In [2]:
```
import math
```

PFDS: FINAL EXAM -- TERM ONE (QUESTION 6)

Write a program to implement the formulas for the number of permutations of n objects taken r at a time and the number of combinations of n objects taken r at a time.

Where ...

Number of permutations of n objects taken r at a time: p(n, r) = n! / (n-r)!.

Number of combinations of n objects taken r at a time is: c(n, r) = n! / (r!*(n-r)!) = p(n,r) / r!

- Test Case #1: 12 objects taken 5 at a time
- Test Case #2: 100 objects taken 15 at a time

In [5]:
```
def find_num_of_perms(n,r):
    return math.factorial(n) / math.factorial(n-r)
def find_num_of_combinations(n,r):
    return find_num_of_perms(n,r) / math.factorial(r)

print(f"The number of permutations of 12 taken 5 at a time: {find_num_of_perms(12, 5)}.
print(f"The number of combinations of 12 taken 5 at a time: {find_num_of_combinations(1
print("\n")
print(f"The number of permutations of 100 taken 15 at a time: {find_num_of_perms(100, 1
print(f"The number of combinations of 100 taken 15 at a time: {find_num_of_combinations
```

```
The number of permutations of 12 taken 5 at a time: 95040.0.
The number of combinations of 12 taken 5 at a time: 792.0.


The number of permutations of 100 taken 15 at a time: 3.312842254126825e+29.
The number of combinations of 100 taken 15 at a time: 2.5333847134998867e+17.
```

In [ ]: