

8.2 –B- Combinations

A **Combination** is an arrangement of SOME items **chosen**. The order does NOT matter.

Case 1: No repetition/replacement

Ex 1: Sheila has 4 shirts (**pink**, **blue**, **yellow**, **green**), she wants to choose 2 for a trip.

1

We can use a formula for this :

$$nC_r = C_r^n = \frac{n!}{(n-r)! r!}$$

We read this: n choose r

Where:

n is the number of total choices available

r is the # steps/items to be chosen

2

Ex 2: A store has 6 employees, but only 3 need to be on duty at any time.

3

Ex 3: A committee of 3 people must be formed from a club of 5 members. How many different committees are possible?

4

Ex 4: How many 6-number combinations are there in the lottery game 6/49?



5

Case 2: with repetition/replacement

Again we can use a formula for this:

$$\frac{(n+r-1)!}{(n-1)! r!}$$

Ex 1: How many combinations with repetition can be made from 10 objects taking 4 at a time?

6

Ex 2: Two prizes are awarded in a class of 20 students. A student can win both prizes. How many different pairs of winners are possible if the order in which the prizes are awarded is not considered?

7

Practice:
page 232 # 5-10



8