In the world of chess programming the most successful algorithm for game tree search is considered AlphaBeta search, however in game of Go it is Monte Carlo Tree Search. The game of Arimaa has similarities with both Go and Chess, but there has been no successful program using Monte Carlo Tree Search so far. The main goal of this thesis is to compare capabilities given by Monte Carlo Tree Search algorithm and AlphaBeta search, both having the same evaluation function, in the game of Arimaa.