

Strategy Games-1: An Introduction to Domineering

The maths masterclasses offer a great opportunity for play and analysis of a wide range of strategy board games. As an introduction to these activities it is useful to ask individuals in the group to name games that they play. The answers usually cover a wide range from snakes and ladders to chess and it is then useful to ask them to assess what level of skill is required to play them on a scale of zero to five. It is quickly established that noughts and crosses is level zero since once both players realise that play in the corners is better than the sides, the game will always end in a draw and there is not much interest in playing it. Obviously Chess and Go are at the top of the list on five but they require too long to play for a typical masterclass session. What is needed is a range of games requiring skill and experience to play well that can also be completed in a short time interval. There are several games that satisfy these requirements and we will start this compilation with the little-known game of Domineering. It was introduced by Goran Andersson in 1974 under the name of Crosscram but is now more usually known as Domineering because of the use of dominoes.

Rules: The game is played on chequered boards of different sizes and involves placing dominoes that cover two squares. Player A starts and must place the dominoes in a 'vertical' orientation, while Player B places the dominoes in a 'horizontal' orientation. The first player who is unable to place a domino on the board has lost – there cannot be a draw.

The advantage of this game is that it can be played on various sizes and shapes of boards, involves strategic thinking and, for 5x5 and 6x6 boards, takes only about ten minutes to complete; furthermore, one player must win and the other lose. Another, surprising feature, is that the result for best play is known for board sizes up to 16 x 16 square, so it is a '*game of no chance*'. However, the actual play encompasses many variations and there are plenty of chances to go wrong so the result is never obvious. It is best to start on a 5 x 5 board in order to learn the tactics and then to move on to a 6 x 6 board. These games take about ten minutes and are suitable for primary school children whereas older children may wish to try play on a chess board [i.e. 8 x 8] which is more challenging and will take a little longer to finish but usually creates a highly-competitive struggle. The rules of the game are simple enough for it to be used for any age group. When I have used it for primary school groups on a 6 x 6 board, there have been roughly equal numbers of wins for Player A or Player B. The only problem that I encountered when making a list of results was when one boy answered that he had won all his games, either as A or B, and his opponent reluctantly admitted that they had lost every time !

The game is easy to set up with a set of dominoes but it is also possible to play the game on a PC over the internet. Jason Davies has developed an excellent program for playing domineering games on various sized or shaped boards; the interactive routine can be accessed by <http://www.jasondavies.com/domineering/> and also incorporates a notation for recording the moves.

John Dore [j.c.dore@kent.ac.uk]

John Dore's website for outreach activities is:-

<http://www.kent.ac.uk/physical-sciences/staff/profiles/jc-dore.html?tab=outreach>