

1. An exam contains six multiple choice questions each with 3 answers and 2 true/false questions. How many different ways can a student answer the exam if they are allowed to leave questions blank?

$$4 * 4 * 4 * 4 * 4 * 4 * 3 * 3 = 4^6 * 3^2$$

2. In how many ways can 5 boys and 4 girls be seated in a row if a girl must sit at both ends of the row?

$$4 * 7 * 6 * 5 * 4 * 3 * 2 * 1 * 3$$

3. How many three-letter identification codes can be constructed from the first 15 letters of the alphabet if the first letter must be a B, a C, or a D and no letters may occur more than once.

$$3 * 14 * 13$$

4. A group of friends has 8 boys and 5 girls. They want to take some pictures that have 3 boys and 2 girls in a row in the picture with the additional condition that the boys and girls have to alternate. How many different pictures are possible?

alternate means bgbgb or gbgbg

$$8 * 5 * 7 * 4 * 6 + 5 * 8 * 4 * 7 * 3$$