

Name: \_\_\_\_\_

## 107 Activity 4: Combining the GMP with Permutations/Combinations

1. Julius Caesar goes to Toga Tom's for lunch with his wife. Together, the two of them plan to *saara* two different entrees, two different sides, and two different desserts.

Entrees	Side	Desserts
Falafel	Tabouleh	Baklava
Gyro	Lebanese Salad	Almond Cookies
Shish kabob	Hummus	Fresh Fruit
Shish tawouk	Baba Ganouj	Ice Cream

- (a) How many ways can they pick two entrees?
- (b) How many ways can they pick two sides?
- (c) Using this pattern, how many total ways can they order their meal?
2. The Indiana State Fair has a pastry competition in three categories: Pies, Cakes, and Cookies. The preliminaries have narrowed each category down to only 4 finalists per category, and from the finalists a First and Second place will be awarded.
- (a) How many ways may prizes be assigned for the Pies?
- (b) How many ways may prizes be assigned for the Cakes?
- (c) Using this pattern, how many total ways can prizes be assigned in the three categories?

3. §5.5, # 57

Two children, Moe and Joe, are allowed to select candy from a plate of nine pieces of candy. Moe, being younger, is allowed to choose first but can only take two candies. Joe is then allowed to take three of the remaining candies. Joe complains that he has fewer choices than Moe. Is Joe correct? How many choices will each child have?

4. §5.5, # 62

George has three books by each of his favorite four authors. In how many ways can the books be placed on a shelf if books by the same author must be together?

5. §5.5, # 64

On a children's baseball team, there are four players who can play at any of the following infield positions: catcher, first base, third base, and shortstop. There are five possible pitchers, none of whom play any other position. And there are four players that can play any of the three outfield positions (right, left, center) or second base. In how many ways can the coach assign players to the positions?

Position	Left/Right/Center/Second Base	Pitcher	Catcher/First/Third/Short
Number available			
Number needed			