

## UNTUITION

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ABSTRACT. How badly can your mathematical common sense mislead you?

- (1) Two players play a game with three colored dice: the black die has faces marked with 1,1,4,4,5,5; the green die has 2,2,2,3,6,6; the red die has 2,3,3,4,4,5. Player One selects one of the three dice, then Player Two selects one of the remaining two dice. Each player then rolls their die and whoever has the higher number on the top face is declared the winner. Which player, if either, has the advantage in this game?
- (2) Can you place 21 one-by-three tiles on an 8 by 8 chessboard without overlap? If so, what are all of the possibilities for the uncovered square?
- (3) The Golden Gate Bridge is two miles long. Suppose that there are no expansion gaps in it, i.e. the edge of the bridge is one continuous piece of metal. Suppose also that the ends of the bridge are fastened down in such a way that they cannot move. If, on a really hot day, the bridge expands by one inch, estimate how much the bridge will sag in the middle.
- (4) Can you stack the 4 Jengas on top of each other in a staircase fashion near the edge of the table in such a way that the staircase is leading out over the edge of the table and such that no point on the topmost Jenga is directly above the table?
- (5) You have two cubes that are the same size. Is it possible to cut a hole in one of the cubes in such a way that the other cube will fit through the hole?