Covering Chessboard with Dominoes

**Need:** A ChessBoard and Dominoes each able to cover most of two chessboard squares, or paper with 8x8 grid (preferably shaded)

1. **Show students the set up. Ask them to cover the chessboard using dominoes.**
   As activity progresses clarify that dominoes should not overlap each other. Ask how many are needed (32). Students should find various strategies, such as parallel dominoes.

2. **Ask students to cover the chessboard using dominoes except for two corners on the same side.**
   You could put a coin on the two corners, or an X if doing on paper. Review strategies.

3. **Ask students to cover the chessboard with 31 dominoes, except this time omitting opposite corners.**
   Students should be able to “almost” do this, but each time come up short. This problem is not doable. The argument (mathematicians call this a proof) is that the opposite corners have the same color. Each domino covers one square of each color. So 31 dominoes cover 31 squares of each color, but the task had 32 squares of one color.

4. **Take-Away or Later Discussion: Can one always cover the board with 31 dominoes if any two opposite-color squares are removed?**
   Answer is yes, but handling all the possibilities might take too long. (There is no slick justification.) Probably best is just to show by multiple examples.