

Name: _____ Per: _____ Date: _____
Serafino • Precalculus S2

Review

Set UP the problem only – no need to evaluate, but please label what your expressions represent.

1. How many different groups of 15 DVDs can I take out of my collection of 79?
2. You are going on vacation and in your suitcase you pack: 3 jeans, 5 shorts, 7 shirts and 2 pairs of shoes. How many different outfits are possible on your trip?
3. You're being a creep and trying to break into your friend's iPhone. You've seen him type it so you know he uses all the numbers down the middle column: 2, 5, 9, and 0, but you can't remember the order.
 - a. How many different passcodes are possible to try?
 - b. How many different passcode are possible if you know the passcode is an even number?
4. You're at Chipotle. Choices: white or brown rice; chicken, pork or beef; and a selection of 5 veggies.
 - a. How many different bowls can you make if you choose one of each?
 - b. How many different bowls can you make if you want rice, 2 different veggies, but aren't sure if you want one or two different kinds of meat?
 - c. How many different bowls can you make if you want rice, no meat, but AT LEAST 3 different veggies?
5. The Seven Dwarves are lining up to go to work.
 - a. How many different ways can they line up?
 - b. How many different ways can they line up if Sneezy, Happy & Doc insist on standing together?
6. We are rearranging the letters in the word COMBINATORICS
 - a. How many different ways can you rearrange the letters?
 - b. How many ways can you rearrange the letters if the word must have four consonants on both ends?

Review

Set UP the problem only – no need to evaluate, but please label what your expressions represent.

1. How many different groups of 15 DVDs can I take out of my collection of 79?

${}_{79}C_{15}$

2. You are going on vacation and in your suitcase you pack: 3 jeans, 5 shorts, 7 shirts and 2 pairs of shoes. How many different outfits are possible on your trip?

$\underline{7} \cdot \underline{2} \cdot (\underline{3+5})$ or $\underline{7} \cdot \underline{2} \cdot \underline{8}$ or $\underline{3} \cdot \underline{7} \cdot \underline{2} + \underline{5} \cdot \underline{7} \cdot \underline{2}$

3. You're being a creep and trying to break into your friend's iPhone. You've seen him type it so you know he uses all the numbers down the middle column: 2, 5, 9, and 0, but you can't remember the order.

- a. How many different passcodes are possible to try? $4!$ or $\underline{4} \cdot \underline{3} \cdot \underline{2} \cdot \underline{1}$

- b. How many different passcode are possible if you know the passcode is an even number?

$\underline{3} \cdot \underline{2} \cdot \underline{1}$ $\underline{2}$ ← Start here
Even #

4. You're at Chipotle. Choices: white or brown rice; chicken, pork or beef; and a selection of 5 veggies.

- a. How many different bowls can you make if you choose one of each?

$\underline{2}C_1 \cdot \underline{3}C_1 \cdot \underline{5}C_1$

- b. How many different bowls can you make if you want rice, 2 different veggies, but aren't sure if you want one or two different kinds of meat?

$\underline{2}C_1 \cdot \underline{3}C_2 \cdot (\underline{5}C_1 + \underline{5}C_2)$

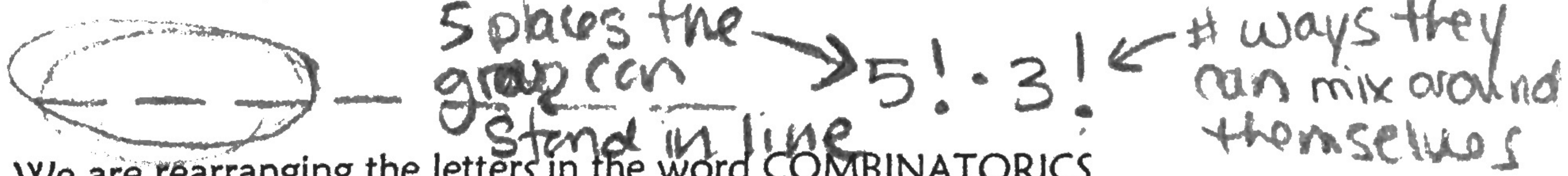
- c. How many different bowls can you make if you want rice, no meat, but AT LEAST 3 different veggies?

$\underline{2}C_1 \cdot (\underline{5}C_3 + \underline{5}C_4 + \underline{5}C_5)$

5. The Seven Dwarves are lining up to go to work.

- a. How many different ways can they line up? $7P_7$ or $7!$

- b. How many different ways can they line up if Sneezzy, Happy & Doc insist on standing together?



6. We are rearranging the letters in the word COMBINATORICS

- a. How many different ways can you rearrange the letters?

$\frac{13!}{2!2!2!}$

- b. How many ways can you rearrange the letters if the word must have four consonants on both ends?

$\underline{8} \cdot \underline{7} \cdot \underline{6} \cdot \underline{5} \cdot \underline{5} \cdot \underline{4} \cdot \underline{3} \cdot \underline{2} \cdot \underline{1} \cdot \underline{4} \cdot \underline{3} \cdot \underline{2} \cdot \underline{1}$
 C C C C V V V V C C C C