For all queries, label all output columns appropriately.

1. How many rows and columns will result from the following queries? Give a formula if it is not possible to know the exact number.

   (a) `SELECT * FROM games, moves`

   (b) `SELECT * FROM games NATURAL JOIN moves`
2. Write a single SQL query to find the player name, game id and move number where the player castled (special is '0-0') as white.
3. Write a single SQL query to find the player name with the most recent rating.
4. Remove all players who have not played in a game.

5. Change any move by a white pawn that starts on row 1 to start on row 2 instead. Assume the column is correct.

6. Insert the first move of the game with id 7 as the first move of opening C48.
7. In a single SQL query, find the pairs of player names such that the players have not played each other.
8. Find all pairs of games such that all of the white pieces moved in one game were also moved in the other. There are 16 white pieces when a game starts. Note this relationship does not have to be symmetrical.
9. Find the total number of play count for each player as white. Include those players who have not played any games as white (clearly, such players would have a play count of 0). Order the results by the total play count.
10. Find all players who have a higher total play count as black than as white.