Chap 2, Prob 47) How many ways are there to split 14 people into seven pairs?

Ans:) • Suppose, we had only 2 people. We can make 1 pair from them.

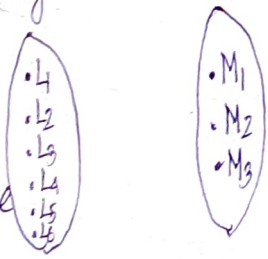
• Suppose, we had only 4 people. Putting aside any 1 particular person, that person can form a pair in 3 ways.
∴ Total no. of ways we can form 2 pairs: 3.1

• Suppose, we had only 6 people. Putting aside any 1 particular person, that person can form a pair in 5 ways.
∴ Total no. of ways we can form 3 pairs: 5.3.1

• Continuing in this manner, 14 people can be split into seven pairs in:
13.11.9.7.5.3.1 ways

Chap 2, Prob 99) In how many ways can we send six urgent letters if we can use three messengers and each letter can be given to any one of them?

For each of the six letters, we have 3 possible choices.



∴ No. of ways = 3^6.

Chapter 3: Divisibility and Remainders

Primes and composite natural numbers

• A number is **composite** if it is equal to the product of two smaller natural numbers. Ex: $6 = 2.3$

• A no. $\neq 1$ and is not composite is **prime**.

• Prime numbers are like "bricks", which you can use to construct all natural numbers.

Ex: $420 = 42.10$, $42 = 6.7$ and $10 = 2.5$
∴ $420 = 6.7.2.5 = 2.3.7.2.5 = 2.2.3.5.7$
(Complete decomposition of our no.)