Math 30-1 Name: _____
Permutations and Combinations

1. Pete's Perfect Pizza has 9 choices for toppings available. How many
    a. 2 topping pizzas can be made?

    b. 3 topping pizzas can be made?

2. Hunting Hills High School has a 12-member student council. A four person subcommittee is selected to organize dances. How many subcommittees can be made if

    a. there are no restrictions?

    b. the president and vice-president must be on the committee?

3. RAMS Leadership Club has 20 members; 12 females and 8 males. A sub-committee of 5 people is needed. How many possibilities are there if
    a. there are no restrictions?

    b. there are exactly 3 females?

    c. there are at least 3 females?

    d. the principal has to be on the committee?

    e. Jack and Dianne can't be on the committee together?

4. A group of 4 journalists is sent to cover a trial. There are 5 males and 7 females to choose from. How many groups can be formed if
    a. there are an equal amount of females and males?

    b. there is at least 1 woman ?

5. All Friday night is Frightening Friday at the drive-in theatre. The owner will show 5 movies. He is deciding between 10 thrillers and 4 horror movies. How many possible combinations are there if
    a. there is at least 1 horror movie?

    b. there are at least 4 thrillers?

    c. he will show “Alien” and “Nightmare on Elm Street” plus 3 other movies?

6. All Monday night is Maniac Monday at the drive-in theatre. The owner will show 5 movies. She is deciding between 12 comedies and 7 tear-jerkers movies. How many possible schedules are there if
    a. There are at least 2 comedies?

    b. There are at least 3 tear-jerkers?

7. Given the words FROG and SMILE, determine the number of possible orders if you select 2-letters from each word.

8. **Algebraically** solve the following:
    a. ${}_nP_2 = 132$ b. ${}_nC_2 = 28$