

1. A combination lock is made with four dials and six numbers on each.
  - (a) How many arrangements are possible?
  - (b) If it took 5 seconds to try each combination, how long would it take to open the lock by trial and error if the right answer was not found until the end?
2. A car manufacturer offers 12 paint colours, 4 possible colours of interior trim and the choice of the deluxe or standard version. How many choices does that give the customer altogether?
3. In how many ways can:
  - (a) five boys line up?
  - (b) four letters from the word BRIDGE be arranged if no letter is repeated?
  - (c) the first 3 horses in an 8 horse race come home?
4.
  - (a) In how many ways can the letters of the word HOUSE be arranged?
  - (b) In how many of these do the consonants come at the two ends?
  - (c) In how many ways are the consonants together?
5. In how many ways can 8 books be arranged on a shelf if:
  - (a) a given book must be first in line?
  - (b) two particular books are kept alongside each other?
6. In how many ways can the letters in THEREAFTER be arranged?
7. In how many ways can eight boys sit in an eight-oared boat if 3 of the crew can only row on the stroke side and one particular boy must be on the bow side?
8. In a railway car, with 3 seats facing the engine and 3 seats with their back to the engine, in how many ways can 6 people be seated if two of them insist on facing the engine?
9. Seven people are available to play tennis. A group of 4 is to be chosen to play. In how many ways can this be done?
10. In the NSW Lotto 6 numbers have to be chosen from 40 numbers. In how many ways can this be done?
11. In how many ways can you be dealt 4 aces and one other card in a hand of five cards?
12. How many even 4 digit numbers can be made from the digits 1, 3, 4 and 6 if:
  - (a) repetitions are allowed?
  - (b) repetitions are not allowed?
13. In how many ways can host and hostess and 4 visitors be arranged around a round table if:
  - (a) there is no restriction?
  - (b) host and hostess must sit next to each other?
  - (c) the hostess sits in a particular seat?
14. A committee of 6 is to be chosen from 8 men and 6 women so as to contain 3 men and 2 women.
  - (a) In how many ways can this be done?
  - (b) In how many ways can it be done if two particular men refuse to serve together?
15. If 4 men and 2 ladies sit down in line, how many ways can this be done if Miss A and Mr B must sit together?