

## Lesson 7: Distinguishing between Permutation and Combination Problems

### GOALS:

- Distinguish between permutations and combinations. That is, distinguish between selecting and ordering objects and just selecting objects.

An important objective in this unit is to decide whether a problem involves a permutation of objects or a combination of objects. Once the problem is identified as either a permutation or a combination problem, you can use any of the methods described in the previous lessons to solve the problem.

### Example 1

How many ways can three teachers be selected from a group of 25 teachers?

Calculator

MATH →

PROB

nPr [2]

$${}_{25}C_3 = 2300 \text{ ways}$$

### Example 2

How many ways can a CEO, a director, and a manager of adult learning be selected from a group of 25 candidates? they have different roles — permutations

Fundamental counting principle

$${}_nP_r = \frac{n!}{(n-r)!}$$

$$= \frac{25!}{(25-3)!}$$

$$= 13800$$

$$\begin{array}{l} n=25 \\ \text{CEO} \quad \text{Direct} \quad \text{Manager} \\ 25 \quad 24 \quad 23 \end{array}$$

$$\begin{array}{l} n = 25 \\ r = 3 \end{array}$$

Use Calculator

MATH