

# Mathematical Puzzles, Games and Other Diversions

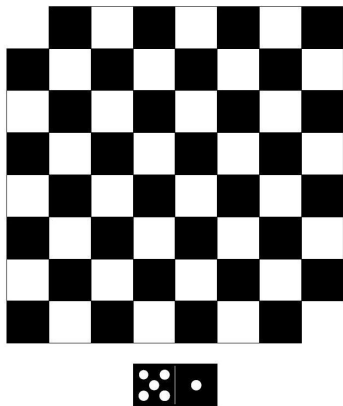
Day 4

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January 28, 2021

## The Mutilated Chessboard

An  $8 \times 8$  chessboard has two diagonally opposite corners removed.  
Can we place 31 dominoes ( $2 \times 1$ ) to cover all the 62 squares?



## The Mutilated Chessboard (cont.)

- ▶ What's the answer for different sized chessboards?
- ▶ What if instead of opposite corners, we remove adjacent ones?
- ▶ Could we do it if we removed ANY two squares of opposite colours (assuming we don't detach a corner)?
- ▶ \* What if we removed TWO squares of each colour, or THREE squares?

## Water and Wine

You begin with 2 jugs, one containing 1L of water, and the other 1L of wine.

- ▶ You take a half-cup (125mL) of water from the first jug and pour it into the jug of wine and mix thoroughly.
- ▶ You then take a half-cup (125mL) of this new wine/water mixture and pour it back into the water jug.

**Question:** When you're done, is there more wine in the water jug OR more water in the wine jug?