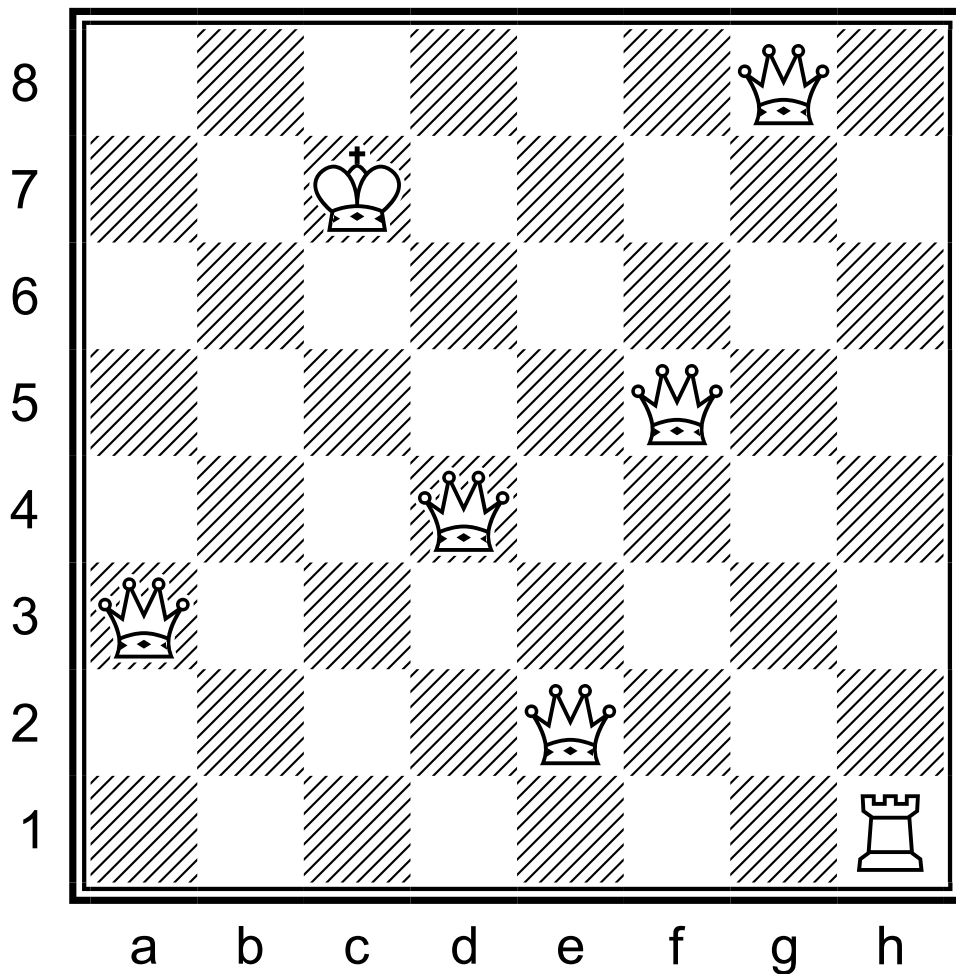


N1AKi) Alain Brobecker & computer

(version by Werner Keym)

Economy records in "Add Unit(s)" problems, 2011/03/13

6Q1/2K5/8/5Q2/3Q4/Q7/4Q3/7R

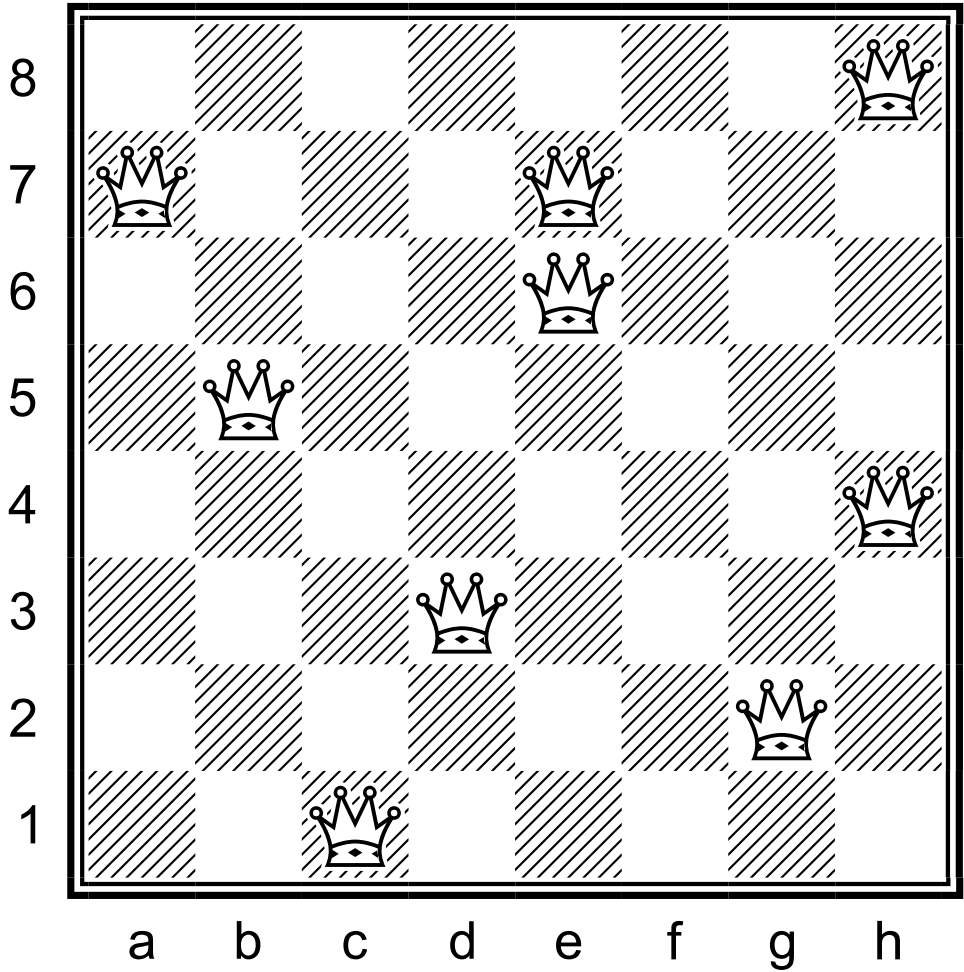


7+0: Add one unit.

N2Ai) Alain Brobecker & Computer

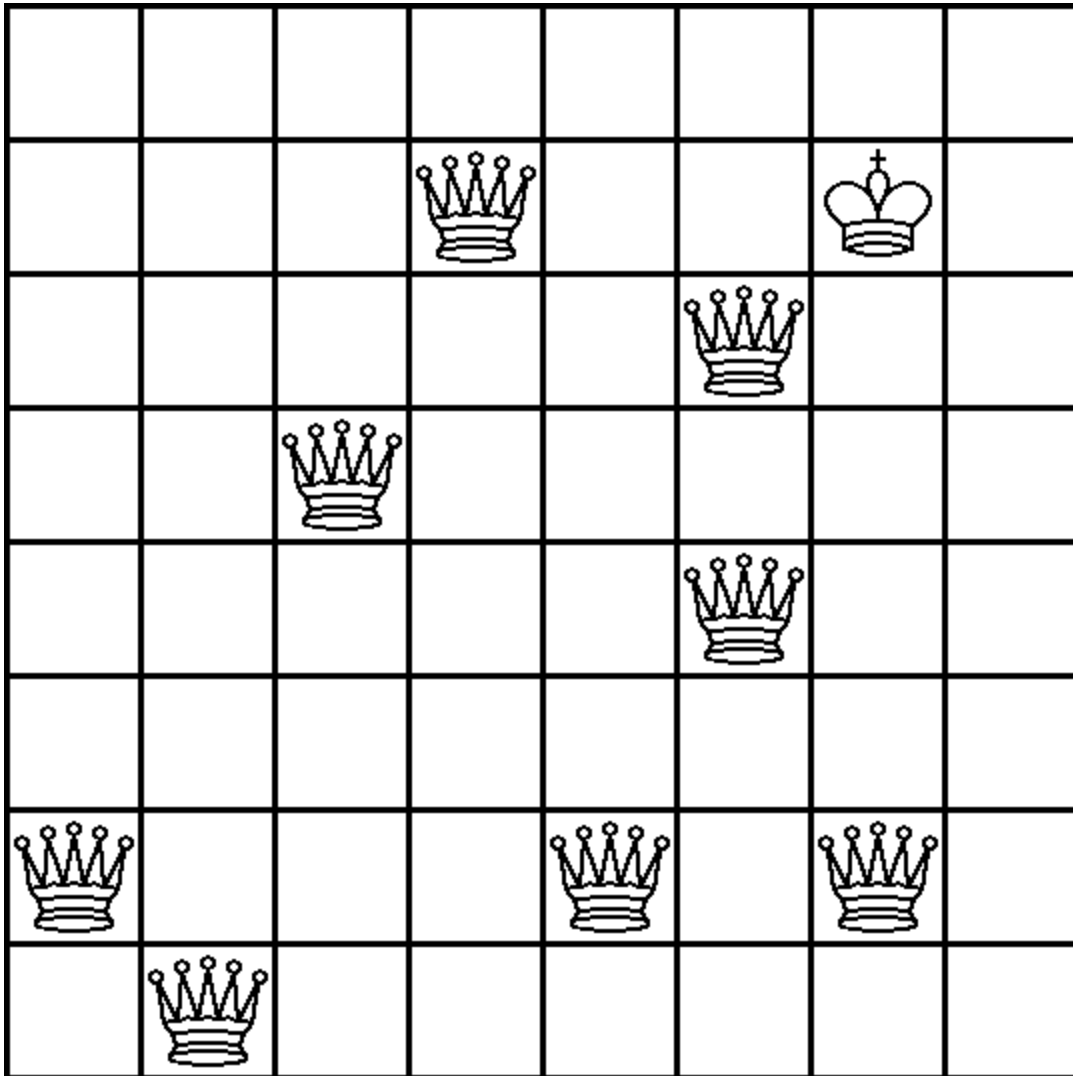
Economy records in "Add Unit(s)" problems, 2011/04/04

7Q/Q3Q3/4Q3/1Q6/7Q/3Q4/6Q1/2Q5



9+0: Add two units.

Alain Brobecker & computer, 2011/03/30
Dedicated to Kevin Begley and Noam Elkies
 Die Schwalbe n°
 8/3Q2K1/5Q2/2Q5/5Q2/8/Q3Q1Q1/1Q6



9+0: Drehe das Brett und ergänze eine Stein.
 9+0: Rotate and add one unit.

Solutions:

N1Kai) 6Q1/2K5/7k/5Q2/3Q4/Q7/4Q3/7R

+BK h 6, other squares attacked twice and no square is unguarded before a promotion.

N2Ai) All squares are controlled at least twice!

Double check by promotion to queen by $n.g7x?h8=Q$ doesn't work, BK would be on $g8$ where there's not enough room for the WK to parry attack by $WQe6$, or on $h7$ which is too much controlled.

So we must put BK on a square controlled only twice and add WK in order to parry one check.

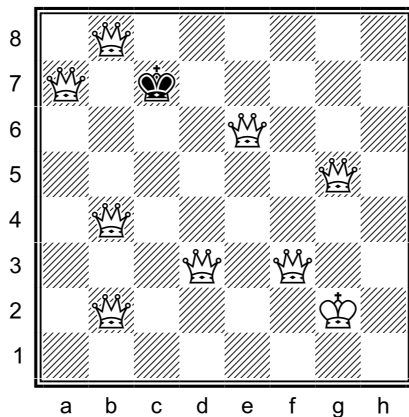
The squares that are controlled only twice are $a5,d1,f3,f4,f7,f8$ and $h2$. But only $f4$ allows enough room for WK to parry the second check, so +WK $d2$ +BK $f4$.

7Q/Q3Q3/4Q3/1Q6/5K1Q/3Q4/3k2Q1/2Q5

One of the many ex-aequo problem: Alain Brobecker & Computer, Original 2011/04/04, 4Q3/2Q5/7Q/Q3Q3/4Q3/1Q6/6Q1/5Q2 has the maximum of 11 squares that are controlled twice, but the BK is on the edge.

Rotate and Add) All squares are controlled by two queens or more. The only possibility is to have a discovered check by promotion. Rotate board by 90° clockwise ($WQa7$ + $WQb8$), add BK on $b7$ and last move was $b7-b8=Q\#$.

1Q6/Q1k5/4Q3/6Q1/1Q6/3Q1Q2/1Q4K1/8



Idea comes from a problem by Noam Elkies (Noam Elkies, Original, 2011/03/12, 5Q2/6Q1/7Q/4K3/Q7/2Q5/1Q6/3Q4, 8+0: Add one unit) and the suggestion of Kevin Begley to modify my program to create a "rotate and add one unit problem".

I created a program that counts the number of times a square is attacked, gave it a board containing the $WQa7+WQb8+WKg2$ matrix, made it test all positions of 6 queens in the $b2-g7$ subboard and asked it to print position if all squares are controlled twice or more, with $c7$ controlled exactly twice and $b6$ controlled more than twice. It gave 5 positions, but three of them allowed two double checks by discovered promotion. The other valid position is 1Q6/Q1k5/5Q2/1Q6/4Q1Q1/8/1Q1Q2K1/8. I also tried to have 5 queens + 1 rook in the $b2-g7$ subboard, but no position was issued.