HW 3 - Circular Permutations and Reflections HW NAME\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

***Determine whether each arrangement is linear or circular, then determine if it is also a reflection.***

1. 8 charms on a bracelet that has no clasp

2. a football huddle of 11 players

3. placing 6 cups in a circle on a table

4. 12 beads on a necklace with a clasp

5. a pearl necklace that is open

6. four people sitting around a square table

7. four people seated around a square table when one chair has balloons tied to it

8. a baseball team’s batting order

***Find the following:***

9. How many ways can 7 keys be arranged on a key ring?

10. How many ways can 10 campers be arranged around a campfire?

11. How many ways can 6 charms be arranged on a bracelet that has no clasp?

12. How many ways can 4 councilmen and 4 councilwomen be seated alternately at a round table?

13. How many ways can 5 hors d’ouevres be arranged on a plate?

14. How many ways can 5 dinner guests be seated around a circular table if the only two married guests are seated next to each other?

15. A necklace has 20 links and no clasp. How many ways can 6 different colored beads be added to the necklace if each bead requires one link?

16. In how many ways can 5 basketball players stand around their coach?

17. The bride and groom and 8 members of the bridal party are seated around a round table. The bride and groom must sit together. In how many ways can the bridal party be arranged around the table?

18. Eight pizza toppings are arranged around a circular tray. How many ways can this be done?

19. How many ways can a sailor string 6 nautical flags on a vertical pole?

20. How many ways can Laura and 4 of her friends be seated at a circular table if Laura must sit in the chair with the balloons?

21. In how many ways can five people A, B, C, D, and E be seated around a circular table if:

a) A and B must sit next to each other?

 b) A and B must not sit next to each other?