\_cards = math.factorial(cards) / (math.factorial(cards - n\_kings) \* math.factorial(n\_kings))

P = (C\_kings / C\_cards)

print("Probability of finding {} kings is {}%"

.format(str(n\_kings), str(round(P\*100, 3)))

)

**Solution B:**

This problem describes a conditional probability since it asks us to find the probability that the second test was passed given that the first test was passed.

When two events, A and B, are dependent, the probability of both occurring is:

multiplication rule

P (A and B) = P (A) . P (B | A)

**Code:**

P\_A\_and\_B = float(input("Enter probability of both the events: "))

P\_A = float(input("Enter probability of any one event: "))

P\_BA = P\_A\_and\_B / P\_A

if (P\_A\_and\_B or P\_A) > 1:

raise Exception("Probabilty of any event cannot exceed 1 !")

print("Probability of getting other event when first event already occurred is {}"

.format(round(P\_BA, 3))

)