Permutations and Combinations Review by I Can Statement

Emerging Level Content:

I can determine if a situation calls for permutations or combinations:

1. Fill in the blanks with either "does" or "doesn't"

    a. In a permutation, order _____ matter

    b. In a combination, order _____ matter

2. For the following situations, decide whether it calls for a permutation or a combination. You do not need to solve the problem.

    a. I'm forming a committee for prom and need 5 people. There are 81 students in the class that could be on the committee. How many possible ways could I create a committee of 5?

    b. I'm heading to the races and betting on the order. There are 10 people competing, and I'm betting on who will be the top 3. How many possible ways could I bet on the top 3?

I can find the number of permutations or combinations of a set:

3. Calculate the following and show your work:

    a. $_8C_3$

    b. $_{12}P_4$

4. My dad bought me 3 concert tickets for my birthday, so I can go and invite 2 of my friends. I have 10 friends that want to go. How many possible combinations of friends could I invite?

5. In how many ways can the letters of the word HOLIDAY be rearranged?

6. A license plate begins with three letters. How many different permutations of these letters can be made if no letter is used more than once?

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Proficient Level Content:

I can expand a binomial using the binomial theorem:

7. Expand $(2x - 3y)^5$ using the binomial theorem. Feel free to draw out Pascal's Triangle as well if you find it helpful.

I can find the probability of an event using permutations or combinations:

8. For each question, find the probability of winning a lottery using the given rules. Assume that lottery numbers are selected at random.

   a. You must correctly select 6 numbers, each an integer from 0 to 49. The order is not important.

   b. You must correctly select 4 numbers, each an integer from 0 to 9. The order is important

9. You work 5 evenings each week at a bookstore. Your supervisor assigns you 5 evenings at random from the 7 possibilities. What is the probability that your schedule does not include working on the weekend?