Chapter 18 Problems

In each problem, all possibilities are equally likely. Each problem counts for 1.5 points altogether, i.e., each part of each problem is worth 0.5 points.

1. If Alice and Alan (a couple) and Barbara and Bob (another couple) sit in a row of chairs, what is the probability that each of the couples sit together?

If Alice and Alan (a couple) and Barbara and Bob (another couple) and Christine and Charlie (another couple) sit in a row of chairs, what is the probability that each of the 3 couples sit together?

If $n$ couples sit in a row of chairs, what is the probability that each of the $n$ couples sits together?
2. If Alice and Barbara (two girls) and Alan and Bob (two boys) sit in a row of chairs, what is the probability that the girls all sit together (the boys may or may not be in a group)?

If Alice, Barbara, and Christine (three girls) and Alan, Bob, and Charlie (three boys) sit in a row of chairs, what is the probability that the girls all sit together (the boys may or may not be in a group)?

If $n$ girls and $n$ boys sit in a row of chairs, what is the probability that the girls all sit together (the boys may or may not be in a group)?
3. If Alice and Barbara (two girls) and Alan and Bob (two boys) sit in a row of chairs, what is the probability that the girls all sit together and all the boys sit together?

If Alice, Barbara, and Christine (three girls) and Alan, Bob, and Charlie (three boys) sit in a row of chairs, what is the probability that the girls all sit together and all the boys sit together?

If $n$ girls and $n$ boys sit in a row of chairs, what is the probability that the girls all sit together and all the boys sit together?
4. If Alice and Barbara (two girls) and Alan and Bob (two boys) sit in a row of chairs, what is the probability that none of the girls are adjacent and none of the boys are adjacent?

If Alice, Barbara, and Christine (three girls) and Alan, Bob, and Charlie (three boys) sit in a row of chairs, what is the probability that none of the girls are adjacent and none of the boys are adjacent?

If $n$ girls and $n$ boys sit in a row of chairs, what is the probability that that none of the girls are adjacent and none of the boys are adjacent?