Assignment2 - Cindy Lin

#2. Proposed metric to evaluate states:

Comparing State A to State B, the better state has the

greater of heuristic 1 value

if equal, greater of heuristic 2 value

if equal, greater of -(heuristic 3 value)

**heuristics are described below in #5

#3. Potential Heuristics

- Heuristic 1
  - Difference between number of agent pieces and number of adversary pieces
    - Benefits:
      - Measures if the agent is winning or losing base on its number of pieces compared to number of adversary pieces.
- Heuristic 2
  - Agent piece is adjacent to an adversary piece it loses to. -100
  - Agent piece is adjacent to an adversary piece it wins to. +100
  - Agent piece is adjacent to the same piece. -50
  - Agent piece is adjacent to a pit. -25
    - Benefits:
      - Measures how advantageous a piece placement is.
- Heuristic 3
  - Sum of distance of agent pieces to adversary pieces that agent wins against.
  - A lower distance is a better state.
    - Benefits:
      - To win, agent pieces have to kill adversary pieces
      - Agent pieces wants to move closer to adversary pieces that it can kill so a lower distance is a better state.
- Heuristic 4
  - +1 for every Agent piece1 is adjacent to agent piece2 such that if agent piece1 gets killed by an adversary piece, agent piece2 can kill that adversary piece.
    - Benefits:
      - Makes adversary reluctant to kill piece1 because it puts it in a position where it can be killed next round
      - If adversary does kill piece1, adversary also loses their piece, so it is an even trade
- Heuristic 5
  - Sum of surrounding empty area around each piece.
    - Benefits:
      - Measures how many spaces there are to move to.
      - Beneficial if there are more spaces you can move to escape adversary pieces.
      - Lowers the amount of safe spaces than adversary pieces can move to.