Name: .... Class: ....

Permutations

1. John's father wants to set a combination on a three-digit lock. He wants to use the numbers 1, 2, 3 but doesn't care what order they are in. In how many different orders can he set the lock's combinations?

2. Richard owns a garden in his back yard. He is planting four different colors of rose flowers. He placed a white rose bush, a yellow rose bush, a pink rose bush and a red rose bush in a row in a planter. In how many different orders can he place all the roses in a planter?

3. Bless has 5 pieces of his birthday cake left. In how many different orders can he eat the remaining cake?

4. In preparation for their school debate, Thomas is in charge of arranging seats for the audience. If he intends to seat 8 people in 8 seats in each row, how many different orders can he arrange the seats?

5. The head coach of a basketball team needs to introduce the 5 starting players of the team at the beginning of the next season's game. In how many different orders can he do this?

6. There is a 4-course meal at the gala party. How many ways can the caterer arrange a full 4-course meal on each person's plate?

7. In a soccer team, there are 11 palyers . How many different ways can the coach arrange the lineup?

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Permutations

1. John's father wants to set a combination on a three-digit lock. He wants to use the numbers 1, 2, 3 but doesn't care what order they are in. In how many different orders can he set the lock's combinations?

   Use factorials to solve this problem.
   John's father can set the lock's combination in 3! different orders
   Evaluate 3! by multiplying all the whole numbers between 1 and the given number.
   3! = 3 x 2 x 1 = 6

   So, John's father can set the lock's combination in 6 different orders.

2. So, Richard can place the roses in 24 different orders in a planter.

3. So, Bless can eat the cake in 120 different orders.

4. So, he can arrange the seats in 40,320 different orders.

5. So, he can do this in 120 different orders.

6. So, there are 24 ways.

7. So, the coach can arrange the lineup in 39,916,800 different ways.