

Combinations Worksheet

1. How many ways can you choose 3 students from a class of 10 to form a committee?
2. A bag contains 5 red, 4 blue, and 3 green marbles. How many ways can you choose 5 marbles if you must have exactly 2 red marbles?
3. You have 8 books: 3 fiction, 3 biography, and 2 poetry. How many ways can you choose 4 books if you want at least one book from each category?
4. From a group of 12 athletes, you want to form two teams: a team of 5 and a team of 4. The remaining 3 do not make any team. How many ways can this be done?
5. Find the number of ways in which Sam can choose at least 1 piece of fruit from a basket containing 4 apples, 5 bananas, 2 cantaloupes and 3 pears.
6. A group of 25 students is flying to Daytona Beach for their grad trip. There are 25 seats available on the plane, 6 of which are first class. Alex and Heather won a draw and must sit in first class. Rachel, Jenna and David are socially conscious and refuse to sit in first class. With these restrictions in mind, in how many ways can the students be divided between first class and economy?
7. A committee of 3 teachers is to select the winner from among 15 students nominated for a special award. The teachers each make a list of their top 3 choices in order. The lists only have 1 name in common, and the name has a different rank on each list. In how many ways could the teacher have made the lists?
8. In order to graduate, a student must select 6 courses from a pool of 10 available courses. However, the courses are divided into 3 groups: Group A (4 courses), Group B (3 courses), and Group C (3 courses). The student must choose at least 2 from Group A and at least 1 from Group B and at least 1 from Group C. How many possible selections are there?

Answers:

1. 120
2. 350
3. 35
4. 27720
5. 359
6. 4845
7. 194 594 400
8. 171