

Discrete Round Tiebreakers

October 24th, 2020

1. How many ways are there to place 8 rooks on a 4-by-4 chessboard so that there are exactly two rooks in each row and column?
2. Compute the value of

$$\sum_{\substack{d_1|1008 \\ d_2|1008}} \gcd(d_1, d_2),$$

where the sum is taken over all ordered pairs (d_1, d_2) for which both d_1 and d_2 divide 1008.