

Recitation Guide - Week 1

Topics Covered: Counting

Problem 1: You own three distinguishable (one gold, one silver, one bronze) rings. You wear all three rings, but no two of the rings are on the same finger, nor are any of them on your thumbs. In how many ways can you wear your rings? (Assume any ring will fit on any finger and you may wear these rings on the fingers of both hands.)

Solution:

We can apply the multiplication rule.

Step 1: Choose the first finger. (8 ways)

Step 2: Choose the second finger. (7 ways)

Step 3: Choose the third finger. (6 ways)

Multiplying all of these, we have $8 \times 7 \times 6 = \boxed{336}$.

Problem 2: Your favorite taco place in the world, Taki's Tacos, is known for its variety of different tacos. Taki has 5 different kinds of salsas and 6 different kinds of cheese. In addition, you can add one of any 20 different toppings, which are optional. On top of all of these choices, you can choose a soft shell or a hard shell. How many different tacos can you possibly order from Taki?

Solution:

We can apply the multiplication rule:

Step 1: Choose the salsa. (5 ways)

Step 2: Choose the cheese. (6 ways)

Step 3: Choose the topping. (20 toppings + 1 option for no toppings = 21 ways)

Step 4: Choose the shell. (2 ways)

Multiplying all of these, we get $5 \times 6 \times 21 \times 2 = \boxed{1260}$ tacos.