1. A coin is tossed ten times. In each case the outcome H (for heads) or T (for tails) is recorded. (One possible outcome of the ten tossings is denoted THHTTHTTH.)
   a. What is the total number of possible outcomes of the coin-tossing experiment?
   b. In how many of the possible outcomes are exactly five heads obtained?
   c. In how many of the possible outcomes are at least eight heads obtained?
   d. In how many of the possible outcomes is at least one head obtained?
   e. In how many of the possible outcomes is at most one head obtained?

2. A club is considering changing its bylaws. In an initial straw vote on the issue, 24 of the 40 members of the club favored the change and 16 did not. A committee of six is to be chosen from the 40 club members to devote further study to the issue.
   a. How many committees of six can be formed from the club membership?
   b. How many of the committees will contain at least three club members who, in the preliminary survey, favored the change in the bylaws?

3. a. How many even integers are in the set \{1, 2, 3, \ldots, 100\}?
   b. How many odd integers are in the set \{1, 2, 3, \ldots, 100\}?
   c. How many ways can two integers be selected from the set \{1, 2, 3, \ldots, 100\} so that their sum is even?
   d. How many ways can two integers be selected from the set \{1, 2, 3, \ldots, 100\} so that their sum is odd?

4. Ten points labeled A, B, C, D, E, F, G, H, I, J are arranged in a plane in such a way that no three lie on the same straight line.
   a. How many straight lines are determined by the ten points?
   b. How many of these straight lines do not pass through point A?
   c. How many triangles have three of the ten points as vertices?
   d. How many of these triangles do not have A as a vertex?