State if each scenario involves a permutation or a combination.

1) Jacob has homework in six subjects. He is deciding what order to complete them in.
2) Selecting which eight players will be in the batting order on a 12 person team.

3) A group of 50 people are going to run a race. The top 6 finishers advance to the finals.
4) There are 50 applicants for three jobs: computer programmer, software tester, and manager.

State if each scenario involves a permutation or a combination. Then find the number of possibilities.

5) A group of 25 people are going to run a race. The top three runners earn gold, silver, and bronze medals.
6) A team of 16 soccer players needs to choose a captain and co-captain.

7) A team of 12 field hockey players needs to choose a captain and co-captain.
8) Danielle and Sarawong are planning trips to four countries this year. There are 6 countries they would like to visit. One trip will be one week long, another two days, another two weeks, and the other a month.
9) Lea and Natalie are planning trips to three countries this year. There are 13 countries they would like to visit. One trip will be one week long, another two days, and the other two weeks.

10) Natalie and Abhasra are planning trips to two countries this year. There are 9 countries they would like to visit. One trip will be one week long and the other two weeks.

Find the number of possibilities in each scenario.

11) Sumalee and Nicole are planning trips to eleven countries this year. There are 15 countries they would like to visit. They are deciding which countries to skip.

12) 4 out of 18 students will ride in a car instead of a van

13) Adam and Stephanie are planning trips to four countries this year. There are 14 countries they would like to visit. One trip will be one week long, another two days, another two weeks, and the other a month.

14) Norachai and Mofor are planning trips to one country this year. There are 5 countries they would like to visit. They are deciding which countries to skip.

15) Norachai has homework in four subjects. He is deciding what order to complete them in.

16) Ted and Natalie are planning trips to four countries this year. There are 6 countries they would like to visit. One trip will be one week long, another two days, another two weeks, and the other a month.
State if each scenario involves a permutation or a combination.

1) Jacob has homework in six subjects. He is deciding what order to complete them in.
   Permutation

2) Selecting which eight players will be in the batting order on a 12 person team.
   Combination

3) A group of 50 people are going to run a race. The top 6 finishers advance to the finals.
   Combination

4) There are 50 applicants for three jobs: computer programmer, software tester, and manager.
   Permutation

State if each scenario involves a permutation or a combination. Then find the number of possibilities.

5) A group of 25 people are going to run a race. The top three runners earn gold, silver, and bronze medals.
   Permutation; 13,800

6) A team of 16 soccer players needs to choose a captain and co-captain.
   Permutation; 240

7) A team of 12 field hockey players needs to choose a captain and co-captain.
   Permutation; 132

8) Danielle and Sarawong are planning trips to four countries this year. There are 6 countries they would like to visit. One trip will be one week long, another two days, another two weeks, and the other a month.
   Permutation; 360
9) Lea and Natalie are planning trips to three countries this year. There are 13 countries they would like to visit. One trip will be one week long, another two days, and the other two weeks.

   Permutation; 1,716

10) Natalie and Abhasra are planning trips to two countries this year. There are 9 countries they would like to visit. One trip will be one week long and the other two weeks.

   Permutation; 72

Find the number of possibilities in each scenario.

11) Sumalee and Nicole are planning trips to eleven countries this year. There are 15 countries they would like to visit. They are deciding which countries to skip.

   1,365

12) 4 out of 18 students will ride in a car instead of a van

   3,060

13) Adam and Stephanie are planning trips to four countries this year. There are 14 countries they would like to visit. One trip will be one week long, another two days, another two weeks, and the other a month.

   24,024

14) Norachai and Mofor are planning trips to one countries this year. There are 5 countries they would like to visit. They are deciding which countries to skip.

   5

15) Norachai has homework in four subjects. He is deciding what order to complete them in.

   24

16) Ted and Natalie are planning trips to four countries this year. There are 6 countries they would like to visit. One trip will be one week long, another two days, another two weeks, and the other a month.

   360