Intensity modulated radiation therapy (IMRT) allows the fluence directed at each pencil sized area of the beam profile to be individually selected. The fluences are typically created by moving thin leaves in and out of the beam for varying lengths of time. Although the fluences are initially selected by ignoring the effect of adjacent leaves on the dose deposited by radiation flowing through each open area (or "bixel"), it has been shown that the final "forward projection" of the dose distribution must take the states of the adjacent leaves into account. Accounting for this effect greatly increases calculation time. A central opening has four nearest neighbors in the x or y direction, so that separate calculations will need be done for up to 2^4 states. The calculations can be greatly reduced by considering the symmetries of a square. While there are 16 possible ways in which adjacent bixels can be open or closed, they can all be obtained from a basic set of six colour patterns by performing a coordinate transformation. By considering the symmetric colourings of a square, the forward dose calculations can be reduced by a factor of 2.7. The reduction is greater if the states of the diagonal neighbors are also considered. In this case, there are 2^8=256 possible states, but by Burnside's theorem, there are only 51 distinct colourings, for a computational gain of 5 fold.