

TOPIC 4: Permutation or Combination Problems

In solving permutation or combination problems, please note the following reminders:

1. Identify the given problem if it is combination or permutation.
2. Choose the correct formula to be used.
3. Observe the correct computation, take note of the factorial notation.
4. Complete your answer.

Example#1: There are 6 members of a volleyball team, the coach instructs them to form a circle for the final coaching. How many possible ways that the team can form a single circle one at a time?

Solution:

1. Is the given problem, a permutation or a combination?
PERMUTATION (CIRCULAR PERMUTATION)
2. How do you say so? **BECAUSE IT USES THE WORDS “one at a time”.**
3. What is the formula to be used? **$P=(n-1)!$**
4. What would be the answer? Show your solution.
 $P=(n-1)! = (6-1)! = 5! = (5) (4) (3) (2) (1) = \mathbf{120 \text{ possible ways}}$

Example#2: How many possible arrangements when only 4 will be chosen out of 10 to be a member of a group?

Solution:

1. Is the given problem, a permutation or a combination? **COMBINATION**
2. How do you say so? **Because order is not given importance.**
3. What is the formula to be used? ${}_nC_r = \frac{n!}{r!(n-r)!}$
4. What would be the answer? Show your solution.

$${}_nC_r = \frac{n!}{r!(n-r)!} = \frac{10!}{4!(10-4)!} = \frac{10 \times 9 \times 8 \times 7 \times 6!}{4 \times 3 \times 2 \times 1 \times 6!} = \frac{630}{3} = 210 \text{ possible ways}$$