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Date **Assignment #5.1**

1. There are 12 people on a basketball team, and the coach needs to choose 5 to put into a game. How many different possible ways can the coach choose a team of 5 if each person has an equal chance of being selected?

(1) ${}_{12}P_5$ (3) ${}_{12}C_5$

(2) ${}_{5}P_{12}$ (4) ${}_{5}C_{12}$

2. Six members of a school's varsity tennis team will march in a parade. How many different ways can the players be lined up if Angela, the team captain, is always at the front of the line?

3. How many different five-member teams can be made from a group of eight students, if each student has an equal chance of being chosen?

(1) 40 (3) 336

(2) 56 (4) 6,720

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4. A certain state is considering changing the arrangement of letters and numbers on its license plates. The two options the state is considering are:

Option 1: three letters followed by a four-digit number with repetition of both letters and digits allowed

Option 2: four letters followed by a three-digit number without repetition of either letters or digits

[Zero may be chosen as the first digit of the number in either option.]

Which option will enable the state to issue more license plates? How many *more* different license plates will that option yield?

5. In a game, each player receives 5 cards from a deck of 52 different cards. How many different groupings of cards are possible in this game?

(1) ${}_{52}P_5$ (3) $\frac{52!}{5!}$

(2) ${}_{52}C_5$ (4) 5!

6. How many different three-member teams can be selected from a group of seven students?

(1) 1 (3) 210

(2) 35 (4) 5,040

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7. An algebra class of 21 students must send 5 students to meet with the principal. How many different groups of 5 students could be formed from this class?

8. The value of $\frac{7!}{3!}$ is

(1) 840 (3) 7

(2) 24 (4) 4

9. The expression ${}_9C_2$ is equivalent to

(1) ${}_9P_2$ (3) ${}_9C_7$

(2) ${}_9P_7$ (4) $\frac{9!}{2!}$

10. Max goes through the cafeteria line and counts seven different meals and three different desserts that he can choose. Which expression can be used to determine how many different ways Max can choose a meal and a dessert?

(1) 7•3 (3) ${}_7C_3$

(2) 7! •3! (4) ${}_7P_3$

11. If the Math Olympiad Club consists of eighteen students, how many different teams of four students can be formed for competitions?

(1) 66 (3) 3,060

(2) 72 (4) 73,440

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12. In the next Olympics, the United States can enter four athletes in the diving competition. How many different teams of four divers can be selected from a group of nine divers?

(1) 36 (3) 3,024
(2) 126 (4) 6,561

13. Five friends met for lunch, and they all shook hands. Each person shook the other person's right hand only once. What is the total number of handshakes?

14. A committee of five members is to be randomly selected from a group of nine freshmen and seven sophomores. How many different committees of three freshmen and two sophomores can be chosen?

15. On a bookshelf, there are five different mystery books and six different biographies. How many different sets of four books can Emilio choose if two of the books must be mystery books and two of the books must be biographies?