

1. (a) How many license plates with 5 digits can be made if no plate starts with zero?
(b) Suppose the first digit is replaced with a letter and the second digit is not a zero. Now how many plates can be made?
2. (a) In geometry, polygons are usually labeled by placing letters at their vertices. How many ways are there of labeling a triangle with letters of the alphabet?
(b) A pentagon?
(c) A decagon?
3. (a) Ten points are taken on the circumference of a circle. How many chords can be drawn by joining them in all possible ways?
(b) With these 10 points as vertices, how many triangles can be drawn?
(c) How many hexagons?
4. A standard deck of playing cards has 52 different cards. A poker hand consists of 5 cards. How many different possible poker hands are there?
5. There are 13 cards of each suit (spades ♠, hearts ♥, diamonds ♦, clubs ♣) in a standard deck. How many different hands can be made from 5 spades, 4 hearts, 2 diamonds, and 2 clubs?
6. Twenty persons are to travel in a double decker bus. The bus carries 12 people on the 1st deck and 8 people on the 2nd deck. If 4 people request the upper deck and 5 people do not want the upper deck, then in how many ways can the passengers be seated if
 - (a) the arrangement of passengers is not considered?
 - (b) the arrangement of passengers is considered?
7. In how many ways can 4 persons be selected from 5 married couples if
 - (a) the selection must consist of 2 women and 2 men?
 - (b) if a husband and wife cannot both be selected?
8. How many 5 letter “words”, each consisting of 3 consonants and 2 vowels, can be formed from the letters of the word EQUATIONS?
(NOTE: A word consists of any arrangement of letters, whether or not it forms a real word.)