

Problem of the Month, May 2008

Please turn all solutions into Dr. Dunn's office, JB 322. You may slide your solutions under his door as well. Most elegant solution wins a \$10 gift certificate to the bookstore! Solutions will be accepted anytime during the month of May, 2008. Good luck!

A chocolate bar is 6×8 squares in size. Two people decide to play a game to determine who gets the chocolate. A player can cut the bar only along a division between the squares, and every cut must be a straight line effecting only one solid chunk of chocolate (so you can't arrange the other pieces in a line so that they break as well). For example, you may cut the bar into one 6×2 and one 6×6 piece, and the next player could respond by cutting the 6×6 into a 6×1 and a 6×5 piece. The last player able to break the chocolate wins ALL the chocolate. Is there a winning strategy for either player (ie. a strategy that player one or player two could implement and guarantee victory, no matter what the other player does)? If you can answer that question, then try to answer the question for a more general piece of chocolate having size $m \times n$ squares?