1. A campus radio station surveyed 190 students to determine the types of music they liked. The survey revealed that 114 liked rock, 50 liked country, and 41 liked classical music. Moreover, 14 liked rock and country, 15 liked rock and classical, 11 liked classical and country, and 5 liked all three types of music.

    a. How many students like rock only?
    b. How many students like country but not rock?
    c. How many students like classical and country but not rock?
    d. How many students like classical or country but not rock?
    e. How many students like exactly one of the three types of music?
    f. How many students do not like any one of the three types of music?
    g. How many students like at least two of the three types of music?
    h. How many students do not like either rock or country?

2. In how many different ways can a committee of 3 people be formed from a group of 5 people?
3. In how many ways can 3 different books be placed on a shelf?
4. How many house styles are possible if a contractor offers 3 choices of roof design, 4 choices of window designs, and 6 choices of brick?
5. You are to set up a code of 2-digit words using the digits 1, 2, 3, 4 without using any digit more than once.
    a. What is the maximum number of words in such a language?

    b. If all words of the form ab and ba are the same, how many words are possible?

6. There are 7 boys and 6 girls willing to serve on a committee. How many 7-member committees are possible if a committee is to contain:
    a. 3 boys and 4 girls?

    b. At least one member of each sex?

7. A person has 4 history, 5 English, and 6 mathematics books. How many ways can the books be arranged on a shelf if books on the same subject must be together?

8. In how many ways can a committee of 8 boys and 5 girls be formed if there are 10 boys and 11 girls eligible to serve on the committee?
9. In how many ways can we choose three words, one each from five 3-letter words, six 4-letter words, and eight 5-letter words?

10. In how many ways can 5 girls and 3 boys be divided into 2 teams of 4 each if each team is to include at least 1 boy?

11. There are 5 rotten plums in a crate of 25 plums. How many samples of 4 of the 25 plums contain:
    a. Only good plums?
    b. Three good plums and one rotten plum?
    c. One or more rotten plums?

12. Expand $(x+2)^4$

13. What is the coefficient of x^3 in the expansion of $(2x-3)^9$?