Note for the teacher: part of the assignment here is for the student to format this page (as a computer literacy exercise).

Possibility Summary Page
The Multiplication Rule (The Wardrobe Problem).
If there are X ways to choose one thing, and Y ways to choose another thing, then there are X·Y ways to choose these two things together. (This assumes that these two things are independent.)
Factorials (The Seating Chart Problem).
The number of ways of rearranging n objects is n!
For example, $5! = 5·4·3·2·1 = 120$.
Permutations (The Prize Problem).
The number of ways to select r out of n objects, in order, is nPr.
For example, $9P4 = 9·8·7·6 = 3024$.
Combinations (The Committee Problem).
The number of ways to select r out of n objects, without regard to order, is nCr.
For example, $9C4 = \frac{9P4}{4!} = \frac{9·8·7·6}{4·3·2·1} = 126$.
Distinguishable Arrangements (Word Scrambling).
If there are a total of N objects, of which A objects are indistinguishable from one another, and another B objects are indistinguishable from one another, etc., then the number of possible arrangements is: $\frac{N!}{A!B!C!...}$