

Permutations and Combinations

$3! =$

${}_5P_3 =$

${}_5C_3 =$

$5! =$

${}_{10}P_7 =$

${}_{10}C_7 =$

$1! =$

${}_4P_0 =$

${}_4C_4 =$

$0! =$

${}_4P_4 =$

${}_4C_0 =$

1. How many ways can you arrange five books on a bookshelf?
2. How many ways can you arrange ten books on a bookshelf if you only have room for three books?
3. How many different ways can four adults be seated in a car?
4. How many different ways can three adults and one child be seated in a car?
5. Three couples are to be seated in a row of six chairs. How many different ways can they be seated?
6. Three couples are to be seated in a row of six chairs. How many different ways can they be seated if each couple must sit together?
7. Faith has room in her bag for only three books. If she has five to choose from, how many different selections of books can she choose?
8. Faith has room in her bag for only two books. If she has five to choose from, how many different selections of books can she choose?
9. A teacher selects four students to be on a committee to represent a class of twenty students. How many different committees are possible?
10. Nicholas is choosing toppings for a pizza. He can choose from four meat and five vegetable toppings.
 - a) How many pizzas having one meat and two different vegetable toppings can he choose?
 - b) How many pizzas having two different meat and one vegetable toppings can he choose?
 - c) How many pizzas having three different toppings can he choose?