

1. An exam contains five multiple choice questions each with 6 answers and 2 true/false questions. How many different ways can a student answer the exam if they are allowed to leave questions blank?

$$7 * 7 * 7 * 7 * 7 * 3 * 3 = 7^5 * 3^2$$

2. In how many ways can 7 boys and 3 girls be seated in a row if a girl must sit at both ends of the row?

$$3 * 8 * 7 * 6 * 5 * 4 * 3 * 2 * 1 * 2$$

3. How many three-letter identification codes can be constructed from the first 10 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.

$$3 * 9 * 8$$

4. A group of friends has 10 boys and 7 girls. They want to take a picture that have 5 kids in a row with the additional condition that the boys and girls have to alternate. How many different pictures are possible?

alternating seats will be bgbgb or gbgbg

$$10 * 7 * 9 * 6 * 8 + 7 * 10 * 6 * 9 * 5$$