

Rules for Three-way Chess

V. 2.1.2; Aug 6, 2006

[Questions or comments to: Richard A. Harshman <harshman@uwo.ca>;<http://publish.uwo.ca/~harshman>]

1 **I. The Board**

2 *Cells.* The board is composed of hexagonal cells. The six sides of each cell are called its “faces”
3 and the six corners are its “points”. Each cell has one of three colors (typically, black, white, and
4 gray or red); adjacent cells always differ in color.

5 *Shape of the board.* The board as a whole has six sides, which are alternately 8 cells wide and 7
6 cells wide (see figure 1). The 8-cell sides are the home rows of the three players, while the 7 cell
7 sides separate the three players. (There is also an alternative version with 9 rather than 7 cells
8 separating the home rows.

9

10 **II. The pieces**

11 The pieces are the same as in standard chess, except that there is an extra bishop and there are 8
12 extra pawns. (A third bishop is needed because each bishop is confined to move on one
13 particular color. Two rows of pawns are needed in order to defend against attack from two
14 directions rather than one.)

15

16 **III. Initial position of the pieces**

17 Each player has three rows of pieces, situated in the first, second, and third rank (see fig.1).

18 *First rank.* The player’s first rank (home row) is 8 cells wide. The pieces are positioned in the
19 same way as in standard chess, except that the knight and bishop’s positions are reversed. The
20 positions are: R, B, Kn, Q, K, Kn, B, R.¹

21 *Second rank.* The player’s second rank (row) is 9 cells wide, and consists of 4 pawns, then the
22 third bishop, and then four more pawns. The third bishop sits on the player’s third color, in the
23 cell in front of the Queen and King.

24 *Third rank.* The player’s third rank (row) contains 10 cells and consists of an empty cell, then 8
25 pawns, and then another empty cell.

26 *Relation between players’ pieces.* Except for the King and Queen, the three players’ pieces “face
27 off” as in standard chess: every piece on a player’s *right* sits directly across from the
28 corresponding piece on each opponents’ *left*, and vice versa. “Directly across” means that the
29 two pieces are in the same file (column of cells). On this hexagonal board, however, there are
30 two files (columns) emerging from each position; one slants to the left and one slants to the right.
31 Each piece faces the left opponent via a left-slanting file and the right opponent via a right-
32 slanting file.

¹ (The knight-bishop swap is done so the bishops sit on different colors.)

33 The Queen and King are exceptions to this rule. The Queen always sits on her own color,
34 which is always on the King's left. Consequently, each Queen is directly across from her two
35 opponents' Kings, and each King is directly across from his two opponents' Queens.
36

37 **IV. Movement of Pieces**

38 Except for the knight, all pieces move in a straight line through unoccupied cells. However, a
39 piece can move onto a cell occupied by an opponent's piece if it is capturing that piece.
40

41 **Capture**

42 A player's piece captures an opponents' piece in the same way as in standard chess: by moving
43 onto its cell. The captured piece is then removed from the board. A player is not required to
44 capture an opponent's king unless it is necessary to prevent capture of his/her king.

45 *Check.* A player must notify the other players when moving into a position from which it would
46 be possible to capture one or both opponents' kings on her/his next move. For example, if a
47 move by Gray makes it possible for Gray to capture White's king if neither White nor Black
48 prevents it, then Gray must declare 'White is in check' or the equivalent.
49

50 **Rook**

51 The rook moves along a rank (row) or file (column) of cells. It passes from one cell to another
52 *across faces* (i.e., at right angles to the flat boundaries that separate two different colors). There
53 are six directions in which a Rook can move.
54

55 **Bishop**

56 The bishop moves diagonally. It passes from one cell to another *across points and along edges*
57 (i.e., exiting from the point of one cell, moving along the line between two adjoining cells, and
58 entering into a point of a neighboring cell.) It always moves on cells of the same color. There are
59 six directions in which a bishop can move.

60 The bishop located in a player's second row (the "third bishop") is the only piece other than a
61 pawn and a knight that can be moved on a player's first move.
62

63 **Queen**

64 The Queen can move, and capture, as either a rook or a bishop. There are 12 directions in which
65 a Queen can move.
66

67 **King**

68 The King can move as a queen does, but only one cell at a time. Thus, it moves either from a
69 point of its cell to the neighboring cell of the same color, or across a face of its cell to an adjacent
70 cell of a different color. Like the queen, there are 12 directions in which a King can move.

71 Knight

72 A knight moves to a closest location that is on a different rank, file and diagonal. The 12
73 permissible locations can be identified as the end points of imaginary paths which extend across
74 2 *faces* in one direction and one *face* in another (outward pointing) direction. It moves directly to
75 the new location, “jumping over” any pieces that happen to be in its imaginary path.
76

77 Pawn

78 A pawn always moves *forward* (i.e. further from its home row). The allowed path depends on
79 whether or not it is capturing a piece.
80

81 (a) **When not capturing**, a pawn moves forward *across a face* of its current cell into an
82 unoccupied adjoining cell that is one rank (row) further from its home row. (Thus, it moves as a
83 rook does but only forward and only by one step at a time. Except at the edges of the board, there
84 are two cells that a pawn can move into, provided the cells are unoccupied.)

85 -- Special case: On a pawn’s *first* move, it has the option of moving across two faces rather
86 than one, but only in a straight line. (Note: this makes it vulnerable to *en passant* capture by
87 either opponent, but only until its owner’s next move.)
88

89 (b) **When capturing**, a pawn moves forward *across a point* of its current cell and along an edge
90 separating two adjoining cells to enter an occupied cell that has the same color as the one it left
91 and that is further from its home row. (Thus, it moves as a bishop does, but only forward and
92 only by one step at a time. Except on the edges of the board, there are three cells which, if
93 occupied by an opponent’s piece, could be attacked by a pawn.)

94 -- Special case: Pawns can capture *en passant*, just as in standard chess. Suppose, for example,
95 player A’s pawn has not been previously moved, and so A takes the option of moving it two
96 places. An opponent’s pawn can capture A’s pawn *en passant* if the first of the two places
97 through which A’s pawn passed is a cell where it would have been vulnerable to capture by the
98 opponent’s pawn. Once A has moved again, this capture is not longer possible. This applies
99 whether A is moving a pawn from his/her second rank to his/her fourth rank, or, instead, from
100 his/her third rank to his/her fifth rank.²
101

102 Castling

103 A player can “castle”, moving the king and rook at one time. Castling is done in the same
104 manner and under the same restrictions as in standard chess.
105

² (*En Passant* capture can be visualized as follows: until A has made his next move, an opponent may, in effect, move A’s pawn back one place and capture it.) In the three-player phase of play, B might prevent the *en passant* capture of A’s pawn by C in any of three ways: (i) if B captures A’s pawn before C can; (ii) if B captures C’s pawn before C’s pawn can capture A’s pawn; or (iii) if B blocks the capture by moving its own piece into the vulnerable position through which A’s pawn passed. In case (iii), of course, B’s piece would become subject to possible capture by C’s pawn.

106 **King Protection Obligation**

107 It is illegal for a player to move into check, i.e. to make a move of any piece that places his
108 previously safe king at risk of immediate capture by either opponent.
109

110 ***V. Promotion***

111 A pawn may be promoted to any piece (other than king) if it reaches the home row of a current
112 opponent; reaching the home row of a defeated player does not qualify.
113

114 ***VI. Order of play***

115 Players move consecutively in clockwise order. White moves first, followed by gray (red), then
116 black.³
117

118 ***VII. End of the game***

119 There are two alternative ways to define the completion of the game as a whole, and the players
120 must decide at the start of a game which approach to adopt. The two alternative rules are First
121 Mate and Last Mate; these are more graphically nicknamed “First Blood” and “Last One
122 Standing”.
123

124 **First Mate (“First blood”)**

125 A First Mate game is over when any player is defeated (or there is a tie or stalemate).
126

127 **Last Mate (“Last-one-standing”)**

128 A Last Mate game is over when all players but one are defeated (or there are ties or stalemates).
129 It is carried out in two stages: Stage I is a three-player competition; when one of the players is
130 defeated, the other two continue to compete in Stage II.
131

³ There is perfect three-way symmetry in the initial spatial position of all players. However, strategic differences could arise due to order-of-play, which affects (a) freedom of action, and (b) information on one’s opponents.

132 **VIII. “Winning”, Losing, and Surviving**

133 When there are three players, and possibly two stages of play, there are more game outcome
 134 possibilities and levels of accomplishment that need to be distinguished. There are two basic
 135 accomplishments: defeating an opponent and surviving in a three-way contest in which another
 136 is defeated. A draw is a divided outcome, with value equal to “surviving” (neither winning nor
 137 losing) a three-way contest.
 138

139 -- “Winning” (multiple possible competitive accomplishments)

140 A three-way battle involves more competitive engagement than a two-way battle; each player
 141 challenges and competes against two others. A given player’s competitive outcomes could all be
 142 successful, or only some or none might be successful, or a draw might occur, etc. Thus, a
 143 “game” is in some respects like a three-person micro-tournament. At the end, each player’s
 144 accumulated outcomes relative to the other players determine that player’s *score*. Just as in
 145 standard chess, defeating an opponent = 1 point, and a (two-way) tie earns each tied player ½
 146 point⁴. A new kind of accomplishment is also possible: an independent award of 1/2 point is
 147 given simply for surviving against two opponents in stage I of three-way play.
 148

149 -- Losing

150 A player is defeated when his/her king is either *captured* or *checkmated* (trapped), or, when the
 151 player *resigns*.
 152

153 *Capture of a king*

154 A king is *captured* in the same way as any other piece: when an opponent’s piece moves onto his
 155 cell.⁵
 156

157 *Checkmate of a king*

158 A king is *checkmated* when pieces of one or both opponents can not be prevented from capturing
 159 him on their next move, but instead of waiting to capture him, the opposing player(s) declare(s)
 160 that he is already defeated because he is trapped.⁶ This can occur two different ways:

⁴ In a three-way tie, each player gets 2/3 point.

⁵ There are several circumstances in which a player’s king would be captured rather than checkmated. For example, player X may make a move that opens up an opportunity for Y to capture Z’s king. Y may then immediately capture it (despite the lack of any preexisting check) but is not obligated to do so. As second example, suppose X has placed Y’s king in check, and Y defends itself by moving so that it could be saved from capture by intervention of Z. If Z chooses *not* to intervene, X could then directly capture Y’s king. However, X could not, at that point, declare (an unassisted) checkmate of Y’s king; X can only do that during some other player’s turn to move.

⁶ *Automatic Checkmate*. An alternative checkmate rule, called “automatic checkmate” can be adopted by agreement of players at the start of a game. Under this rule, if a player has no legal move that would let him end his turn with his king free of threat of capture, he has been checkmated. However, this eliminates all possibility of capturing or declining to capture a king or blocking

161 *Checkmate by one player.* X is checkmated by a single player, for example by Y, if
 162 (i) Y can capture X's king on Y's next move;
 163 (ii) no move by X or Z can prevent it;
 164 (iii) Y exercises his option to checkmate X's king, typically by saying something like "I
 165 checkmate X".
 166

167 *Checkmate by two players acting jointly.* X is checkmated by Y and Z jointly if
 168 (i) at least one of X's opponents, Y or Z, can capture X's king on his/her next move,
 169 provided X's other opponent cooperates;
 170 (ii) no move by X can prevent it;
 171 (iii) Y and Z declare that they exercise their option to jointly checkmate X's king,
 172 typically by first discussing and agreeing to do this, and then by one of them saying
 173 something like "Z and I jointly checkmate X" with the other declaring "I agree".
 174 (If X is checkmated by joint action of Y and Z, they each get 1/2 point.)
 175

176 *Declaration of checkmate.* Checkmate can be declared immediately or deferred (see below). In
 177 either case, X is defeated at the time of the declaration. In a First Mate game, the game is over; in
 178 a Second Mate game, Stage II starts, and players resume the sequence of moves with the next
 179 one eligible to move (i.e., omitting X). All of X's pieces remain in place, and can be captured in
 180 the normal way. (Optionally, X's king can be placed sideways to indicate his defeated status, but
 181 he continues to occupy his cell.)
 182

183 (a) A player (e.g., Y) usually declares checkmate of an opponent (e.g., X) right after making
 184 the move that traps the opponent's king; however, there is no *obligation* to do so. Y can declare
 185 it at any later time that it still exists, except at the start of a move (by Y).
 186

187 (b) If Y chooses not to declare a checkmate of X at the time X's king is trapped, the game (or
 188 stage) continues. At X's turn, X *must* move to get out of Y's undeclared checkmate if this is at
 189 all possible, but X may make some other move when it is not⁶.
 190

191 (c) If X's king becomes trapped by Y "incidentally"-- after a move made by Z, Y can
 192 immediately declare a checkmate of X, or Y can declare it later, as long as it still exists.
 193

194 (d) A player can not declare a checkmate at the *start* of his/her turn to move. To defeat
 195 someone at that point, the player must *capture* the opponent's king. After the player makes a
 196 move, however, he/she may *then* declare a checkmate (except on a king that he/she could have
 197 captured during that turn). The checkmate could have predated that move, or it could have been
 198 created by that move.

of one player from capturing another's king. The resulting game is more like traditional two-way chess, but eliminates some of the human interaction challenges that add subtlety to the three-way game and that may make 3WC a game in which it is harder for computers to defeat highly skilled and intelligent human players in the foreseeable future (see the memo: "Comparison of the breadth, depth, and kinds of thinking required in three-way vs. two-way chess, with possible implications for human-computer competition" R Harshman, March-April 2005).

199 **Resignation**

200 During a two player game (e.g., in Stage II), either player may Resign by declaration at any time.
201 However, during a three-player contest (e.g., in Stage I), it is acceptable only if either (a) the
202 other two players agree to the action and all three players agree on the final allocation of points;
203 or (b) the player resigning gives the other players time to adjust their strategies. This can be
204 accomplished by declaring an intention to resign after each of three *successive* moves. After the
205 third such move and declaration, the player no longer participates⁷.

206 **-- Surviving (outliving an opponent)**

207 At the end of a three-player engagement (Stage 1), the usual outcome is that one player has been
208 defeated and two survive. Survival when playing against two opponents is considered an
209 accomplishment equivalent in value to obtaining a tie when playing against one opponent.

210 **-- Forcing a Draw**

211 A game or stage can end in a draw if (a) there is a stalemate (see below) or if (b) no player could
212 possibly checkmate an opponent by a series of legal moves (e.g., because there is insufficient
213 material left to do so). It can also end in a draw (c) by mutual agreement of *all* active players. (d)
214 In three-way play, if just two of the players wish to cede victory and draw one another they each
215 earn ½ point while the third player earns 1 point (for a “weak victory”). There are two further
216 circumstances in which a player can request declaration of a draw: (e) after a ‘Three-fold
217 Repetition’ of a position, or (f) after Fifty Moves with no pawn being moved and no capture
218 being made (see FIDE World Chess Federation rules for detailed definitions).

219
220 *Stalemate*: When a player’s move eliminates all legal moves for one of his opponents, (e.g., all
221 of that opponent’s moves would place the opponent’s king in check) it creates a stalemate
222 between the two players; at that point, the stage or game is over. The stalemated players (i.e., the
223 one who’s move created the stalemate and the player who was left with no legal moves) are
224 awarded a two-player draw worth ½ point for each. If there is a third player, that player has
225 achieved a “weak victory” and is awarded one point.

226 When a stalemate occurs in Stage I of a two-stage game, either of the stalemated players can
227 request an opportunity to play against the non-stalemated player in Stage II. If both stalemated
228 players request this, two separate Stage II continuation games are played, both starting with
229 pieces positioned as they were at the time of the stalemate, but without the other stalemated
230 player participating. If none of the three players requests continuation, the game is converted to
231 First Mate and is over. If two continuations are carried out, the two Stage II games are
232 considered/counted as two distinct two-player chess games. *END*

⁷ * During a three-player engagement, Resignation is considered “bad form” because it is not normally justified or appropriate. A player’s situation never justifies resigning since (i) it is in the interest of each of your opponents to prevent the other one from defeating you; (ii) if one opponent defeats the other before you are defeated, you gain a half point for surviving (and get to proceed to Stage II, if it is a two-stage game); (iii) subsequent exchanges of pieces in the battle between your opponents may weaken both of them relative to you; (iv) you may discover an opening and defeat one of your opponents who is concentrating on your other opponent; etc. Furthermore, resignation in those circumstances prematurely terminates the competition between the other two players, To insist on resigning immediately, when the other players are not ready, is considered a serious breach of etiquette. Also, if the game ends without consensus on its outcome point allocation, it is nullified.

233 **Appendix 1: Three-way Chess Coordinates**

234 Each individual cell on the Three-way chessboard is identified by a letter-number pair (e.g. ‘a1’).
 235 The letter gives its location in a particular ‘file’ (column), and the number gives its location in a
 236 particular ‘rank’ (row). The labels assigned to each file and rank are determined by their position
 237 relative to the leftmost bottom cell on the board, the first cell of White’s ‘home row’. The
 238 standard 8-7-8-7-8-7 coordinates are shown in Figure 2.

239
 240 *Home row.* A player’s home row is the row of 8 cells at the bottom edge of the board; it is the
 241 row in which the player’s king sits at the start of the game.

242
 243 *Ranks.* Ranks are rows of cells parallel to the *home row*. They are numbered from 1, the home
 244 row, to 14, the opposite edge of the board.
 245

246 *Files.* The files are columns of cells parallel to the left leaning (7-cell) edge of the board⁸. Each
 247 file starts with a cell on the lower edge of the board and proceeds upward in a straight line
 248 through successive rows. Files are ordered sequentially from left to right by letters of the
 249 alphabet, starting with ‘a’ for the file that originates on the left of White’s home row (the home
 250 position of White’s left rook), and proceeding through ‘b’, ‘c’, etc.

251 There are six additional files beyond ‘h’; these originate on the 7-cell edge of the board to
 252 the player’s right, and are identified by the letters “i”, “j”, “k” ... up to “n”. Note that the first of
 253 the 7 cells on the right slanting edge is in the same file as the one for the last of the home cells,
 254 namely, cell “h”.⁹
 255

256 *Cell labels.* A cell is identified by giving its file letter followed by its row number. Thus, the
 257 names for the home row cells are ‘a1’, ‘a2’, ‘a3’ ... ‘a8’.

258 The cells in a given file can have a starting or ending rank that differs from other files. For
 259 example, the ranks of cells in file ‘a’ range from 1 to 7, those in file “b” range from 1 to 8, in
 260 “c”, from 1 to 9, etc. Likewise, cells in file “i” are in ranks 2 to 14, those in file “j” in ranks 3 to
 261 14, etc.
 262

263 *Absolute vs. relative coordinates.* By default, the positions of pieces on the board are defined
 264 relative to the home row for White. These absolute coordinates can be written in two characters,
 265 such as “b3”. However, *relative* coordinates for pieces can also be defined from the viewpoint of
 266 any player (i.e., relative to that player’s home row). A cell location identified in relative
 267 coordinates is distinguished by an initial capital letter of either W, G (or R), or B followed by a
 268 dash (e.g. B-a3). The initial capital letter identifies the player whose home row is used for
 269 reference. For example, cell W-d9 is the same as cell G-e2 (or R-e2) and B-m6.

⁸ Because of the hexagonal nature of the playing grid, each cell is located in two files simultaneously: one that goes upward to the left and one that goes upward to the right. However, only one kind of file is actually needed (together with rank) to uniquely identify the location of all cells on the board. By convention, cells are identified in terms of the *leftward* file in which they are located. Of course, explicit reference to rightward leaning files is sometimes useful, particularly when describing the location of one piece relative to another.

⁹ On the larger 8-9-8-9-8-9 three-player board, there are two added ranks, 15 and 16, and two further files, “o” and “p”.)

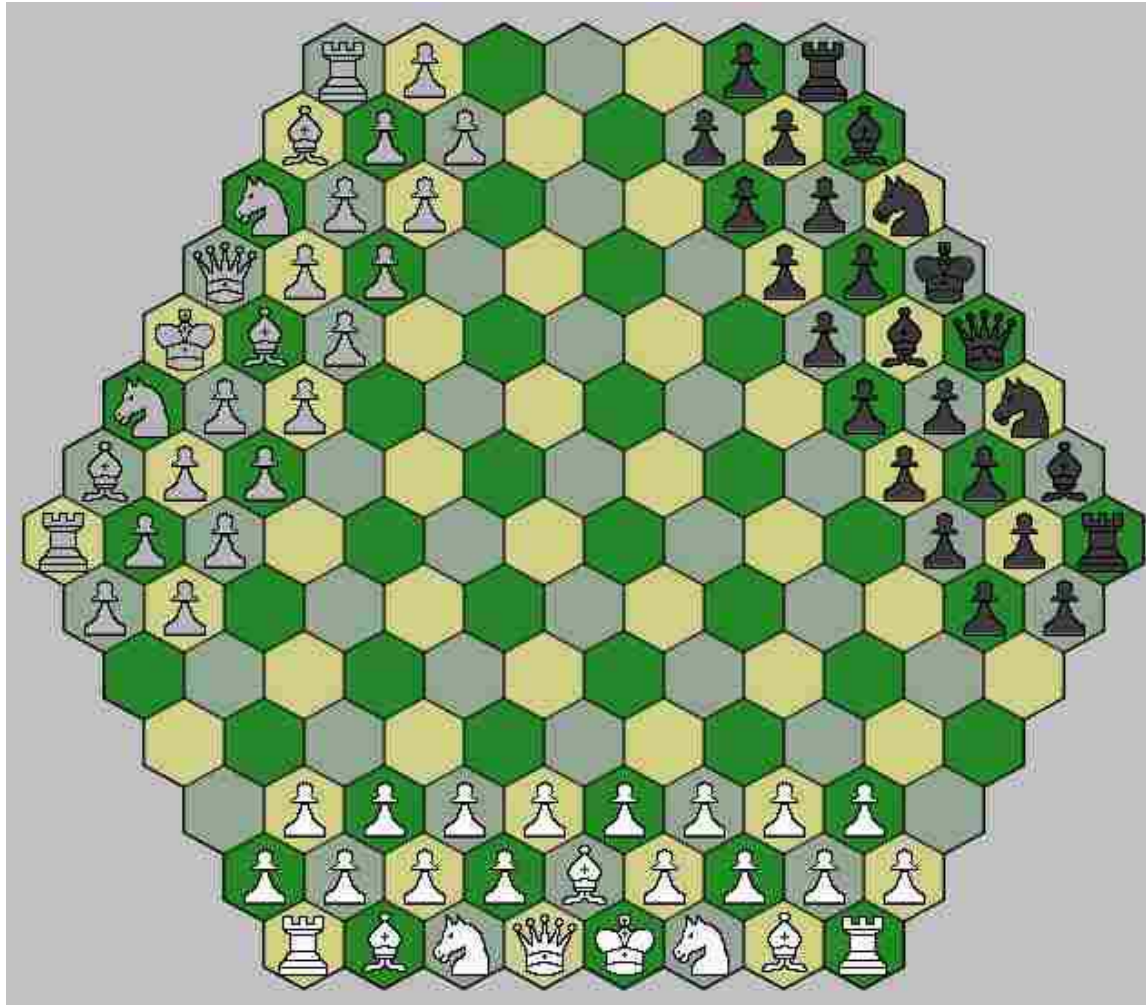
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271 **Appendix II: Table of Outcomes**

Points Awarded to Players for Various Game Outcomes in Three-Way Chess							
Ways to Earn Points:							
Standard:							
Defeat an opponent = 1							
Tie an opponent = 1/2							
New:							
Outlive an opponent (in 3-way play) = 1/2							
Jointly checkmate a common opponent = 1/2							
Case	Outcome Scenarios for a First Mate game (or Stage 1 of a Second Mate game)	Points Awarded					
		Player X	Player Y	Player Z			
1	X defeats Y, Z survives	1.5	0	.5			
2	X and Z jointly checkmate Y	1	0	1			
3	X, Y and Z agree to a 3-way draw	2/3	2/3	2/3			
4	Y and Z stalemate or agree to a two-way draw, ceding a “weak victory” to X	1	1/2	1/2			
Some Outcome Scenarios for Stage 2 of a Second Mate game: after, e.g., X defeats Y, then					Points Awarded in Stage 2 of <i>Second Mate</i> game		Total score for <i>Second Mate</i> game
		X	Z		X	Y	Z
5	if X then defeats Z	1	0		2.5	0	.5
6	if Z then defeats X	0	1		1.5	0	1.5
7	if X and Z tie	.5	.5		2.0	0	1.0
* (Points earned are additive. Special cases: To jointly defeat opponent =1/2; Three-way draw = 2/3)							

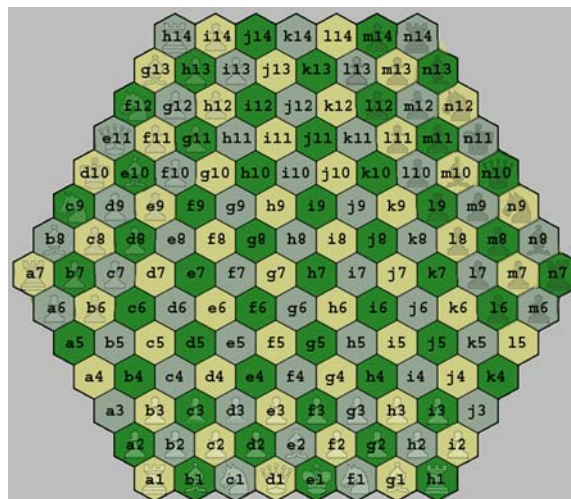
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273 Figure 1, Three-way Chess Initial Setup
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Figure 2: Chess Coordinates for standard size board:



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Revision Notes

Version 2.1.2; Aug 6, 2006 is a slight correction of 2.1.1 (April 12, 2006), replacing 2.0.1 (April 2, 2005), which was a major revision of Version 1.1 (December 17, 2004), which revised Version 1.0.2 of Nov. 27, 2003b. **This is mainly a clarification of End Game rules, which are now in section VIII.** It defines conditions for stalemate and other kinds of draw, clarifies pawn promotion and immediate vs. deferred declaration of checkmate, places restrictions on resignation during three way play, makes explicit the obligation to notify opponents when they are placed in check, and adds draws and stalemate to the table of points for different outcomes. The previous version, 2.0.1, was a major revision, making several changes: (1) Checkmate was introduced: a player can lose by having his king checkmated (trapped) as well as captured; (2) simple 'winning' vs. 'losing' was replaced by levels of success, involving points earned equivalent to those awarded in standard chess for defeating or tying an opponent, plus a special .5 point award for 'survival' in three-player engagements. Other more minor rule changes include: (3) a restriction on pawn movement for capture was eliminated; (4) the 6-move requirement for pawn promotion was dropped; (5) the rule against "walking past" a pawn was eliminated. Other improvements include: (6) the description of chess board coordinates was streamlined; (7) one picture showing initial board set-up and another giving cell coordinates were both provided; (8) a point award table, demonstrating the new point system, was provided; and (9) there were other minor rule/description changes that had been made over the preceding months.