

DSL1_C5_S2_Challenge

In [3]:

```
import math as m
```

In [4]:

```
# import lib for permutation and combination
from itertools import permutations, combinations, combinations_with_replacement, product
# product: permutation with replacement
```

Task 1: committee of 5 people already a member in committee

In [59]:

```
people = [1,2,3,4,5,6,7,8,9,10,11,12]
len(list(combinations(people, 5))) * len(list(combinations(people,1)))
```

Out[59]:

9504

Task 2 :

In [13]:

```
total = 150
van = 50
lorry = 20
cars = 80
#a
print("probability of vans leaving first : ", van/total , "or 1/3")
print("probability of lorry leaving first : ", lorry/total , "or 2/15")
print("probability of car leaving second : ", cars/(total-1), "or 80/149")
```

probability of vans leaving first : 0.3333333333333333 or 1/3
probability of lorry leaving first : 0.1333333333333333 or 2/15
probability of car leaving second : 0.5369127516778524 or 80/149

Task 3

In [49]:

```
no_of_std = [0,1,2,3,4,5]
freq = [1,2,8,5,12]
prob = [1/30, 2/30, 8/30, 5/30, 12/30, 2/30]
```

In [50]:

```
#a
print("probability left hand : ", '2/30', '4/15')
```

probability : 2/30 4/15

In [52]:

```
#b
print("probability at least 3 left hand : ", '1/6 + 2/5 + 1/15 = ', '19/30')
```

probability at least 3 left hand : 1/6 + 2/5 + 1/15 = 19/30

Task 4

In [35]:

```
A_sqPQRS = 2*2
A_triABR = 1/2*1*1
A_triABR
```

Out[35]:

0.5

In [36]:

```
A_sqPQRS
```

Out[36]:

4

In [39]:

```
print("probability of point lying inside triangle : ", A_triABR/A_sqPQRS , " or 1/8 ")
```

probability of point lying inside triangle : 0.125 or 1/8

Task 5

In [43]:

```
d1=[1,2,3,4,5,6]
```

In [54]:

```
ss = (6,6)
sum_of_maximum_number = 6+6
sum_of_maximum_number
print('probabilty sum of the two nos are appear is :',"less than 13" )
```

probabilty sum of the two nos are appear is : less than 13

Task 6

In [26]:

```
tickets = [i for i in range(1,21)]
tickets
```

Out[26]:

[1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20]

In [29]:

```
#a even nos
even = [2,4,6,8,10,12,14,16,18,20]

print("probability of even nos : ", len(even)/len(tickets), "or 10/20")
```

probability of even nos : 0.5 or 10/20

In [30]:

```
# b No divisible by 3
divi = [ 3,6,9,12,15,18]
print("probability of nos dividible by 3 : ", len(divi)/len(tickets), "or 6/20")
```

probability of nos dividible by 3 : 0.3 or 6/20

In [31]:

```
#c prime no
prime = [2,3,5,7,11,13,17,19]
print("probability of prime no : ", len(prime)/len(tickets),"or 8/20")
```

probability of prime no : 0.4 or 8/20

In [33]:

```
#d nos divisible by 5
divi5 = [5,10,15,20]
print("probability of prime no : ",len(divi5)/len(tickets) ,"or 4/20")
```

probability of prime no : 0.2 or 4/20

Task 7

In [57]:

```
dice = [1,2,3,4,5,6]
count11 = (4,5,1),(3,3,5),(2,3,6),(6,1,4) # all combinations of these pairs
count12 = (2,4,6), (3,3,6), (5,6,1),(4,4,4) # all combinations of these pairs
combinations_of_12 = 25
combinations_of_11 = 27
print("probability of sum 11 :",27/216 )
print("probability of sum 12 :",25/216 )
```

```
probability of sum 11 : 0.125
probability of sum 12 : 0.11574074074074074
```

In [58]:

```
print(" Henry will beat on sum of 11")
```

```
Henry will beat on sum of 11
```