importing necessary modules

In [37]:
```
import math
from itertools import permutations,combinations,combinations_with_replacement
```

Task1

a) How many committees are possible if there are 3M and 2F

In [ ]:
```
men="M1 M2 M3 M4 M5 M6".split()
women="W1 W2 W3 W4".split()
```

In [ ]:
```
len(list(combinations(men,3)))*len(list(combinations(women,2)))
```

b) There are only men

In [ ]:
```
len(list(combinations(men,5)))
```

c) There is majority of women

In [ ]:
```
len(list(combinations(men,1)))*len(list(combinations(women,4)))+len(list(combinations(women,3)))*len(list(combinations(men,2)))
```

Task2: To find out all possible combinations of 5 unique cards from a deck

In [ ]:
```
cards=[i for i in range(1,53)]
len(list(combinations(cards,5)))
```

Task3: To find out all possible permutations of wining 1st,2nd,3rd

In [ ]:
```
contestants=[i for i in range(1,9)]
len(list(permutations(contestants,3)))
```

Task4: How many possible ways jenny and david don't sit together

In [12]:
```
math.factorial(15)-math.factorial(14)*2
```

Out[12]:
```
1133317785600
```

Task5: What is the probability of getting a number in dice that is 3times the other side of the dice

In [44]:
```
d1="1 2 3 4 5 6".split()
len(list(combinations(d1,1)))*len(list(combinations(d1,1)))
print("Probability of getting such a pair is = ",4/36," or 1/9")
```

```
Probability of getting such a pair is =  0.1111111111111111  or 1/9
```

Task6: To find how many words can be formed with 3 Consonants and 2 vowels

In [22]:
```
cons="1 2 3 4 5 6 7 8".split()
vow=[1,2,3,4]

len(list(combinations(cons,3)))*len(list(combinations(vow,2)))
```

Out[22]:
```
336
```

Task7:To find probability of good bulb

In [21]:
```
print("Total number of good bulbs = ",25*0.75)
print("Probability of good bulbs = ",25*0.75/25," or 19/25")
```

```
Total number of good bulbs =  18.75
Probability of good bulbs =  0.75  or 19/25
```