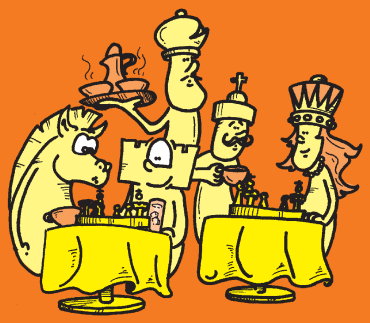


THE PUZZLING SIDE OF CHESS

Jeff Coakley

LOOPOLOGY VIII

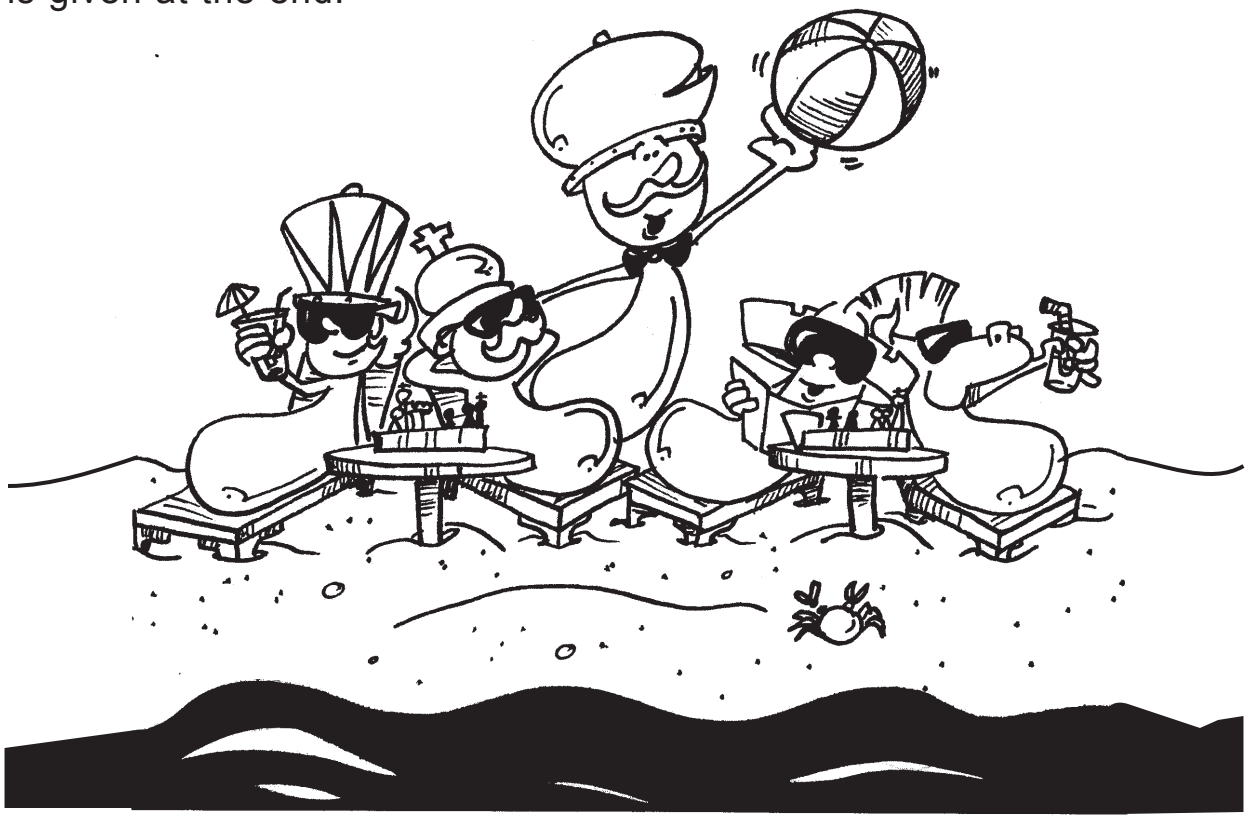
Multi-Piece Single Loops, Part 1

number 168 September 15, 2018

Another chapter in the nearly complete *Looper's Handbook*. The topic is pawnless single loops with four or five types of pieces.

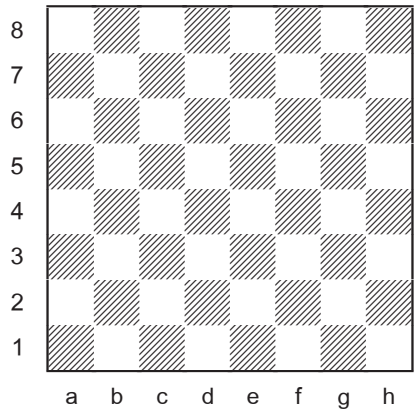
The knightless quartet KQRB cannot form a single loop because any piece guarding a queen would be reciprocally defended. The five loopable groups are QRBN, KQRN, KQBN, KRBN, and KQRBN.

Once again, thanks to François Labelle for providing optimal solutions. An updated table showing the maximum piece count for single loops is given at the end.



Last Days of Summer

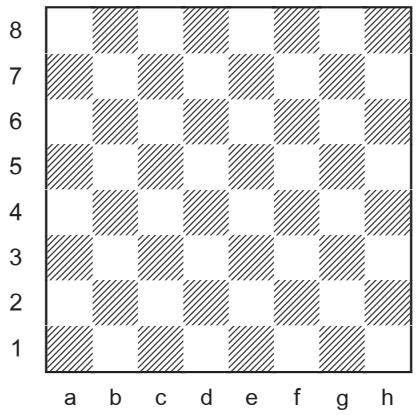
Single QRBN Loop



Place three queens, three rooks, three bishops, and three knights so that every piece is defended exactly once and every piece defends exactly one other. The chain of defence must form a continuous loop.

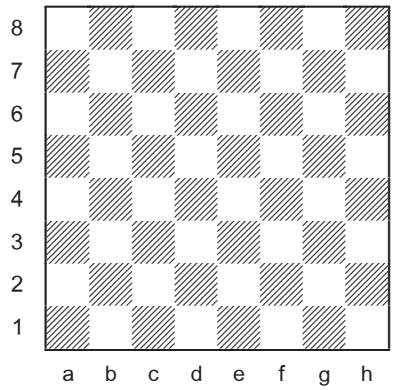
For all problems, the stipulated number of pieces is the maximum possible in a single loop with an equal number of each piece. A repeating sequence of pieces is not necessary.

Single KQRN Loop



Place three kings, three queens, three rooks, and three knights so that every piece is defended exactly once and every piece defends exactly one other. The chain of defence must form a continuous loop.

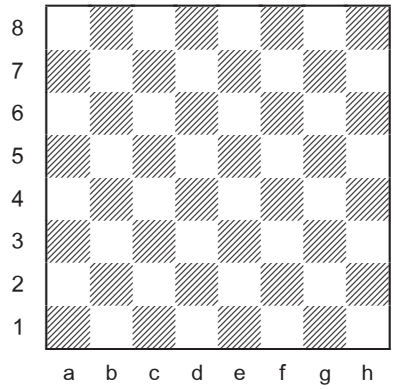
Single KQBN Loop



Place three kings, three queens, three bishops, and three knights so that every piece is defended exactly once and every piece defends exactly one other. The chain of defence must form a continuous loop.

Next up is the hardest of the four-piece groups, KRBN, with a maximum of five pieces each. It won't be easy to match that record. How close can you get?

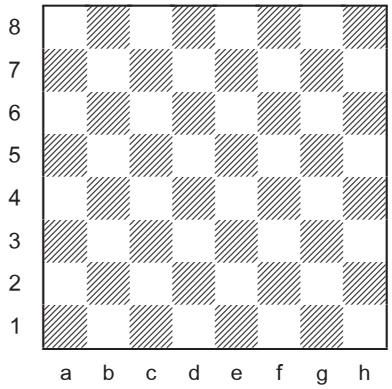
Single KRBN Loop



Place five kings, five rooks, five bishops, and five knights so that every piece is defended exactly once and every piece defends exactly one other. The chain of defence must form a continuous loop.

Our final task is the logically appealing “group of five”. Three officers of each type. For a warm-up exercise, make a loop with two of each piece.

Single KQRBN Loop



Place 3 kings, 3 queens, 3 rooks, 3 bishops, and 3 knights so that every piece is defended exactly once and every piece defends exactly one other. The chain of defence must form a continuous loop.

Otherworldly Looposaurus

SOLUTIONS

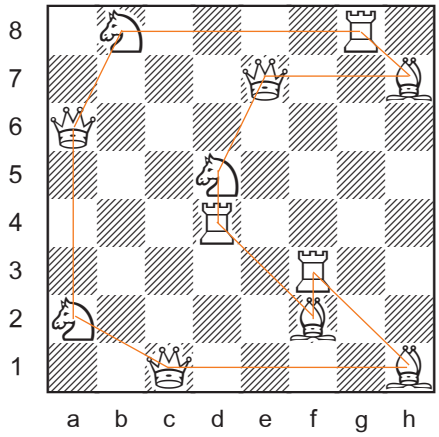
PDF hyperlinks. You can advance to the solution of any puzzle by clicking on the underlined title above the diagram. To return to the puzzle, click on the title above the solution diagram.

Archives. Past columns and a detailed index of problem-types and composers are available in the *Puzzling Side of Chess* archives.

Single QRBN Loop

François Labelle 2018

Puzzling Side of Chess



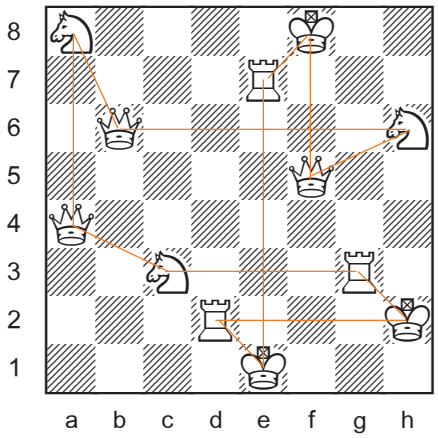
12 pieces, 3 each

There are 4247 solutions, none symmetrical. This total does not include positions with the same pattern that are reflections or rotations of a previously counted solution, a convention used for all problems.

Single KQRN Loop

François Labelle 2018

Puzzling Side of Chess



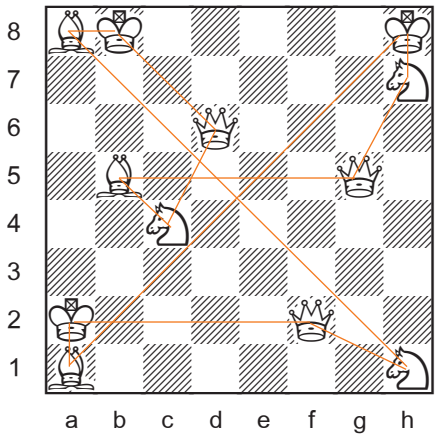
12 pieces, 3 each

198 solutions, none symmetrical.

Single KQBN Loop

François Labelle 2018

Puzzling Side of Chess



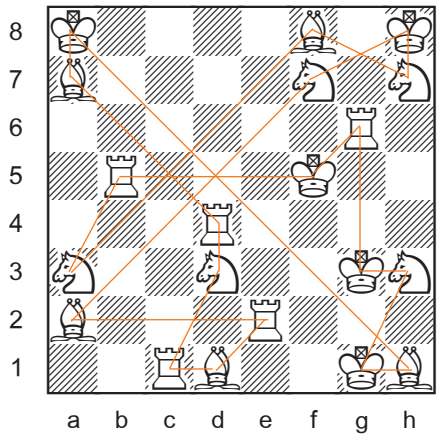
12 pieces, 3 each

4303 solutions, none symmetrical.

Single KRBN Loop

François Labelle 2018

Puzzling Side of Chess



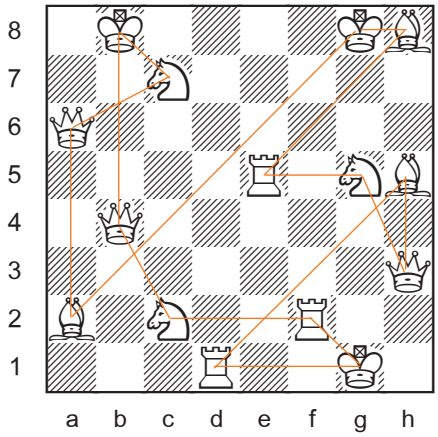
20 pieces, 5 each

23 solutions, none symmetrical.

Single KQRBN Loop

François Labelle 2018

Puzzling Side of Chess



15 pieces, 3 each

108 solutions, none symmetrical.

Maximum Pieces in Single Loop

Equal Number of Each Piece

BN	20	KBN	21	BNP	24	KRBN	20
KB	20	RBN	18	KNP	21	QRBN	12
KN	20	KRB	15	RNP	18	KQRN	12
RN	16	KRN	15	QNP	15	KQBN	12
RB	14	KQN	12	RBP	15		
QN	12	QBN	12	KRP	12	KQRBN	15
KR	12	QRN	9				
RP	10						
NP	8						

Belt Loops, Pocket Loops

Until next time!