

MATH 210

FINITE MATHEMATICS

BRIAN VEITCH • FALL 2016 • NORTHERN ILLINOIS UNIVERSITY

6.3 The Multiplication Principle

A person is given a choice between 8 shirts and 3 different pants. How many different outfits can the person wear?

Definition 1: The Multiplication Principle

Suppose you have the following n tasks, T_1, T_2, \dots, T_n

Example 1

How many ways are there to fill out a 2 question multiple choice exam which has 5 possible answers A, B, C, D, E?

What about a 20 question exam?

Example 2

An employee ID for a company consists of the employee's first initial, last initial, and the last four digits of his/her social security number. How many possible IDs are there?

Example 3

How many five letter code words can be constructed from only the first 15 letters of the alphabet if

1. repetition of letters is allowed?

2. no repetition is allowed?

Example 4

Currently my iPhone uses a 6 digit numeric code. I have the option of changing it to a custom alphanumeric password. Compare a 6 digit numeric code to a 6 character alphanumeric password.