Math 2   **TO BE TURNED IN BY THE END OF CLASS**   Name:_____

For 1-3. How many different ways can the letters of each word be arranged?

1. Pizzeria   2. Calendar   3. California

4. How many different 7-digit phone numbers can have the digits 7, 3, 5, 2, 7, 3, and 2?

5. The table below shows the initial letter of each of the 50 states. How many different ways can you arrange the initial letters of the states?

Initial Letter	A	C	D	F	G	H	I	K	L	M	N	O	P	R	S	T	U	V	W
Number of States	4	3	1	1	1	1	4	2	1	8	8	3	1	1	2	2	1	1	3

For 6-9. Determine whether each arrangement of objects is a linear or circular permutation. Then describe the number of arrangements for each situation.

6. 12 gondolas (seats) on a Ferris Wheel.

7. A stack of 6 pennies, 3 nickels, 7 dimes, and 10 quarters

8. The placement of 9 specialty departments along the outside perimeter of a supermarket. It goes all the way around the store.

9. A family of 5 seated around a rectangular table.

10. Classic Pizza offers pepperoni, mushrooms, sausage, onions, peppers, and olives as toppings for their 7 inch pizza. How many different 3-topping pizzas can be created?

11. My computer password requires a minimum of 8 characters that can be letters or numbers (0-9). What is the minimum number of passwords possible?

12. A train yard has 12 flatcars, 10 tankers, 15 boxcars, and 5 livestock cars.

a. If the cars must be connected according to their destinations how many different ways can the cars be arranged?
b. How many ways can the train be arranged if the train can carry 30 cars max?
c. How many trains can be formed with 3 livestock cars, 6 flatcars, 6 tankers and 5 boxcars?

13. 8 teams are competing for the NBA Eastern Title. How many different ways can those teams finish, $1^{st} - 8^{th}$ place?

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