I. General Counting Principle (p.177):

In a sequence of selections/events where...

n_1 = # of possibilities for 1st selection/event,

n_2 = # of possibilities for 2nd selection/event,

n_3 = # of possibilities for 3rd selection/event,

etc.

the **total # of possible outcomes** is given by –

$$\mathbf{N} = n_1 \times n_2 \times n_3 \times \ldots$$

II. "n" Factorial (p.181):

$$n! = n \times (n-1) \times (n-2) \times \ldots \times 3 \times 2 \times 1$$

III. Examples (pp.185-186): #6,12

IV. **Permutation** (p.182):

1. A sequence of selections/events where "r" possibilities occur from "n" different possibilities, repetition (replacement) is not permitted, and the **order is relevant**...
2. The total # of possible outcomes is given by –

$$_{n}\mathbf{P}_{r} = \frac{n!}{(n-r)!}$$

V. **Combination** (p.183):

1. A sequence of selections/events where "r" possibilities occur from "n" different possibilities, repetition (replacement) is not permitted, and the **order** is **NOT relevant**...
2. The total # of possible outcomes is given by –

$$_{n}\mathbf{C}_{r} = \frac{n!}{(n-r)!\cdot r!}$$

VI. Examples (pp.186-187): #14,16,18,20,22,24,26

HW: pp.185-187 / #1,3,5,9-27(odd)