

Name: \_\_\_\_\_ Period: \_\_\_\_\_ Date: \_\_\_\_\_

**Combinatorics: 15.1-15.4**

1. Suppose Kailey's Pizzeria place has 7 toppings:

Pepperoni, Sausage, Meatball, Bacon, Onion, Mushroom, and Broccoli

a) Suppose you are to rank the 7 toppings from your favorite to your least favorite. How many different rankings are there?

b) Now, what if you were asked to rank your favorite 3 toppings? How many ways can this be done?

c) How many different pizzas can be made using 3 of the 7 available toppings?

d) How many pizzas can be made if there are two different sizes, and you can have either 2 or 3 toppings?

2. A JV baseball team plays 18 games. How many ways can they end the season with 15 wins, 2 losses and 1 tie?

3. On a 10 question True or False test, how many ways can you answer at least 3 questions true?

4. In my Pre-Calculus class of 28 students, I am only allowed to give 5 As, 10 Bs, 10 Cs, 2 Ds and 1 F. How many ways can this be done?

5. Stephen loves wearing accessories. He has a collection of 9 bracelets, 5 necklaces, 3 fedoras and 2 pairs of glasses with no lenses. How many ways can Stephen wear his accessories? He can wear none of them, 1, 2, 3 or 4, but only one of each (ex: can't wear two bracelets, or the fashion police will come arrest him).

6. Natalie is trying to hack into Mr. Kase's computer. She was tipped off that his password has the same letters as the state of Tennessee, but it is not Tennessee. How many different password combinations could there be?

7. Of the 20 teachers that are off during period 5, they must cover the following duty locations. 6 teachers must be assigned to spots around the hallway, 3 teachers must be in the cafeteria, 4 teachers must be in the library and 7 must be in the campus center. How many ways can Mr. Pizzuto assign teachers their duty locations?

8. Of the 108 teachers at 65 of them have their masters, 42 of them have had careers outside of education and 30 do not have their masters and have been working in education their whole career. How many teachers have their masters and have worked in careers other than education?