

# About Arimaa®

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Arimaa is a competitive strategy game, developed by Omar Syed after he watched Deep Blue defeat Gary Kasparov at chess in 1997. It turns out to be particularly deep, and the playing community is still discovering new strategic principles after five years of active study. In each year's championship, the attacks and defenses employed are different from the previous year.

## **Arimaa was designed to be:**

- \* Difficult for computers.
- \* Playable with a standard chess set.
- \* Fun and interesting for humans.

Some features which make Arimaa highly competitive and interesting for human players include:

- \* Rules that are simple, consistent and easy to learn.
- \* Lots of strategic concepts to explore and discover.
- \* Extremely low chance of draws even among experienced players.
- \* Equal winning chances for both players. Neither side has a clearly distinguishable advantage.
- \* Yearly world championship tournaments for both humans and AIs.

## **Play free online:**

You can play the game for free online at <http://www.arimaa.com>.

We have a small and friendly international playing community with about 300 active members. Advanced players are always happy to teach and help review your games. There is also convenient "Bot Ladder" that teaches you to play by offering progressively more difficult AI opponents.

Tournaments and special events happen periodically throughout the year.

## **The AI Challenge:**

**\$17,000 if a programmer can beat the top humans**

Omar Syed has offered a \$10,000 prize to any programmer whose AI, running on a typical home PC, can beat a team of the top human players by 2020. Others have contributed to the prize with varying deadlines; if the challenge is won in 2008, the prize fund is worth \$17,000.

In 2007, the human team was so confident that two of the defenders selected were mid-level amateurs rather than top experts. Even so, the computer challenger did not win a single game. The expert player making up the third member of the team played his games with increasingly difficult handicaps ... and won all three.

# Arimaa<sup>®</sup> - Basic Game Rules

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**The goal:** get one of your rabbits into the opponent's back row.

**Setup:** Arimaa is played on an 8x8 board, with four squares designated as traps. Players set up their pieces in the two back rows however they like - unlike chess, there is no prescribed starting position. The gold player places his or her pieces first, then silver may reply. (In this document, 'silver' pieces are shown as black, and 'gold' are shown as white.)

**Pieces.** each player has sixteen pieces as follows.

1	Elephant	1	Camel
2	Horses	2	Dogs
2	Cats	8	Rabbits

**Moves.** All pieces have the same move: one square in any orthogonal direction (no diagonals). Exception: rabbits may only move sideways or forward; they may not voluntarily retreat towards their home row.

**Turns.** Players alternate turns as in chess, with gold playing first. Each turn, a player has 4 'steps' to distribute however he or she likes - from one step for each of four different pieces, to four steps on a single piece.

**Pushes and Pulls.** Using two steps, a strong piece can force an opponent's weaker piece to move. In the figure to the right, the black horse may displace white's cat to positions A, B, or C as long as those squares are unoccupied. The horse then must move to the square vacated by the cat. This is a "push".

If the white cat at right moves to position D, the white player may then use a second step to "pull" any of the three surrounding rabbits into the space recently vacated by the cat.

You may only push or pull weaker pieces of the opposite color. For strength purposes, elephant > camel > horse > dog > cat > rabbit.

**Frozen Pieces.** Any piece adjacent to a stronger enemy piece is *frozen* - it cannot be moved voluntarily - unless it also has an adjacent friendly (of any size). In the figure to the right, the white dog is frozen because of the adjacent black elephant. However, the white cat is not frozen by the same elephant because it also has an adjacent white rabbit. The cat is free to move, but the dog is not.

**Captures.** Any piece caught alone on a trap without an adjacent ally is removed from the board, regardless of whose turn it is. Pieces are removed at the time they become isolated in a trap, even if that is mid-turn. However, any piece may move through or even stop on a trap safely as long as it has an ally in any adjacent square.

In the picture to the right, the white dog in the upper-left trap is dead. The black rabbit in the lower right trap is safe, however, until the other black rabbit moves away (or is pushed or pulled).

**Winning.** You win by moving a rabbit into the opponent's final row (scoring a goal). Also, if a player does not have any legal moves, his opponent wins. (win by immobilization).

**The Arimaa Board**

