

1. In how many ways can 8 people line up at a movie theater box office?
2. (a) How many 5-digit numbers can be formed from the integers $\{1,2,4,6,7,8\}$ if no integer can be used more than once?
(b) How many of these numbers will be even?
(c) How many odd?
3. (a) If the call letters of a radio station must begin with a W, how many different stations could be designated by using only 3 letters, with repetitions of a letter allowed?
(b) How many by using 4 letters, without repetitions?
4. (a) In how many ways can 3 letters be mailed in 6 mailboxes, if each letter must be mailed in a different box?
(b) If the letters are not necessarily mailed in different boxes, how many ways are there of posting them?
5. There are 7 seats available in a van. In how many ways can 7 persons be seated for a journey if only 3 are able to drive?
6. A passenger train has 9 coaches numbered 1 to 9. In how many ways can 4 people be assigned to the coaches if they must ride in different coaches?
7. In how many ways can 6 students be seated in a classroom with 30 desks?
8. Twelve boys try out for the basketball team. Two can play only at center, four can play only at guard, and the rest can play only at forward. In how many ways can the coach put a starting five out on the court?
9. How many numbers, each with at least 3 digits, can be formed from the 5 digits $\{1,2,3,4,5\}$ if no digit may be used more than once?
10. In how many ways can 5 boys and 5 girls be seated alternately in a row of 10 chairs (numbered 1 to 10), if a boy always occupies chair number one?
11. An encyclopedia consists of 9 volumes numbered 1 through 9. In how many ways can the 9 volumes be arranged together on a shelf so that some or all of the volumes are out of order?
12. (a) How many 5 digit numbers can be formed?
(b) How many of these begin with 2 and end with 4?
(c) How many do not contain the digit 5?
(d) How many are divisible by 5?