

Finite Mathematics (Math 10120), Fall 2020

Quiz 1, Friday, August 28

1. A pizza place has 8 different toppings available to put on a pizza. How many different topping choices are possible, including the choice of no toppings? Assume that there's no limit on the number of toppings a person can choose.

Two ways

→ Addition Rule
 $(\# \text{ top combinations}) = \binom{\# \text{ w/ toppings}}{0} + \binom{\# \text{ w/ toppings}}{1} + \binom{\# \text{ w/ toppings}}{2} + \dots + \binom{\# \text{ w/ toppings}}{8}$
 $= C(8,0) + C(8,1) + C(8,2) + \dots + C(8,8) = 256$

→ $\# \text{ of topping choices} = \# \text{ of subsets of set of 8 toppings} = 2^8 = 256$

2. A club contains 9 senior members and 7 junior members. The governing board for this club consists of a president, vice president, and council of of three members (all positions on this council are exactly the same). Only seniors are eligible for the president and vice president positions, and only juniors are eligible to be on the council. How many ways are there to choose the governing board from the current members?

$\# \text{ ways to choose president and VP} = P(9,2) = 9 \cdot 8 = 72$

$\# \text{ ways to choose council} = C(7,3) = \frac{7 \cdot 6 \cdot 5}{3!} = 35$

→ $\# \text{ ways to choose governing board} = 72 \cdot 35 = 2520$