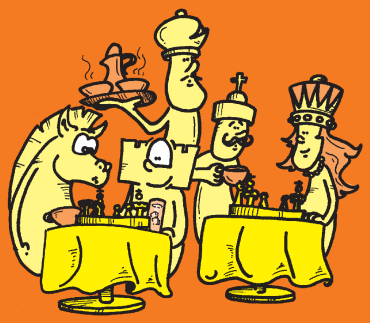


THE PUZZLING SIDE OF CHESS

Jeff Coakley

QUEENFEST: A ROYAL HEYDAY

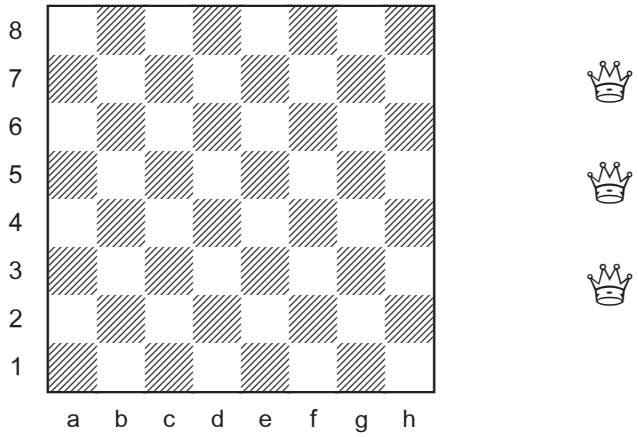
number 59 January 18, 2014

This column presents a variety of puzzles involving multiple queens. The starting point is an empty board. The task is to arrange the queens to achieve certain goals.

The solution pages also include an answer for December's "long perp" problem.

Queenfest 01 (three queens)

One queen can attack twenty-seven squares by herself. Or as few as twenty-one on an open board. What about three queens?



Place three queens on the board so that ...

a. the most squares are attacked.

b. the fewest squares are attacked.

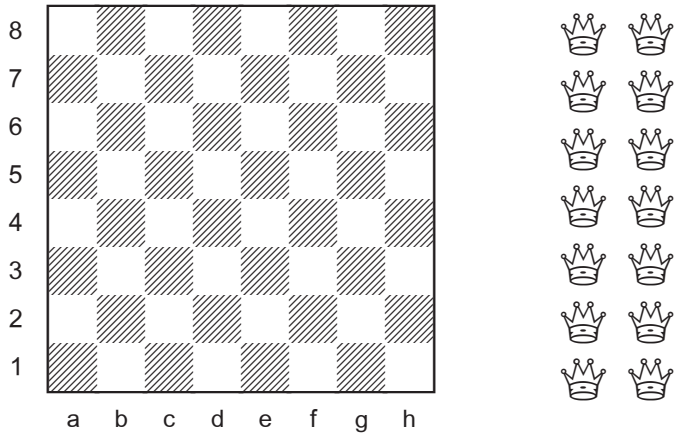
c. all dark squares are attacked.

d. the fewest dark squares are attacked.

It may be too obvious to mention, but a piece does not attack the square it stands on.

Now that you've finished the appetizers, here's something a bit more substantial for the main course.

Queenfest 02 (double defensive loop)

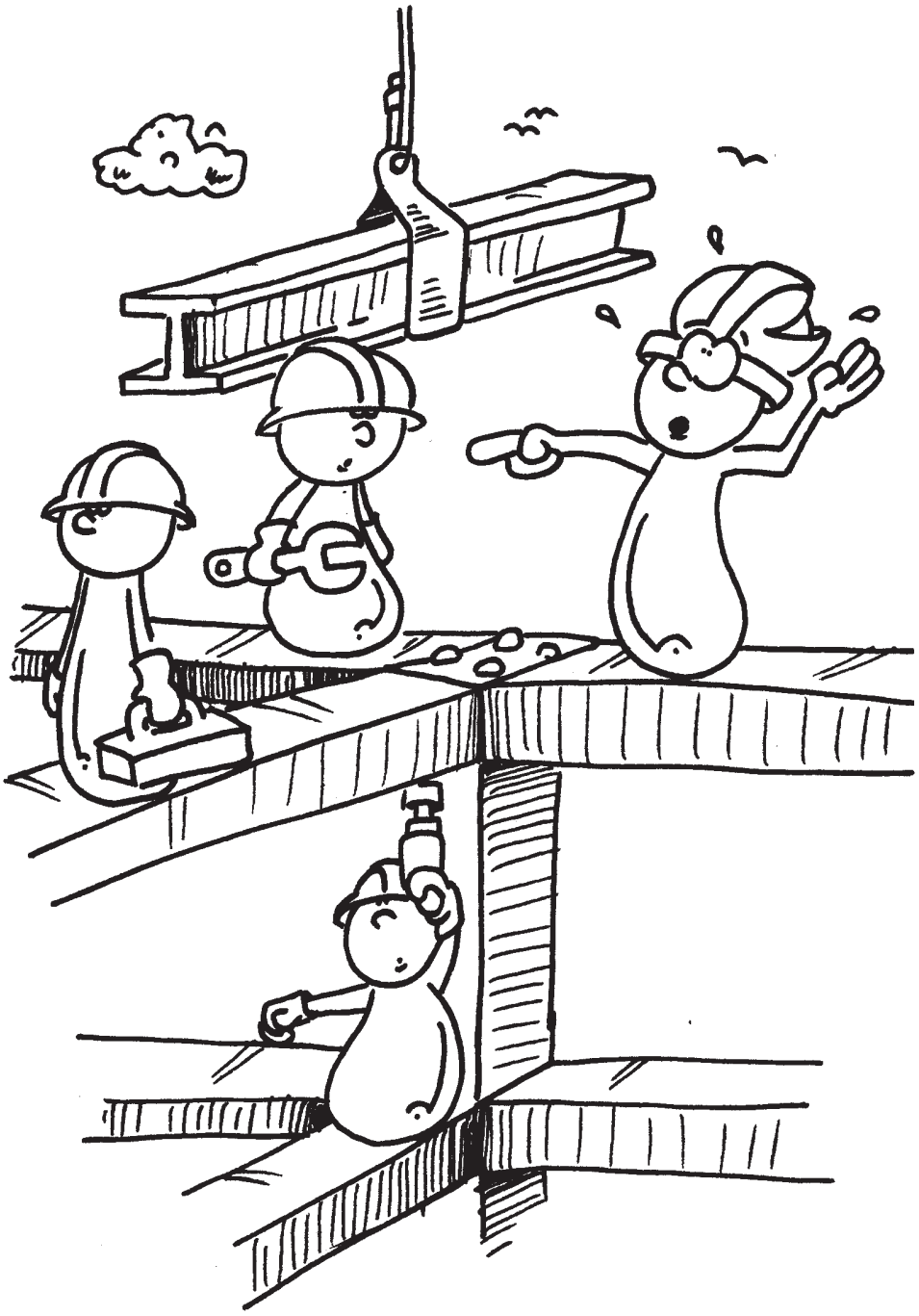


What is the maximum number of queens that can be placed on the board so that each one is defended exactly twice?

The queens will form a continuous loop, with each piece protecting the two others it is linked to in the "chain".

The solution given to this problem is not based on computer calculation. So feel free to set a new mark!

For other *defensive loop* puzzles, see columns 15(1), 18(9), 24(8), 36(1) in the archives.



Time to don your hard hats! We're heading into a heavy construction zone.

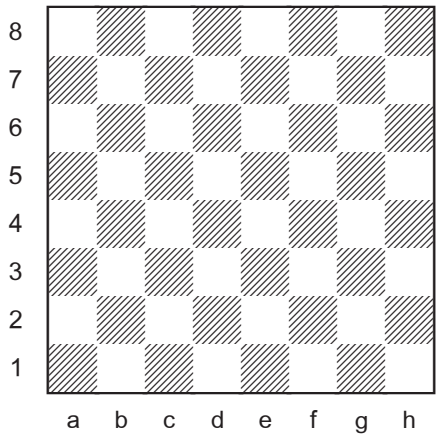
You may want to bring along your lawyer as well. The positions constructed in the next problem must be legal.

A simple preliminary test for legality is to find two previous moves (one white, one black) that would lead to the position. The usual difficulty is that the black king was in an impossible double check on the last turn.

Queenfest 03 (construction task 06)

The goal in this puzzle is to construct positions that maximize the number of mates-in-one. We begin with the basic case of white king and queen versus black king. Each subsequent part of the puzzle adds one more white queen, up to the legal limit of nine.

The records given in this column have not been confirmed as the maxima by a computer program. There may be room for expansion!?



Construct a position with the following pieces so that White has the most mates in 1.

a. ♔ ♕ ♕

b. ♔ ♕ ♕ ♕

c. ♔ ♕ ♕ ♕ ♕

d. ♔ ♕ ♕ ♕ ♕ ♕

e. ♔ ♕ ♕ ♕ ♕ ♕ ♕

f. ♔ ♕ ♕ ♕ ♕ ♕ ♕ ♕

g. ♔ ♕ ♕ ♕ ♕ ♕ ♕ ♕ ♕

h. ♔ ♕ ♕ ♕ ♕ ♕ ♕ ♕ ♕ ♕

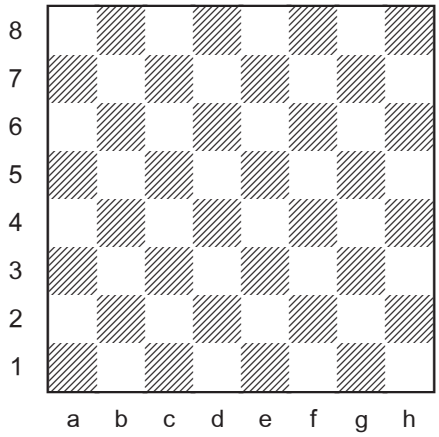
i. ♔ ♕ ♕ ♕ ♕ ♕ ♕ ♕ ♕ ♕ ♕

For more *construction tasks*, see columns 15(5), 24(3-6), 27(3), 37(5).

The Longest Perp

Last year's final column (57) ended with the following construction task.

12c. Fifty Move Perp



Construct a position in which perpetual check leads to a draw by the fifty move rule before there is a threefold repetition.

The side playing for the draw (White) must make their best moves, aiming for the shortest draw. In other words, White must seek a threefold repetition. Black's goal is to avoid a draw as long as possible. An additional stipulation is that Black must have a significant winning advantage if White does not force a draw.

Norwegian IM Geir Sune Tallaksen Østmoe has kindly provided two very interesting solutions to this problem. He has also taken the next logical step in developing the idea of lengthy perpetual checks. Here is the new task.

12d. Longest Perp Without Fifty Move Rule

Assume that the "fifty move rule" does not exist. Construct a position in which White draws by perpetual check and which maximizes the number of moves that must be played before Black has to concede a draw by threefold repetition.

As before, White must play for the shortest draw and Black must avoid a draw as long as possible. Black must also have a winning advantage if White does not force a draw.

A solution to this problem will be given next week.

Stay tuned for *Queenfest II*.

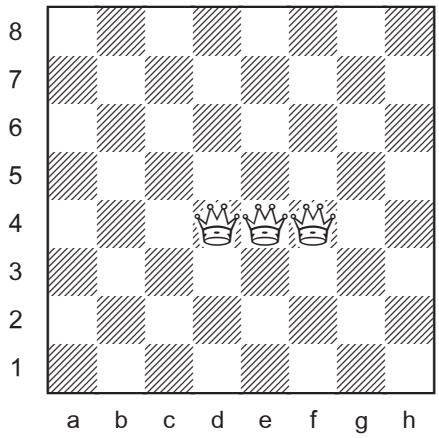
SOLUTIONS

All queenfest puzzles by J. Coakley. Problems 1 and 3 are from *Winning Chess Puzzles For Kids Volume 2* (2010). Problem 2 is a *ChessCafe.com* original (2014). [A new record solution for Queenfest 3b by Adrian Storisteanu (Caisay) was added to this column in January 2020.]

PDF hyperlinks. You can advance to the solution of any puzzle by clicking on the underlined title above the diagram. To return to the puzzle, click on the title above the solution diagram.

Queenfest 01 (three queens)

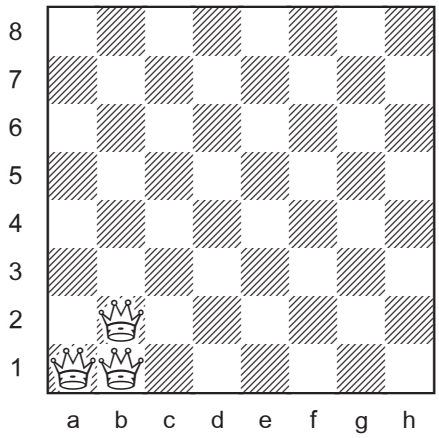
1a



54 squares are attacked.

The position can of course be reflected and/or rotated, giving eight "different" solutions.

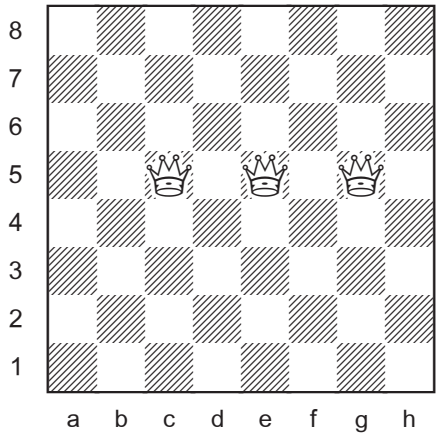
1b



39 squares are attacked.

Also reflectible and rotatable.

1c

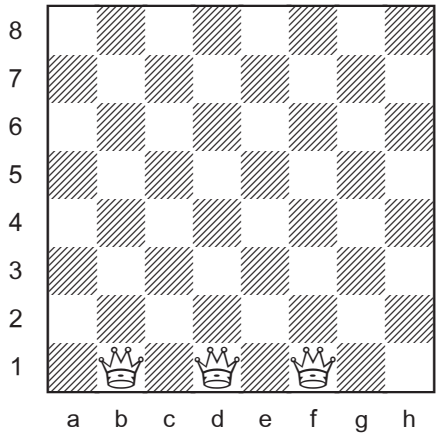


All dark squares are attacked.

Due to the colour of the squares, not all rotations and reflections work in this case. There are four solutions.

Qb4 Qd4 Qf4 (rotated 180°)
Qd2 Qd4 Qd6 (rotated 90° and reflected)
Qe3 Qe5 Qe7 (rotated 270° and reflected)

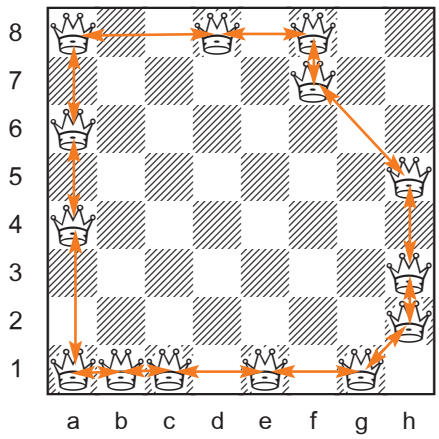
1d



16 dark squares are attacked.

There are many solutions: any position with the queens on light squares and all on the same rank or file.

Queenfest 02 (double defensive loop)



14 queens, each defending exactly two others.

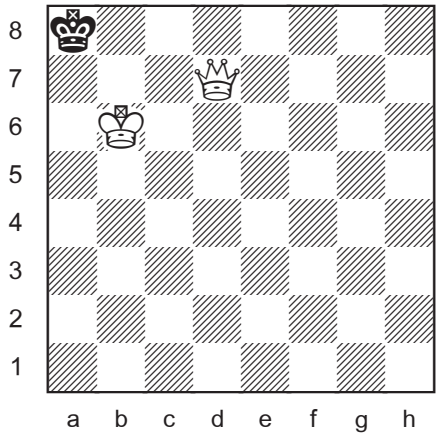
The position can be reflected and/or rotated. I don't know if this solution is unique, but I was unable to find a different pattern. Can you?

Maybe fifteen queens is possible!? I gave up the search.

Queenfest 03 (construction task 06)

3a

one queen



5 mates in one

The following table shows the current records for these construction tasks. I will be surprised if someone doesn't break at least one of them.

King and Queens vs. King

MAXIMUM MATES IN ONE

current records

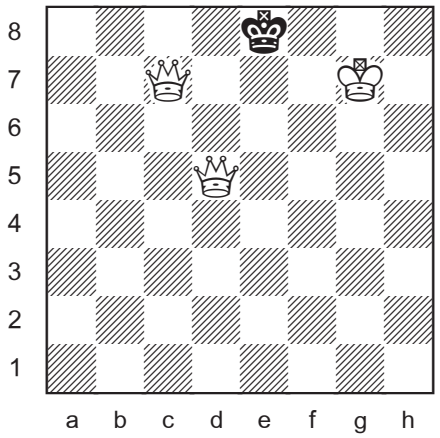
queens	mates
1	5
2	14
3	30
4	41
5	51
6	61
7	70
8	79
9	87

3b

two queens

Adrian Storisteanu 2019

Puzzling Side of Chess

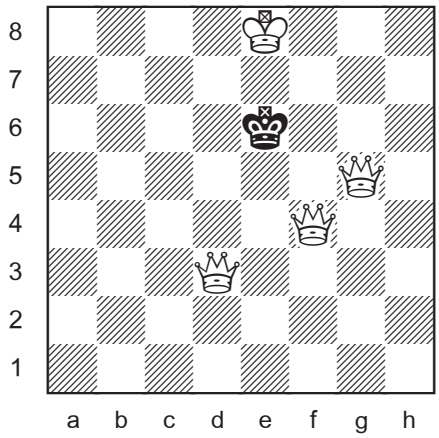


15 mates
(4 + 11)

[January 2020. The solution given in the original column and in *Winning Chess Puzzles For Kids Volume 2* only had 14 mates.]

3c

three queens



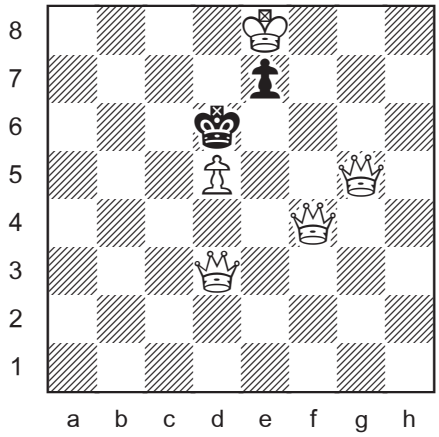
30 mates
(12 + 9 + 9)

The numbers in parentheses are the mates by each queen in alphanumeric order. For this diagram, d3 + f4 + g5.

[January 2020: Caisay 4.3 has determined that this is a unique solution.]

An en passant capture is necessary to prove the legality of this position! A clever construction device that will also be used elsewhere in these puzzles.

The position three moves ago looked like this:



A white queen just moved to f4, giving check. The continuation was 1...e7-e5 2.d5xe5+ e.p. Kd6xe6.

The illegal position Kg6 Qc6 Qd2 Qg4 vs. Ke5 allows 31 mates (10 + 12 + 9).

As you may have noticed already, the maximum mates by a single queen is twelve. To achieve that number, she must be a “camel jump” away from the opposing king.

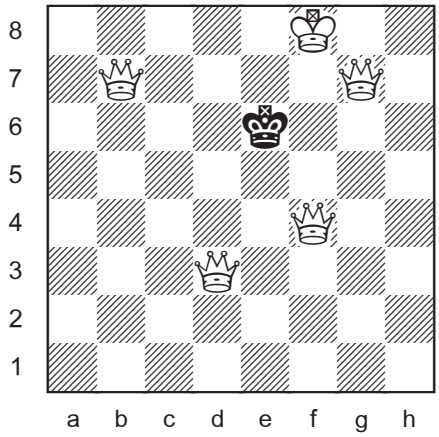
The rarely seen chess camel is a heterodox piece from the leaper class that “jumps one square farther” than a knight. If the knight’s move is described by the coordinates (2,1), then the camel’s move is (3,1).

The camel combines the weaknesses of a knight and bishop. It has limited range and is restricted to squares of one colour.

Strangely enough, the concept of a “camel jump” is also useful in the basic endgame Q vs. R. With the defending king on the side of the board, the queen is often best placed a camel jump away.

3d

four queens



41 mates
(10 + 12 + 10 + 9)

The legality of the position is demonstrated by the same last three moves as in 3c: 1...e7-e5 2.d5xe5+ e.p. Kd6xe6.

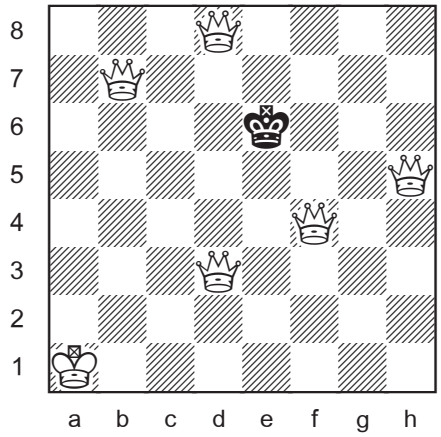
Another solution with 41 mates is Kf8 Qb5 Qc7 Qd4 Qf3 vs. Ke6 (11+9+10+11) with the last moves 1...e7-e5 2.f5xe6+ e.p. Kf6xe6.

[January 2020. A position found by Caisay 4.3 with 41 mates and without the necessity of an e.p. capture is Kc2 Qc6 Qc7 Qe1 Qg5 vs. Kd4. The last moves could be 1.Qb6xc6+ Kc4-d4.]

44 mates are possible in this illegal position:
Kf7 Qb4 Qd3 Qd8 Qf2 vs. Ke5 (12+10+11+11).

3e

five queens



51 mates
(10 + 12 + 9 + 10 + 10)

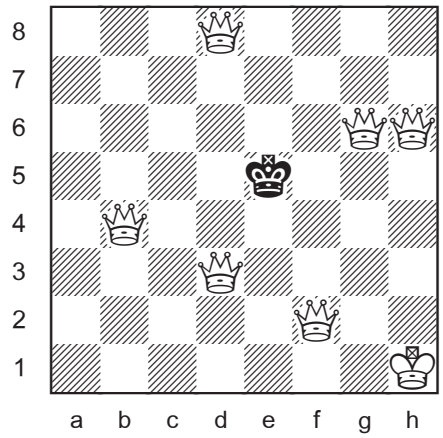
The white king is a bystander. That will be his role in the remaining parts of the puzzle.

Last moves: 1.d7-d8=Q+ Ke7-e6

Illegal position: Kf7 Qb4 Qd3 Qd8 Qf2 Qg4 vs. Ke5
54 mates (12+10+11+11+10)

3f

six queens



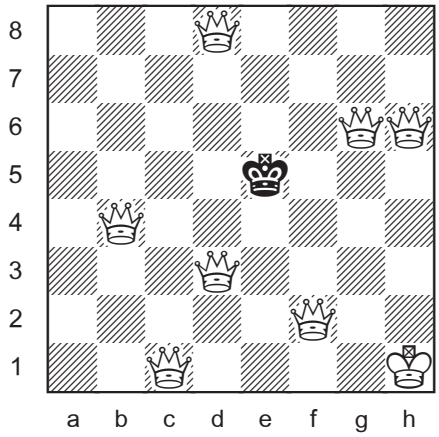
61 mates
(12 + 10 + 11 + 11 + 10 + 7)

Last moves: 1.Qxg6+ Ke6-e5

Illegal position: Kh1 Qb4 Qd3 Qd8 Qf2 Qf7 Qg4 vs. Ke5
64 mates (12+10+11+11+10+10)

3g

seven queens



70 mates

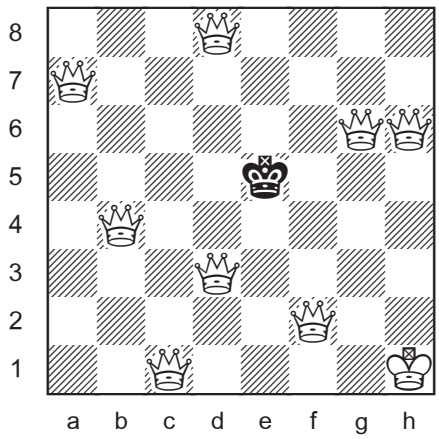
(12 + 9 + 10 + 11 +11 + 10 + 7)

Last moves: 1.Qxg6+ Ke6-e5

Illegal position:
Kh1 Qb6 Qc4 Qd2 Qd7 Qf3 Qg6 Qh4 vs. Ke5
74 mates (11+10+12+10+10+10+11)

3h

eight queens



79 mates

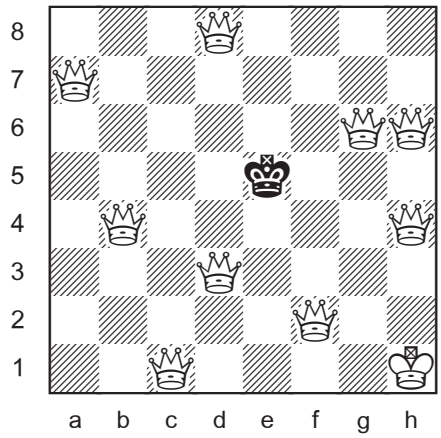
(9 + 12 + 9 + 10 + 11 + 11 + 10 + 7)

Last moves: 1.Qxg6+ Ke6-e5

Illegal position:
Kh1 Qb6 Qc4 Qd2 Qd7 Qf3 Qf8 Qg6 Qh4 vs. Ke5
84 mates (11+10+12+10+10+10+10+11)

3i

nine queens



87 mates
(9 + 12 + 9 + 10 + 11 + 11 + 10 + 9 + 6)

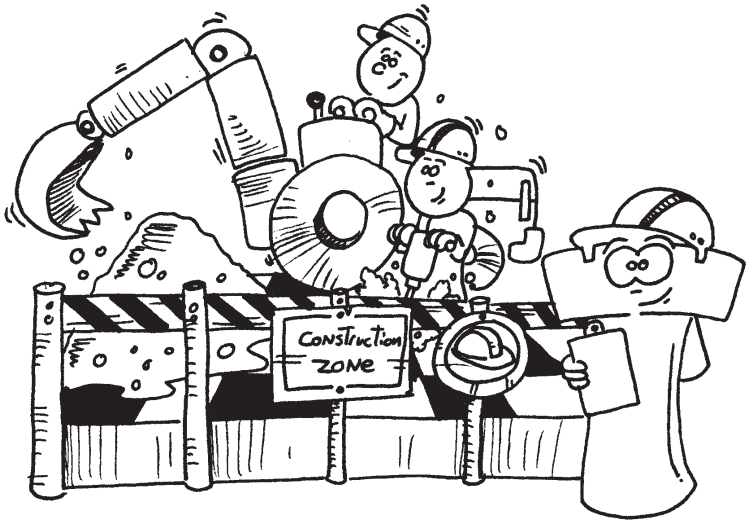
Last moves: 1.Qxg6+ Ke6-e5

Illegal position: Kh1 Qb6 Qc4 Qd2 Qd7 Qf3 Qf8 Qg1 Qg6 Qh4 vs. Ke5
92 mates (11+10+12+10+10+10+8+10+11)

Bonus puzzle 3j As many queens as you like!

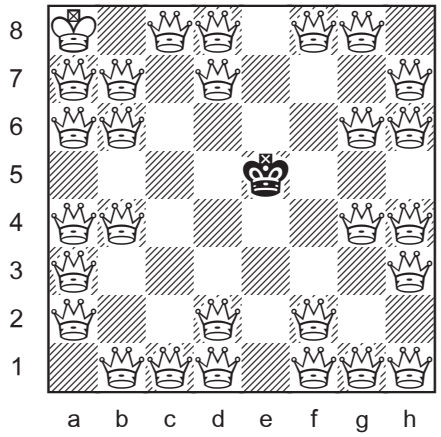
Construct a position with a white king and an unlimited number of queens versus a lone black king so that White has the most mates in one.

There is no legal restriction with regard to the number of white queens or the necessity of Black having a legal move on the previous turn. In the interest of economy, use the fewest queens possible to achieve the maximum number of mates. The solution is given below.



3j twenty-seven queens

J. Coakley 2014 *version of* Nenad Petrovic 1947



141 mates

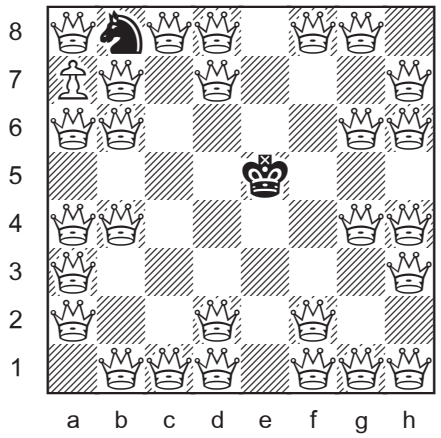
(4+4+2+3+1+4+10+9+4+4+4+2+10+10
+5+3+10+8+2+9+9+4+3+4+5+5+3)

Additional queens cannot increase the number of mates. For example, if another queen is placed on c2, she would have 6 mates, but she would obstruct 6 mates previously playable by the queens on b1(2), c1(3), and d2(1).

Here is the original problem by Croatian composer Nenad Petrovic (1907-1989), the great master of record-setting construction tasks. The only differences are on a7, a8, b8.

Nenad Petrovic 1947

Sahovski Vjesnik



This position holds the record for most mates in one (143) in an illegal position. That explains why there is no white king!

There are three new mates by Qa8xb8#, a7xb8=Q#, and a7xb8=B#. One old mate by Qa7-b8# has been eliminated.

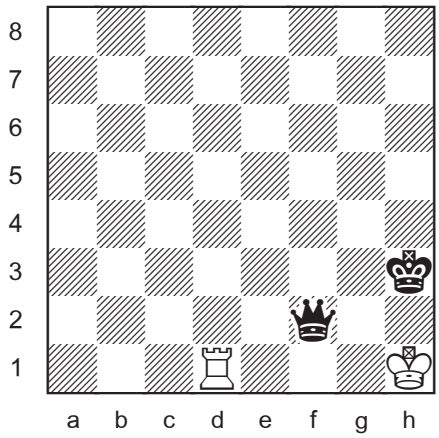
Longest Perp

12c-1

Geir Sune Tallaksen Østmoe 2014

ChessCafe.com

Construct a position in which perpetual check leads to a draw by the fifty move rule before there is a threefold repetition.



White to play and draw

Solution:

1.Rd3+ Kh4 2.Rh3+ Kg4 3.Rg3+ Kf4

(*3...Kh4? 4.Rg4+! leads quickly to threefold repetition.*)

4.Rg4+ Ke3

(*4...Kf3? 5.Rf4+! draws immediately. 5...Kxf4 is stalemate and 5...Ke2 6.Rxf2+ Kxf2 reduces to two kings.*)

5.Rg3+ Kf4 6.Rg4+ Ke3 7.Rg3+ Kd4 8.Rg4+ Kd3 9.Rg3+ Kc4
10.Rg4+ Kc3 11.Rg3+ Kb4 12.Rg4+ Kb3 13.Rg3+ Ka4 14.Rg4+ Ka3
15.Rg3+ Ka4 16.Rg4+ Ka3 17.Rg3+ Kb4 18.Rg4+ Kb3 19.Rg3+ Kc4
20.Rg4+ Kc3 21.Rg3+ Kd4 22.Rg4+ Kd3 23.Rg3+ Ke4 24.Rg4+ Kf5
25.Rg5+ Ke4 26.Rg4+ Kf5 27.Rg5+ Kf6 28.Rg6+ Ke5 29.Rg5+ Kf6
30.Rg6+ Ke5 31.Rg5+ Kd6 32.Rg6+ Kd5 33.Rg5+ Kc6 34.Rg6+ Kc5
35.Rg5+ Kb6 36.Rg6+ Kb5 37.Rg5+ Ka6 38.Rg6+ Ka5 39.Rg5+ Ka6
40.Rg6+ Ka5 41.Rg5+ Kb6 42.Rg6+ Kb5 43.Rg5+ Kc6 44.Rg6+ Kc5
45.Rg5+ Kd6 46.Rg6+ Kd5 47.Rg5+ Ke6 48.Rg6+ Kf7 49.Rg7+ Ke6
50.Rg6+ Kf7 ½-½

At this point, White could claim a draw by the *fifty move* rule. It would actually take 22 more moves before a threefold repetition could be forced.

51.Rg7+ Kf8 52.Rg8+ Ke7 53.Rg7+ Kf8 54.Rg8+ Ke7 55.Rg7+ Kd8 56.Rg8+ Kd7 57.Rg7+ Kc8 58.Rg8+ Kc7 59.Rg7+ Kb8 60.Rg8+ Kb7 61.Rg7+ Ka8 62.Rg8+ Ka7 63.Rg7+ Ka8 64.Rg8+ Ka7 65.Rg7+ Kb8 66.Rg8+ Kb7 67.Rg7+ Kc8 68.Rg8+ Kc7 69.Rg7+ Kd8 70.Rg8+ Kd7 71.Rg7+ Ke8 72.Rg8+ Kf7 73.Rg7+

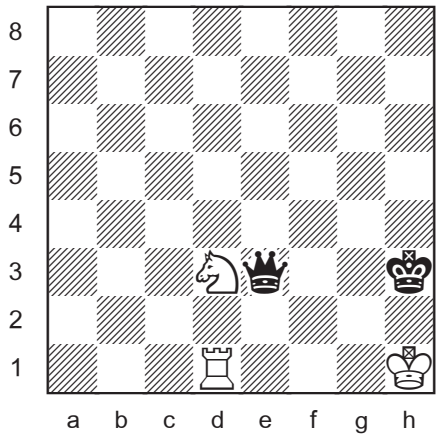
The first threefold repetition.

The next diagram shows a more “study-like” version of the same problem.

12c-1b

Geir Sune Tallaksen Østmoe 2014

ChessCafe.com



White to play and draw

Solution:

1.Nf2+!

1...Qxf2 transposes to the previous position.

1...Kg3 2.Rd3 pins the queen.

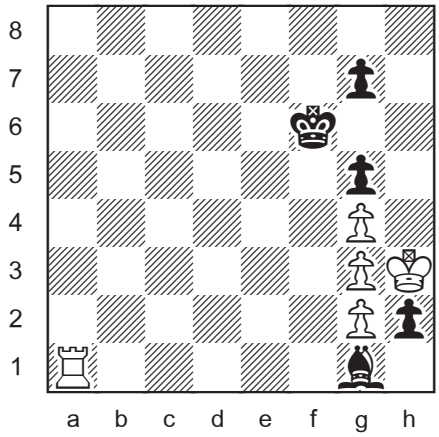
1...Kh4 2.Kg2 is a straightforward tablebase draw.

In the second solution for this construction task, given below, the *fifty move rule* is surpassed by 65 moves (without a capture or pawn move) before the third repetition occurs. Can anyone push the limit further?

12c-2

Geir Sune Tallaksen Østmoe 2014

ChessCafe.com



White to play and draw

Solution: 115 moves

Except where stated otherwise, the annotations are by the composer.

White holds a draw by checking on either the 1st or 8th rank. Black can force White to switch from the 1st to the 8th rank by dancing around the g7 pawn. On other ranks, the bishop will eventually capture the rook, after which White is not stalemated and Black wins.

1.Rf1+ Ke7 2.Re1+ Kd7 3.Rd1+ Kc7 4.Rc1+ Kb7 5.Rb1+ Ka7 6.Ra1+ Kb6 7.Rb1+ Kc6 8.Rc1+ Kd6 9.Rd1+ Ke6 10.Re1+ Kd5 11.Rd1+ Kc5 12.Rc1+ Kb5 13.Rb1+ Ka5 14.Ra1+ Kb4 15.Rb1+ Kc4 16.Rc1+ Kd4 17.Rd1+ Ke4 18.Re1+ Kd3 19.Rd1+ Kc3 20.Rc1+ Kb3 21.Rb1+ Ka3 22.Ra1+ Kb2 23.Rb1+ Kc2 24.Rc1+ Kd2 25.Rd1+ Ke2 26.Re1+ Kd2 27.Rd1+ Kc2 28.Rc1+ Kb2 29.Rb1+ Ka2 30.Ra1+ Kb3 31.Rb1+ Kc3 32.Rc1+ Kd3 33.Rd1+ Ke3 34.Re1+ Kd4 35.Rd1+ Kc4 36.Rc1+ Kb4 37.Rb1+ Ka4 38.Ra1+ Kb5 39.Rb1+ Kc5 40.Rc1+ Kd5 41.Rd1+ Ke5 42.Re1+ Kd6 43.Rd1+ Kc6 44.Rc1+ Kb6 45.Rb1+ Ka6 46.Ra1+ Kb7 47.Rb1+ Kc7 48.Rc1+ Kd7 49.Rd1+ Ke7 50.Re1+ Kf6

(*50...Kd8? 51.Re8+ Kd7 52.Rd8+ and White reaches the 8th rank quicker than in the main line.*)

51.Re6+

(*51.Rf1+ Ke6 52.Re1+ Kf7 and now White has to play 53.Re7+, reaching the game position with one more move played, as 53.Rf1+? Kg8! 54.Rf8+ Kh7 55.Rh8+ Kg6 56.Rh6+ Kf7 57.Rf6+ Ke7 wins for Black.*)

51...Kf7 52.Re7+ Kf6

[*Coakley: After 52...Kg8, 53.Rxg7+ is forced since 53.Re8+? Kh7 54.Rh8+ Kg6 55.Rh6+ Kf7 56.Rf6+ Ke7 wins for Black. Besides resetting the "fifty move counter", this capture on g7 would also reduce the number of moves required to reach a threefold repetition. The game would continue 53...Kf8 54.Rf7+ Ke8 55.Rf8+ Ke7 56.Re8+ reaching the same position as move 63 in the main line but without a pawn on g7.*]

53.Re6+ Kf7 54.Re7+ Kg6 55.Re6+

(*55.Rxg7+? Kf6 wins for Black.*)

55...Kh7 56.Rh6+ Kg8 57.Rh8+ Kf7 58.Rf8+ Kg6 59.Rf6+ Kh7 60.Rh6+ Kg8 61.Rh8+ Kf7 62.Rf8+ Ke7 63.Re8+ Kd7 64.Rd8+ Kc7 65.Rc8+ Kb7 66.Rb8+ Ka7 67.Ra8+ Kb7 68.Rb8+ Kc7 69.Rc8+ Kd7 70.Rd8+ Ke7 71.Re8+ Kd6 72.Rd8+ Kc6 73.Rc8+ Kb6 74.Rb8+ Ka6 75.Ra8+ Kb6 76.Rb8+ Kc6 77.Rc8+ Kd6 78.Rd8+ Ke6 79.Re8+ Kd5 80.Rd8+ Kc5 81.Rc8+ Kb5 82.Rb8+ Ka5 83.Ra8+ Kb5 84.Rb8+ Kc5 85.Rc8+ Kd5 86.Rd8+ Ke5 87.Re8+ Kd4 88.Rd8+ Kc4 89.Rc8+ Kb4 90.Rb8+ Ka4 91.Ra8+ Kb4 92.Rb8+ Kc4 93.Rc8+ Kd4 94.Rd8+ Ke4 95.Re8+ Kd3 96.Rd8+ Kc3 97.Rc8+ Kb3 98.Rb8+ Ka3 99.Ra8+ Kb3 100.Rb8+ Kc3 101.Rc8+ Kd3 102.Rd8+ Ke3 103.Re8+ Kd2 104.Rd8+ Kc2 105.Rc8+ Kb2 106.Rb8+ Ka2 107.Ra8+ Kb2 108.Rb8+ Kc2 109.Rc8+ Kd2 110.Rd8+ Ke2 111.Re8+ Kf2

(*111...Kd1 112.Re1+ and Black has already reached both c2 and d2 twice.*)

112.Re2+

(*112.Rf8+ takes one move longer.*)

112...Kf1 113.Re1+ Kf2 114.Re2+ Kf1 115.Re1+ Kf2 ½-½

Now, before playing 116.Re2+, White can claim a draw by threefold repetition.

Okay, construction experts, who will try their hand at task 12d? Can you set the record for the *longest perpetual check without the fifty move rule*?

Our current record position will be given in the January 25 column.

Until next time!